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State of the System 2045

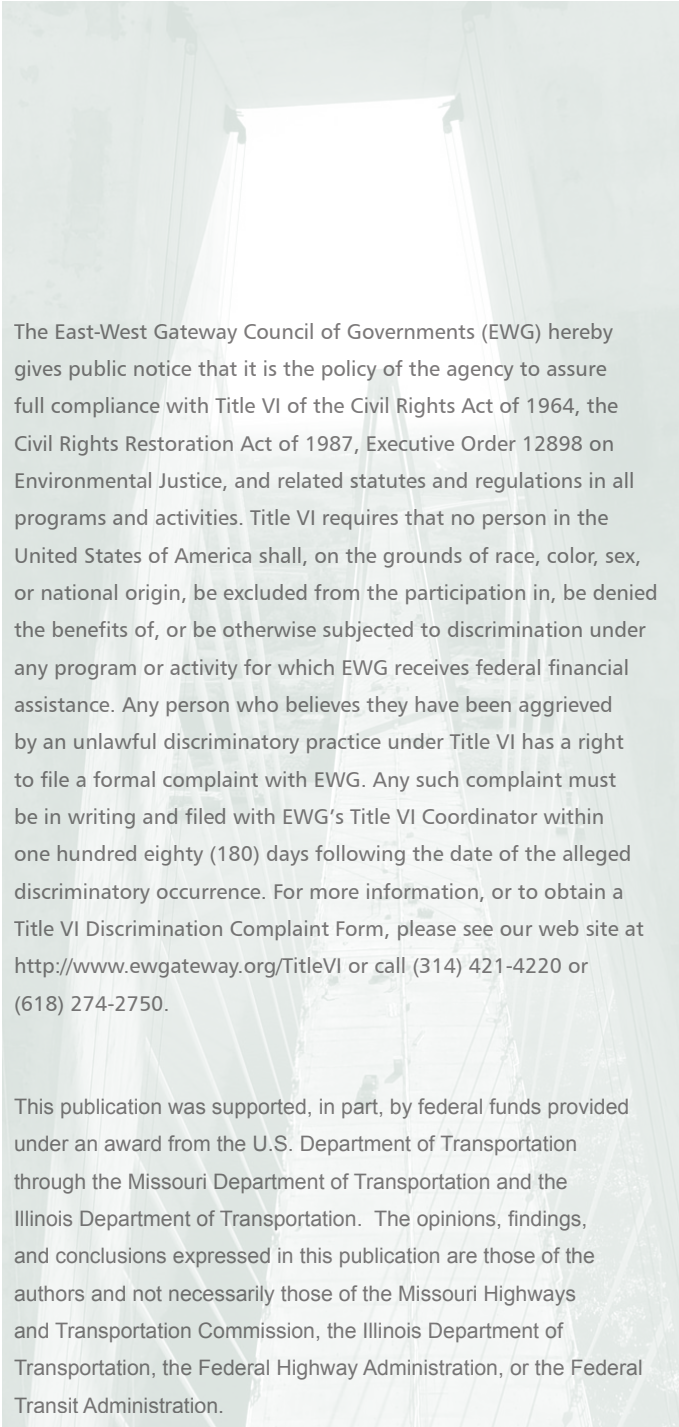
Technical Supplement to the Long-Range Transportation Plan for the St. Louis Region

June 2019



EAST-WEST GATEWAY
Council of Governments

Creating Solutions Across Jurisdictional Boundaries



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Chapter 1: Population & Employment Trends



Preface

This document serves as the *State of the System Report* and the Technical Supplement to the St. Louis area's long-range transportation plan, *Connected2045*, produced by East-West Gateway Council of Governments (EWG). Contained within are 12 chapters that detail the analysis that went into the development of *Connected2045* and highlights EWG's transportation planning activities.

Chapter 1 provides population and employment trends and forecasts for the St. Louis region (the region), as well as information on commuter flow.

Chapter 2, the *System Performance Report*, outlines the region's adopted performance targets as required under federal law.

Chapters 3-10 present technical detail on the regional transportation system with regards to preservation, public transit, equity, bicycle/pedestrian and paratransit, safety, reliability, freight, and air quality, mobility, accessibility, safety and security, and preservation.

Chapter 11 provides more detail about the transportation investments identified in the *Connected2045* plan document.

The final chapter documents the public engagement process that informed *Connected2045* throughout the plan development process.

Population Trends

The population of the eight-county East-West Gateway (EWG) region was estimated to be just under 2.6 million in 2013. Between 1950 and 1970, the region added about 30,000 people per year, but since 1970 St. Louis has been a slow-growing region, adding fewer than 5,000 people per year. Over the last half century, the region's population has shifted away from the urban core to the more suburban and rural portions of the region.

Table 1 and **Figure 1** depict population change in the eight counties of the region from 1950 through 2017. **Table 2** shows how St. Louis ranks among the 50 most populous regions on population growth since 2010.

In the last 67 years, the most notable change has been the population decline in the city of St. Louis, dropping from over 850,000 in 1950 to an estimated 309,000 in 2017. The biggest declines occurred between the 1950s and the 1970s, years in which the city lost an average of more than 13,000 people per year. In the current decade, annual losses have averaged only about 1,500 per year.

Table 1: County Population, 1950-2017

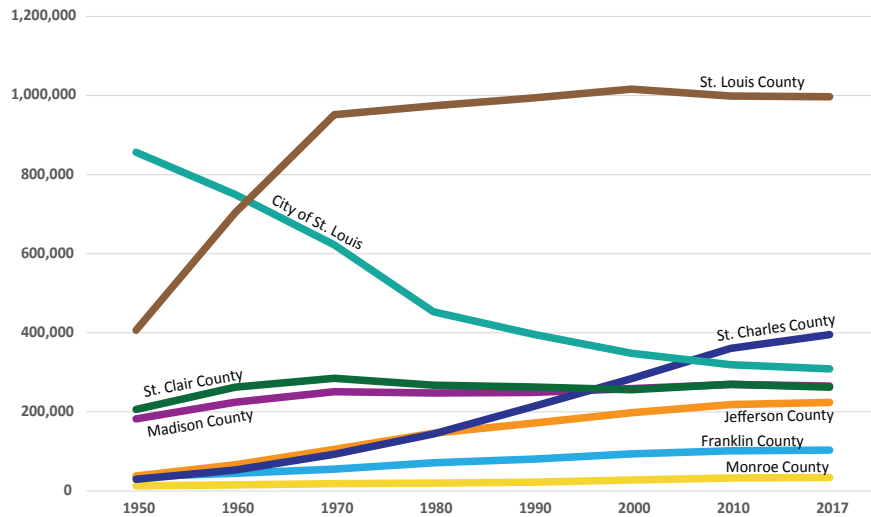
County Name	1950	1960	1970	1980	1990	2000	2010	2017
Franklin County	36,046	44,566	55,116	71,233	80,603	93,807	101,492	103,330
Jefferson County	38,007	66,377	105,248	146,183	171,380	198,099	218,733	223,810
Madison County	182,307	224,689	250,934	247,691	249,238	258,941	269,282	265,428
Monroe County	13,282	15,507	18,831	20,117	22,422	27,619	32,957	34,097
St. Charles County	29,834	52,970	92,954	144,107	212,907	283,883	360,485	395,504
St. Clair County	205,995	262,509	285,176	267,531	262,852	256,082	270,056	262,479
City of St. Louis	856,796	750,026	622,236	453,085	396,685	348,189	319,294	308,626
St. Louis County	406,349	703,532	951,353	973,896	993,529	1,016,315	998,954	996,726
Total	1,770,566	2,122,136	2,383,818	2,325,823	2,391,606	2,484,935	2,573,263	2,590,000

Source: U.S. Census Bureau, Decennial Census and Population Estimates

St. Charles County saw the most dramatic increase in population in the decades since 1950. In this period, St. Charles County has grown by more than a factor of 13, from a population of 30,000 in 1950 to nearly 400,000 in 2017. Growth appears to have slowed somewhat in the post-recession period. From 2000 to 2010, the county grew by more than 7,600 people per year, on average. Since 2010, the growth has been smaller, but still robust, at 4,800 people per year.

St. Louis County is the largest county in the region, with nearly a million residents. The county experienced a substantial increase in population in the 1950s and 1960s, smaller increases in the following decades, and a 1.7 percent decline in the population from 2000 to 2010. Since 2010, however, the county's population appears to have stabilized at just under one million people.

Figure 1: Population Change in the St. Louis Region, 1950-2017



Source: U.S. Census Bureau, Decennial Census and Population Estimates

In recent decades, Jefferson County has been second only to St. Charles County in population growth. From 2000 to 2010, Jefferson County added an average of 2,000 people per year. Since 2010, the number has fallen to fewer than 1,000 per year. Franklin County has, for decades, exhibited slow but steady growth. From 2000 to 2010, Franklin County added just under 800 persons per year. Since 2010, growth has amounted to an average of 268 per year.

Illinois is one of only three states to lose population since 2010, and two of the three counties in the Illinois portion of the region have followed the statewide trend. St. Clair and Madison counties both grew slowly in the decade from 2000 to 2010, but each have fallen slightly in population in the most recent Census estimates. Monroe County has continued to gain population, but at a slower pace. From 2000 to 2010, Monroe County averaged an annual growth of 1.8 percent. Since 2010, this has fallen to just under 0.5 percent.

The shift of population within the region from the urban core to suburban areas is shown in **Map 1** and **Map 2**. **Map 1** shows the change in the Census-designated urbanized area from 1950 through 2010. In this time

period, the population of the region grew by less than 50 percent, while the urbanized area more than quadrupled. **Map 2** shows population change from 2000 to 2010. Growth areas in this time period included the western portion of St. Charles County, the middle third of St. Clair and Madison counties, the I-55 and Route 30 corridors in Jefferson County and the Route 47 corridor in Franklin County. Areas with population loss in this decade include portions of the city of St. Louis, north St. Louis County, and riverfront communities in Madison and St. Clair counties.

St. Louis has consistently experienced net out-migration over the last quarter century, although the population has continued to grow because of the number of births in the region. Net migration may be split into the domestic and international components. From 2010 to 2017, the St. Louis region experienced a net loss of 65,000 people to domestic migration, but had a net gain of 27,000 from international migration. Total net migration (i.e., the sum of domestic and international migration) amounted to a net loss of about 38,000 people.

**Table 2:
Population Change,
Percent, 2010-2017**

1	Austin	23.3
2	Raleigh	18.1
3	Orlando	17.6
4	Houston	16.4
5	San Antonio	15.5
6	Dallas	15.1
7	Charlotte	13.9
8	Nashville	13.9
9	Denver	13.5
10	Phoenix	13.0
11	Las Vegas	13.0
12	Seattle	12.4
13	Jacksonville	11.8
14	Atlanta	11.3
15	Tampa	11.1
16	Miami	10.6
17	Salt Lake City	10.6
18	Oklahoma City	10.4
19	Washington, D.C.	10.3
20	Portland	10.2
21	Columbus	9.3
22	San Francisco	9.0
23	San Jose	8.8
24	Riverside	8.4
25	Sacramento	8.2
26	San Diego	7.8
27	Minneapolis	7.5
28	Indianapolis	7.4
29	New Orleans	7.2
30	Richmond	7.1
31	Boston	6.2
32	Kansas City	6.0
United States		5.5
33	Louisville	4.7
34	Los Angeles	4.1
35	New York	3.9
36	Baltimore	3.6
37	Cincinnati	3.0
38	Virginia Beach	2.9
39	Philadelphia	2.2
40	Birmingham	1.9
41	Memphis	1.8
42	Milwaukee	1.3
43	Providence	1.2
44	Chicago	0.8
45	St. Louis	0.7
46	Detroit	0.4
47	Buffalo	0.1
48	Hartford	-0.2
49	Cleveland	-0.9
50	Pittsburgh	-1.0

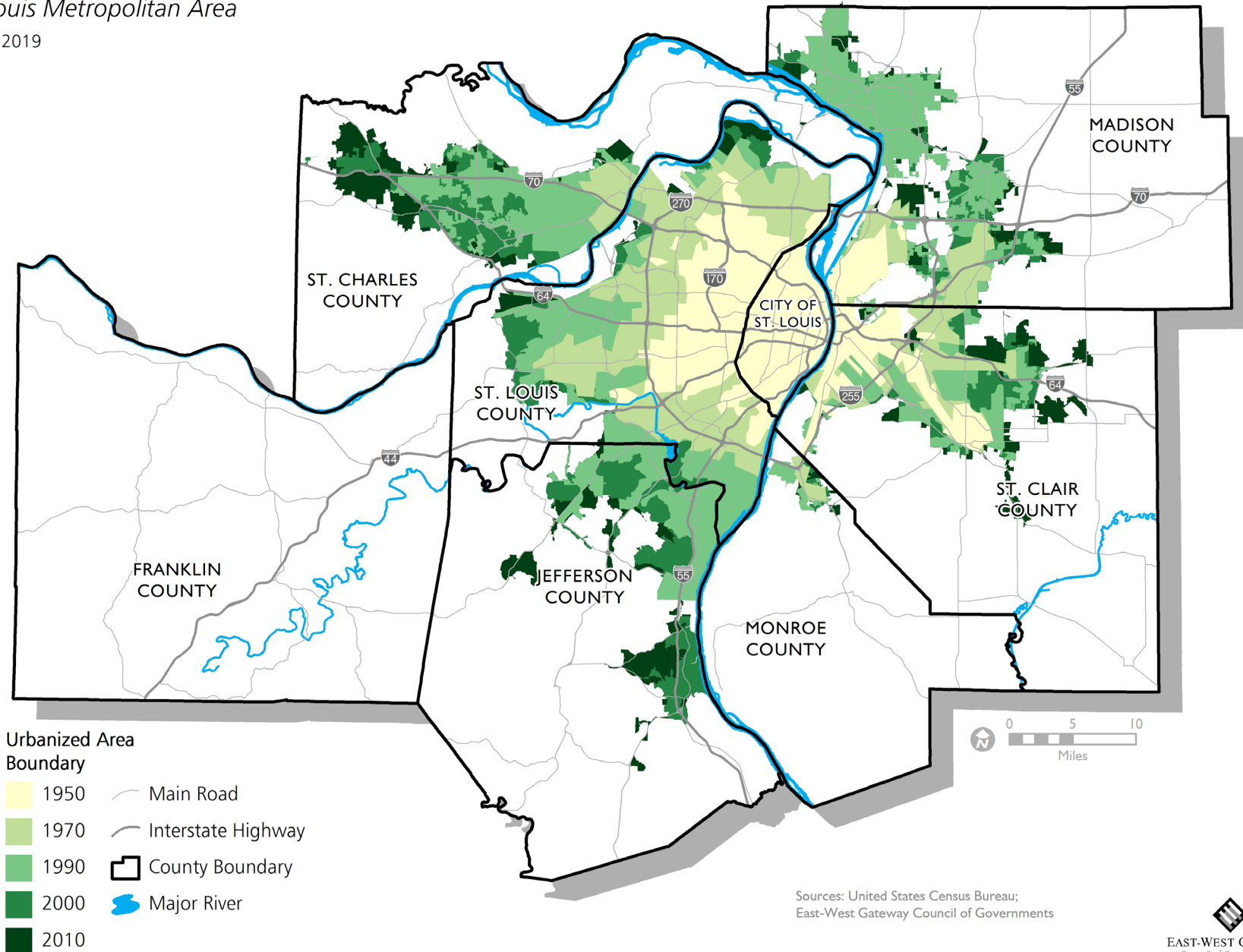
Source: U.S. Census Bureau,
Population Estimates

Map 1:

Change in Urbanized Area, 1950 - 2010

St. Louis Metropolitan Area

March 2019

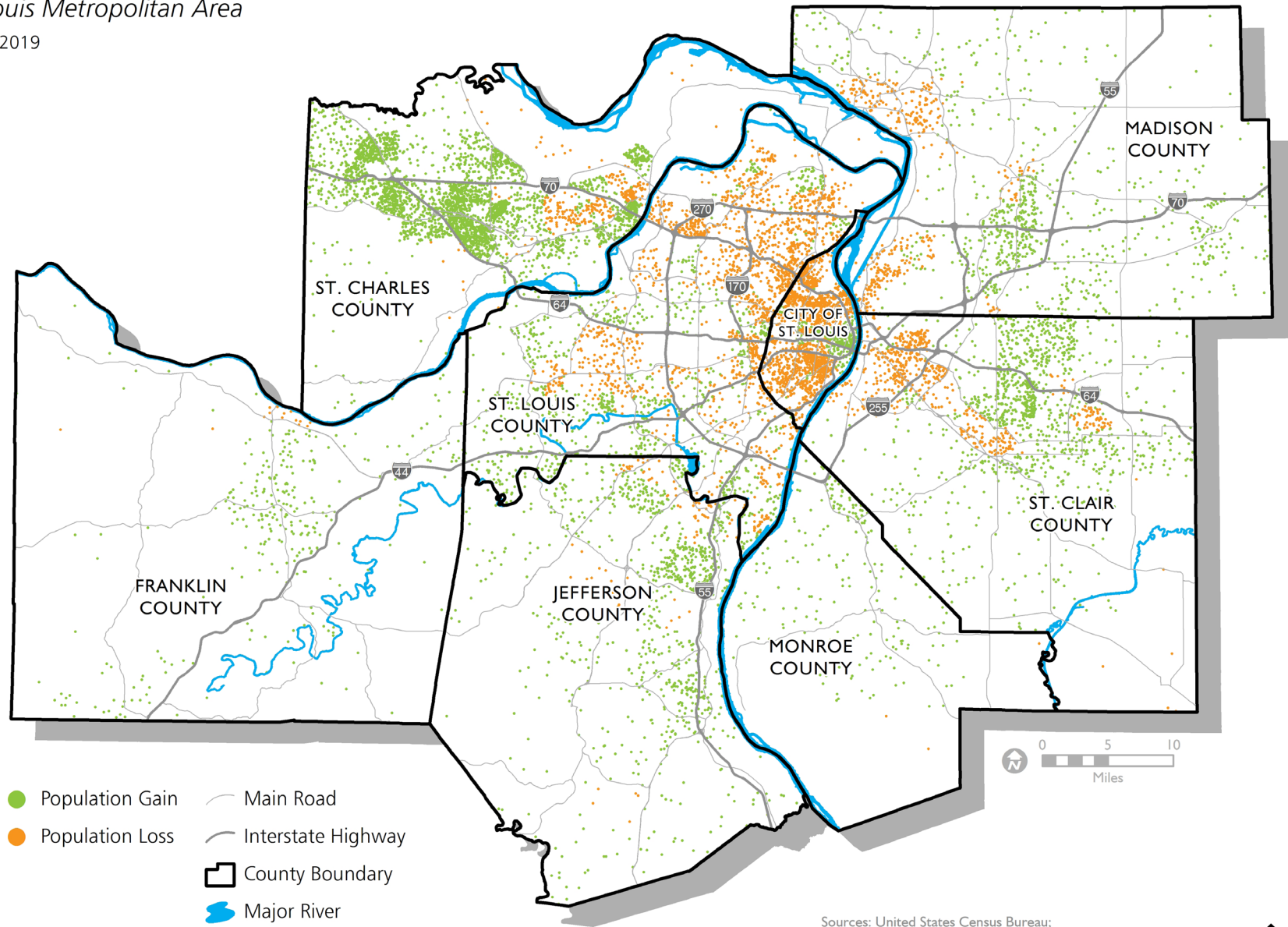


Map 2:

Population Change by Tract, 2000 - 2010

St. Louis Metropolitan Area

March 2019



Sources: United States Census Bureau;
East-West Gateway Council of Governments


EAST-WEST GATEWAY
Council of Governments

Aging Population

St. Louis is an aging region. Among the 50 largest metropolitan regions, St. Louis ranks 9th on median age. The median age in St. Louis is 39.3, about 1.2 years older than the national average (see **Table 3**). St. Louis also ranks 8th on persons over the age of 65 as a percent of population (**Table 4**).

As shown in **Table 5**, working-age adults form a relatively small proportion of the St. Louis population compared to the United States. Some 61.6 percent of the population in St. Louis is between the ages of 18 and 64, which is usually considered the prime working-age range. **Figure 2** shows the working-age population for the St. Louis Metropolitan Statistical Area (MSA) and the United States from 2010 to 2017. Over this time period, this age group increased 3.3 percent for the country, but decreased 1.4 percent in the St. Louis region.

Age pyramids are used to show current and projected age distributions by sex. **Figure 3** shows the age pyramid for 2016 and the projected age pyramid for 2045. In both, the male population is shown in purple and the female in orange. The bulge in the middle of the 2016 pyramid represents the baby boom generation. The most notable projected change is that as this cohort ages, the region is projected to see a dramatic increase in the number of persons over the age of 65. In the absence of increases of in-migration, the region can expect to see absolute losses in both the youth and working-age population through 2045.

**Table 3:
Median Age**

2017

1	Pittsburgh	43.3
2	Tampa	42.0
3	Cleveland	41.3
4	Miami	41.0
5	Hartford	40.8
6	Buffalo	40.7
7	Providence	40.2
8	Detroit	40.0
9	St. Louis	39.3
10	San Francisco	39.0
11	Louisville	38.8
12	Richmond	38.8
13	Boston	38.7
14	Philadelphia	38.7
15	Baltimore	38.6
16	Birmingham	38.6
17	New York	38.5
18	Jacksonville	38.3
19	Portland	38.2
20	New Orleans	38.1
	United States	38.1
21	Milwaukee	37.8
22	Cincinnati	37.7
23	Charlotte	37.5
24	Chicago	37.4
25	Kansas City	37.3
26	Las Vegas	37.3
27	Sacramento	37.3
28	Orlando	37.2
29	San Jose	37.1
30	Seattle	37.1
31	Washington, D.C.	37.1
32	Minneapolis	37.0
33	Los Angeles	36.9
34	Raleigh	36.8
35	Phoenix	36.7
36	Denver	36.6
37	Indianapolis	36.6
38	Atlanta	36.4
39	Nashville	36.4
40	Memphis	36.2
41	Virginia Beach	36.1
42	Columbus	35.9
43	San Diego	35.8
44	Oklahoma City	35.2
45	Dallas	34.9
46	Austin	34.7
47	San Antonio	34.7
48	Riverside	34.5
49	Houston	34.4
50	Salt Lake City	32.9

U.S. Census Bureau, American Community Survey 1-Year Estimates (B01002)

**Table 4:
Seniors**

Population aged 65 and older as a percent of total population, 2017

1	Pittsburgh	19.5
2	Tampa	19.5
3	Cleveland	18.1
4	Miami	17.9
5	Buffalo	17.6
6	Hartford	16.9
7	Providence	16.7
8	St. Louis	16.1
9	Detroit	16.0
10	Birmingham	15.8
	United States	15.6
11	Philadelphia	15.6
12	Louisville	15.6
13	Boston	15.3
14	Phoenix	15.3
15	Jacksonville	15.3
16	New York	15.3
17	Milwaukee	15.2
18	New Orleans	15.1
19	San Francisco	15.1
20	Baltimore	15.0
21	Richmond	15.0
22	Sacramento	15.0
23	Cincinnati	14.7
24	Orlando	14.6
25	Portland	14.4
26	Las Vegas	14.4
27	Kansas City	14.4
28	Virginia Beach	14.2
29	Chicago	14.1
30	San Diego	13.6
31	Memphis	13.5
32	Minneapolis	13.5
33	Los Angeles	13.5
34	Oklahoma City	13.5
35	Indianapolis	13.4
36	Charlotte	13.3
37	San Jose	13.1
38	Seattle	13.1
39	Columbus	12.9
40	Nashville	12.8
41	San Antonio	12.8
42	Riverside	12.7
43	Washington, D.C.	12.6
44	Denver	12.6
45	Atlanta	11.9
46	Raleigh	11.7
47	Dallas	11.1
48	Houston	10.8
49	Austin	10.5
50	Salt Lake City	10.4

U.S. Census Bureau, American Community Survey 1-Year Estimates (B01001)

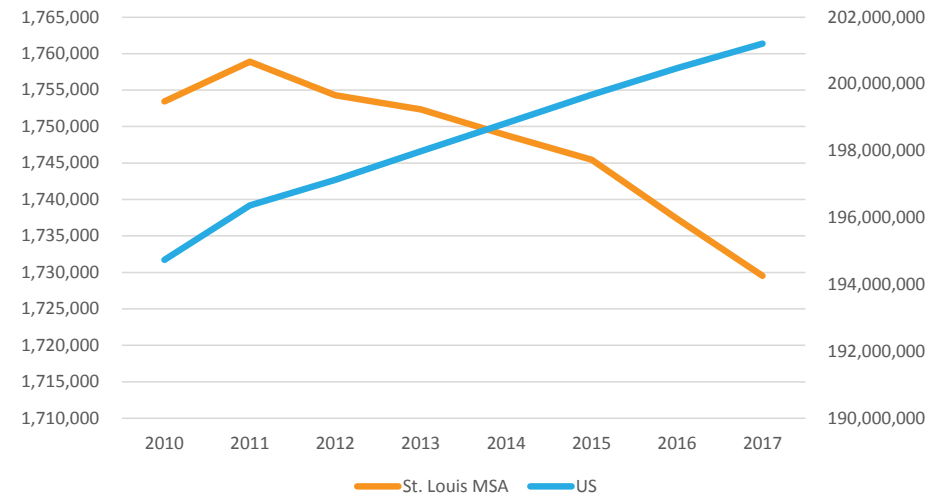
**Table 5:
Working-Age Adults**

Population aged 18 - 64 as a percent of total population, 2017

1	Austin	66.1
2	Seattle	65.3
3	San Francisco	65.0
4	Boston	64.7
5	Denver	64.6
6	Los Angeles	64.6
7	San Jose	64.6
8	San Diego	64.6
9	Washington, D.C.	64.4
10	Raleigh	64.0
11	Nashville	63.9
12	Portland	63.8
13	Virginia Beach	63.6
14	Columbus	63.4
15	Providence	63.4
16	Atlanta	63.4
17	Orlando	63.3
18	Richmond	63.3
19	New York	63.2
20	Baltimore	63.0
21	Hartford	62.9
22	Chicago	62.8
23	Dallas	62.7
24	Minneapolis	62.7
25	Charlotte	62.6
26	Philadelphia	62.6
27	New Orleans	62.6
28	Houston	62.5
29	Las Vegas	62.3
30	Jacksonville	62.2
31	Sacramento	62.0
32	Buffalo	62.0
33	San Antonio	61.8
34	Indianapolis	61.8
35	Miami	61.8
	United States	61.8
36	Salt Lake City	61.7
37	Detroit	61.7
38	Cincinnati	61.7
39	Oklahoma City	61.7
40	Louisville	61.7
41	Milwaukee	61.7
42	St. Louis	61.6
43	Memphis	61.6
44	Pittsburgh	61.5
45	Riverside	61.3
46	Kansas City	61.2
47	Birmingham	61.2
48	Cleveland	60.7
49	Phoenix	60.5
50	Tampa	60.3

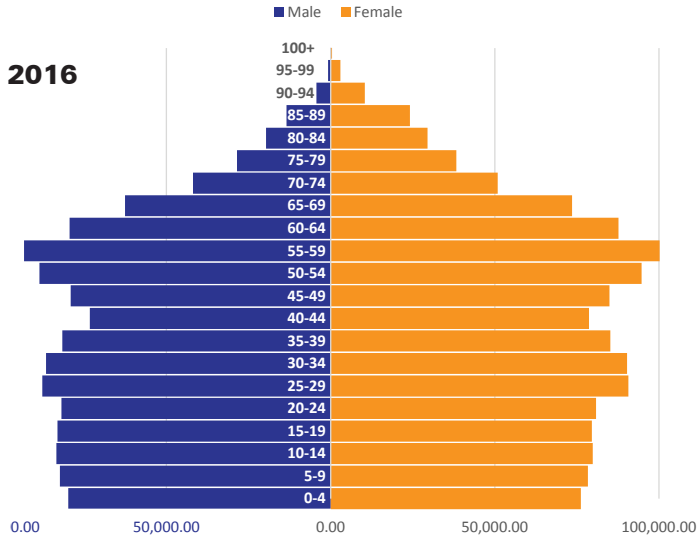
U.S. Census Bureau, American Community Survey 1-Year Estimates (B01001)

**Figure 2: Working Age Population (Aged 18 to 64)
United States and St. Louis MSA, 2010-2017**



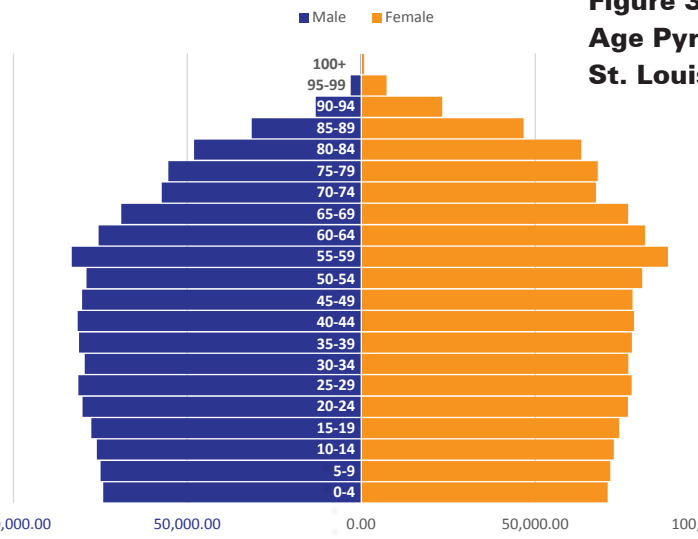
Source: U.S. Census Bureau, American Community Survey

**Figure 3:
Age Pyramid,
St. Louis MSA, 2016**



Source: U.S. Census Bureau, CDC, EWG

**Figure 3:
Age Pyramid,
St. Louis MSA, 2045**



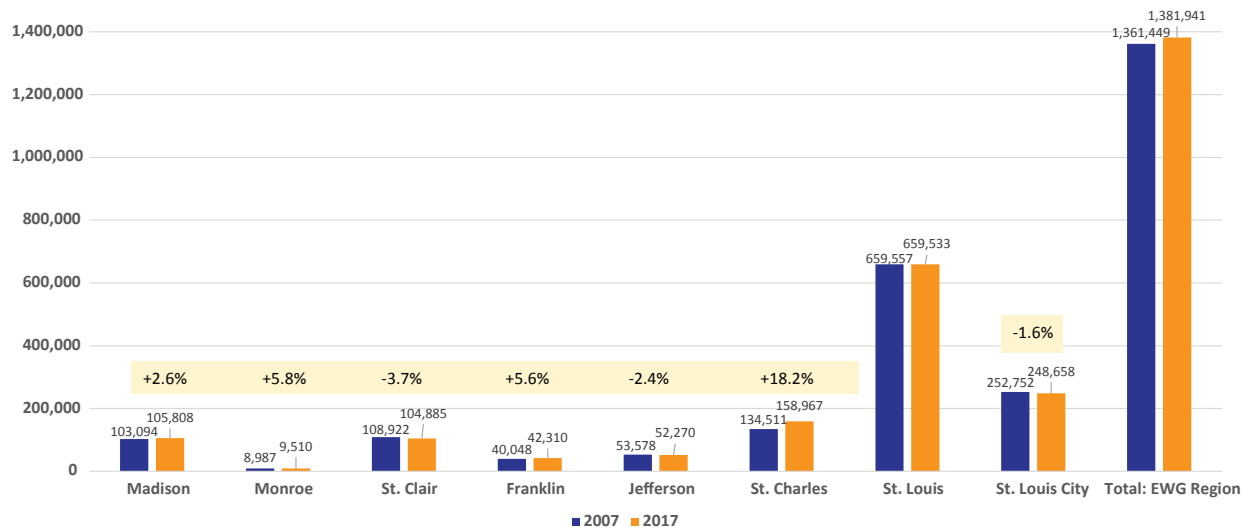
Economic and Employment Trends

It took nearly 10 years for the St. Louis region to recover the jobs lost in the Great Recession of 2007-2009. Not until 2016 did the region enjoy employment levels last seen in 2007. As of 2017, wage and salary employment in the EWG region stood at 1.38 million, up 1.5 percent from the pre-recession high in 2007.

Figure 4 shows change in wage and salary employment by county over the last 10 years. Nearly two thirds of jobs in the region are located in St. Louis County or the city of St. Louis. These jurisdictions have still not regained pre-recession employment levels, as total employment in the city and county is down by about

one half of one percent relative to 2007. St. Charles County registered as the strongest percentage gain in employment in the last 10 years, with an 18 percent jump in wage and salary jobs. Franklin County increased its payroll employment by 5.6 percent, while employment levels in Jefferson County fell by 2.4 percent. In the Illinois counties, employment levels increased in Madison and Monroe (+2.6 percent and +5.8 percent), while falling in St. Clair (-3.7 percent),

Figure 4: Wage and Salary Employment by County, 2007 and 2017



Source: Bureau of Economic Analysis

**Table 6:
Wage and Salary
Employment**

Percent Change, 2007-2017

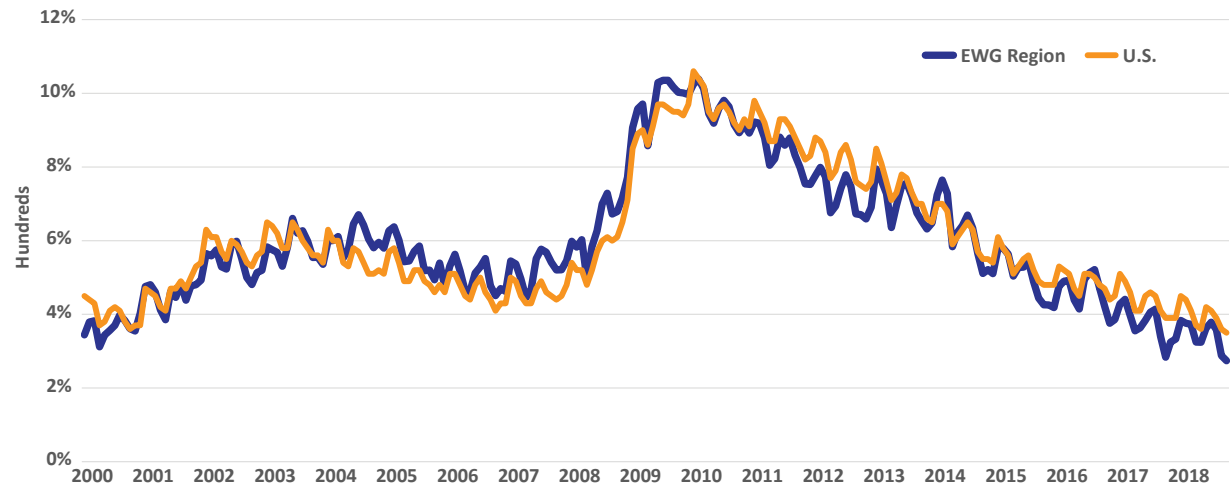
1	Austin	22.2
2	San Antonio	21.1
3	Raleigh	21.0
4	San Jose	20.1
5	Dallas	19.6
6	Nashville	18.4
7	San Francisco	17.3
8	Denver	17.3
9	Charlotte	17.2
10	Houston	16.0
11	Salt Lake City	15.2
12	Orlando	14.0
13	Seattle	12.6
14	Riverside	12.1
15	Portland	11.8
16	Columbus	10.7
17	Indianapolis	10.6
18	Boston	10.3
19	Atlanta	8.8
20	San Diego	8.7
21	Louisville	8.2
22	New York	8.1
23	Oklahoma City	8.0
24	Jacksonville	7.7
25	Richmond	7.6
26	Minneapolis	7.5
27	New Orleans	7.3
28	Washington	7.2
29	Los Angeles	7.2
30	Miami	7.0
31	Sacramento	6.4
32	Phoenix	6.2
33	Kansas City	6.0
	United States	5.7
34	Baltimore	4.4
35	Las Vegas	4.1
36	Cincinnati	4.0
37	Philadelphia	3.7
38	Tampa	2.7
39	Chicago	2.3
40	Pittsburgh	2.2
41	Buffalo	1.4
42	St. Louis	1.4
43	Detroit	0.9
44	Providence	0.8
45	Hartford	0.5
46	Milwaukee	-1.6
47	Birmingham	-2.0
48	Memphis	-2.3
49	Cleveland	-2.5
50	Virginia Beach	

Source: Bureau of Economic Analysis

Over the last 10 years, employment in St. Louis has grown less quickly than in most peer regions. As shown in **Table 6**, St. Louis ranked 42nd on growth in wage and salary employment from 2007 to 2017 with an increase of 1.4 percent. The United States as a whole experienced 6 percent growth.

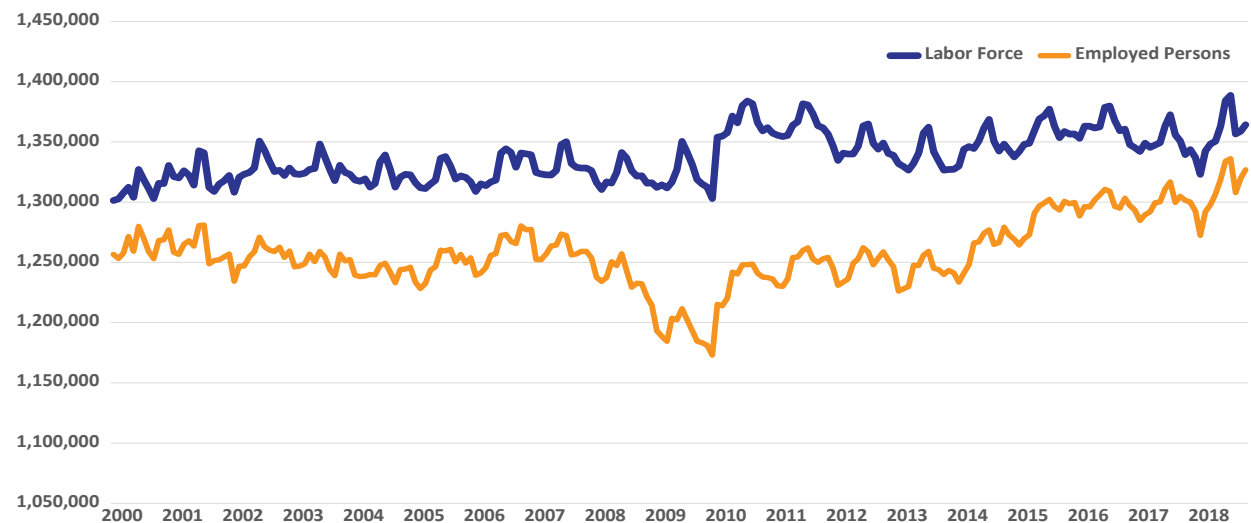
Despite slow growth in employment, the region has low unemployment levels by national standards. In October, 2018, the estimated unemployment rate in the EWG region stood at 2.7 percent, compared to the national average of 3.5 percent. **Figure 5** shows regional and national unemployment rates since 2000. Before the Great Recession, unemployment levels in St. Louis were slightly higher than in the rest of the country, but in the last five years unemployment levels in St. Louis have fallen below the national average. **Figure 6** shows that since the Great Recession, employment levels have risen, while the number of workers in the labor force has declined slightly. The labor force consists of workers who are either employed or looking for work.

Figure 5: Unemployment Rate, U.S. and EWG Region, 2000-2018



Source: Bureau of Labor Statistics, Local Area Unemployment Statistics

Figure 6: Labor Force and Employment, EWG Region, 2000-2018



Source: Bureau of Labor Statistics, Local Area Unemployment Statistics

Table 7 shows long-term changes in the economy. In the last quarter century, the region has lost over 45 percent of its manufacturing jobs. Even so, manufacturing remains a vital sector in the St. Louis economy, employing over 100,000 people in jobs with above average wages. Sectors that have experienced the greatest increases include professional and business services, which is driven largely by increases in health care employment, and the leisure and hospitality sector.

Table 8 summarizes county worker flows for the region. Nearly half of workers in the region are employed in the same county in which they live. The largest inter-county flow of workers is from St. Louis County to the city of St. Louis, with about 90,000 workers making the daily commute. The second greatest volume of inter-county flow is the 77,000 workers who commute from St. Charles County to St. Louis County. About 69,000 commuters travel from their homes in Illinois to one of the Missouri counties, while about 16,000 Missourians work in Illinois. About 76,000 workers in the EWG region live outside the region, while about 28,000 residents of the eight EWG counties go to work outside the region (**Map 3**).

Table 7: Employment (thousands) by Sector, St. Louis MSA, 1990-2017

Sector	1990	2017	Percent Change	Change (thousands)
Mining, Logging, Construction	50.6	66.7	31.8	16.1
Manufacturing	202.4	114.7	-43.3	-87.7
Wholesale	62.7	64.4	2.7	1.7
Retail	141.1	143.3	1.6	2.2
Transportation and Utilities	47.9	50.7	5.8	2.8
Information	28.9	28.1	-2.8	-0.8
Financial Activities	70.1	87.8	25.2	17.7
Professional and Business Services	147.4	213.1	44.6	65.7
Education and Health	134.5	251.5	87.0	117
Leisure and Hospitality	104.8	150.6	43.7	45.8
Other Services	49.2	51.9	5.5	2.7
Government	138.1	154.7	12.0	16.6

Source: Bureau of Labor Statistics

Table 8: Commuter Flow, 2016

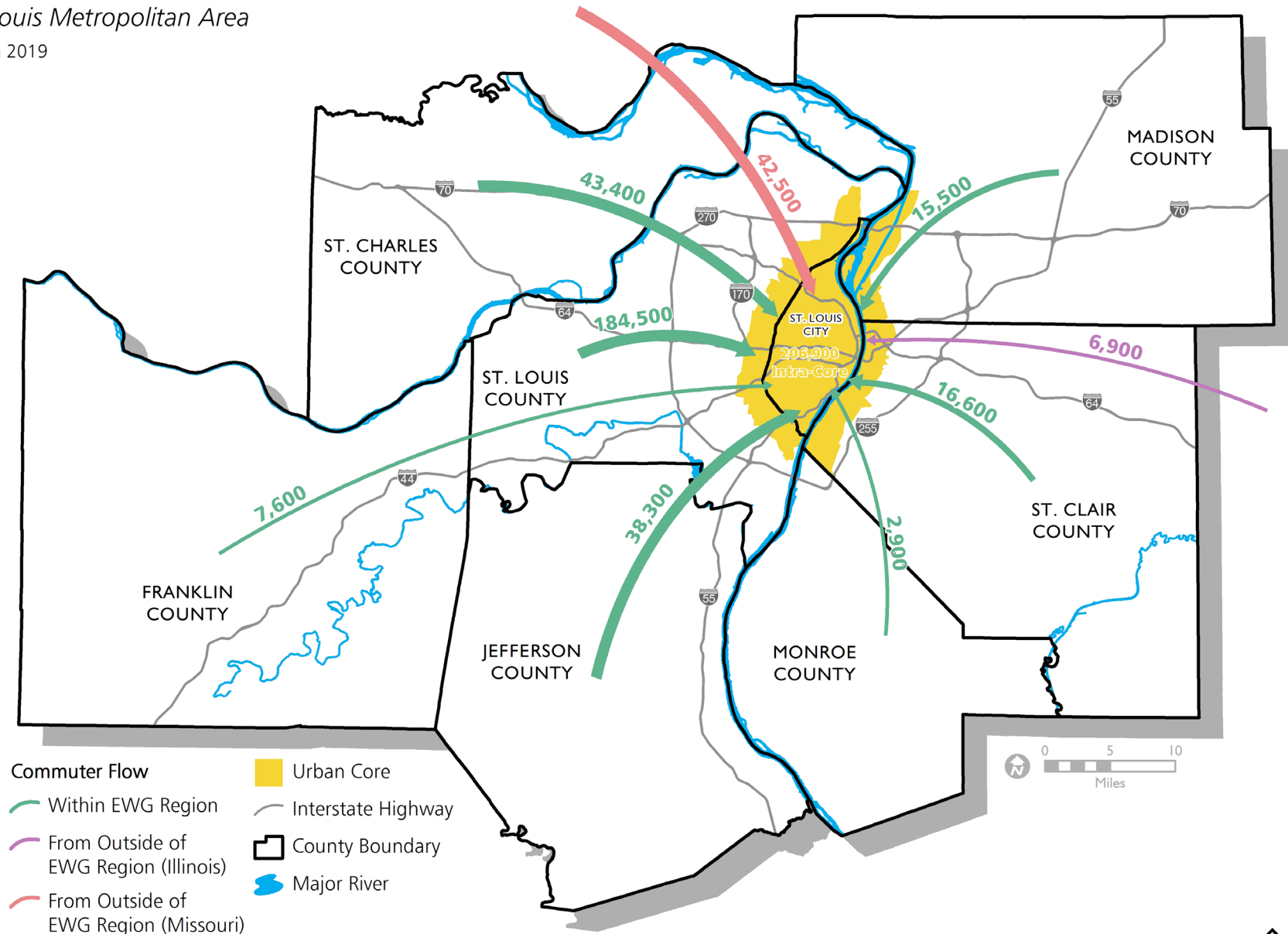
County of Residence	County of Employment							City of	
	Madison	Monroe	St. Clair	Franklin	Jefferson	St. Charles	St. Louis	St. Louis	Outside
Madison	75,020	140	11,395	150	230	1,795	15,075	14,840	4,689
Monroe	560	6,020	2,525	25	230	135	3,205	3,380	984
St. Clair	8,570	1,855	73,765	20	485	685	12,290	16,445	3,602
Franklin	135	4	10	31,045	980	1,005	10,115	2,255	2,879
Jefferson	595	145	1,090	1,400	38,840	1,850	45,560	14,430	2,625
St. Charles	995	15	825	615	530	100,330	77,145	14,445	5,455
St. Louis	4,340	525	4,025	1,540	6,345	20,690	346,595	95,670	6,172
City of St. Louis	1,455	175	1,925	165	1,025	2,540	53,620	84,050	1,716
Outside	13,029	607	8,262	4,762	3,405	15,066	21,424	10,050	

Map 3:

Commuter Flow

St. Louis Metropolitan Area

March 2019



Sources: East-West Gateway Council of Governments

EAST-WEST GATEWAY
Council of Governments

Chapter 2: System Performance Report



System Performance Report

Measuring and tracking the performance of the region's transportation system is a fundamental component of the long-range transportation plan (LRTP) and the performance-based planning process. Performance measurement allows planners to assess the current state of the system to develop recommendations for improvements, evaluate the effectiveness of recently implemented improvements, and forecast the effectiveness of planned improvements.

National Performance Requirements

Federal legislation passed in 2012 introduced a new requirement to incorporate a performance-based approach into the transportation planning process. The Moving Ahead for Progress in the 21st Century Act, known as MAP-21, requires state departments of transportation (DOTs), metropolitan planning organizations (MPO), and transit authorities to set coordinated targets, report on a required set of performance measures, and prioritize projects using a coordinated performance-based planning process.

These performance requirements were continued and bolstered by the Fixing America's Surface Transportation (FAST) Act, which was signed into law in 2015.

Required measures and related procedures were not specified by the legislation and had not been released during development of the previous edition of *Connected2045*. However, since then a number of Transportation Performance Management final rules have been released by the Federal Highway Administration and the Federal Transit Administration, passed through standard rulemaking procedure, and are now effective. Each final rule lists required measures, data sources, and calculation procedures.

The final rules include:

- Highway Safety Improvement Program (PM1)
- Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition for the National Highway Performance Program (PM2)
- Assessing Performance of the National Highway System (NHS), Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program (CMAQ) (PM3)
- Transit Asset Management

Highway Safety

The safety performance measures require state DOTs and MPOs to establish safety targets as five-year rolling averages on all public roads for:

- The number of fatalities
- The rate of fatalities per 100 million vehicle miles traveled (VMT)
- The number of serious injuries
- The rate of serious injuries per 100 million VMT
- The number of non-motorized fatalities and non-motorized serious injuries.

Injuries and fatalities from traffic crashes vary considerably from year to year due to numerous factors, and the five-year average is meant to smooth large changes. The region has experienced an increase in traffic fatalities from 227 in 2011 to 302 in 2017, while serious injury numbers are generally declining. Bicycle and pedestrian fatalities and serious injuries have not followed any consistent trend.

MPOs can either choose to set quantitative regional targets or commit to help implement the state targets by planning for and programming safety projects. During the development of regional safety targets, EWG analyzed state targets set by both IDOT and MoDOT and compared those to statewide and regional trends in both traffic safety and transportation funding for safety projects. Given the current trends and levels of proposed funding, MoDOT's assumptions (9 percent fatality reduction, 5 percent serious injury reduction, and a 4 percent non-motorized reduction) were considered unrealistic to achieve in the period of one year. Therefore EWG adopted IDOT's assumptions (2 percent reductions in fatalities, serious injuries, and non-motorized fatalities and serious injuries) for setting targets for the region as a whole.

Fatalities

Measure:

This measure tracks the five-year rolling average of the number and rate of vehicle-related fatalities in the EWG region on all public roads.

Methodology:

Traffic fatalities are identified in the Fatality Analysis Reporting System (FARS). This data is used to calculate the number of fatalities that occur per year within the EWG region.

Proposed Targets:

2 percent reduction

To achieve a five-year rolling average (2015-2019) of regional traffic fatalities of 289.6 by December 31, 2019 (Baseline 234.6) (**Figure 7**).

And

To achieve a five-year rolling average (2015-2019) regional traffic fatality rate of 0.98 per 100 million VMT by December 31, 2019 (Baseline 0.84) (**Figure 8**).

Figure 7: Traffic Fatalities, EWG Region

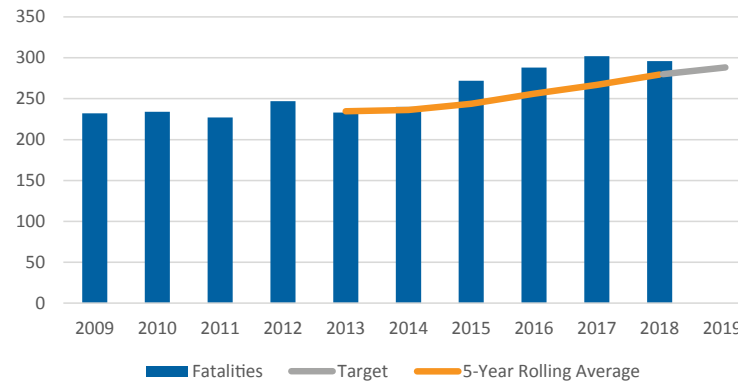
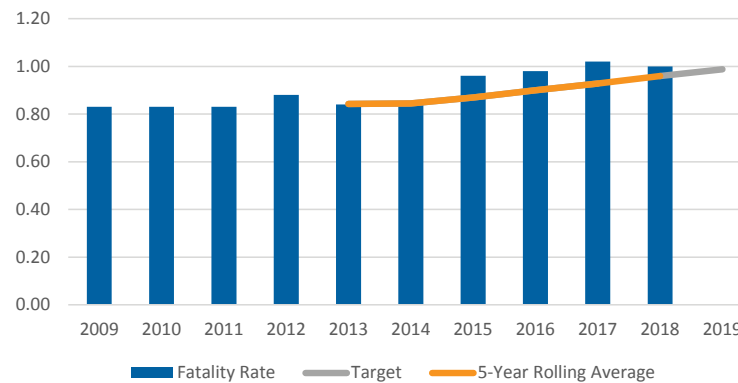


Figure 8: Fatality Rate per 100 million VMT, EWG Region



Serious Injuries

Measure:

This measure tracks the five-year rolling average number and rate of serious injuries resulting from traffic crashes in the EWG region on all public roads.

Methodology:

Illinois and Missouri traffic crash data provided by IDOT and MoDOT are used to calculate the number of serious injuries that occur per year within the EWG region. VMT data comes from EWG analysis of IDOT and MoDOT published data.

Proposed Targets:

2 percent reduction

To achieve a five-year rolling average (2015-2019) of regional traffic serious injuries of 1,721.9 by December 31, 2019 (Baseline 2059.6) (**Figure 9**).

And

To achieve a five-year rolling average (2015-2019) regional traffic serious injury rate of 5.83 per 100 million VMT by December 31, 2019 (Baseline 7.41) (**Figure 10**).

Figure 9: Serious Injuries, EWG Region

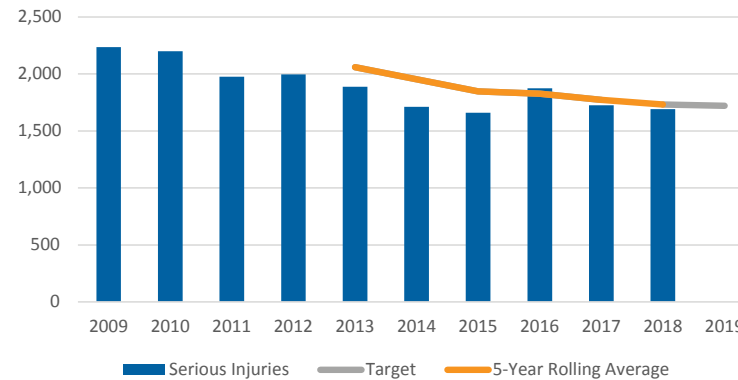
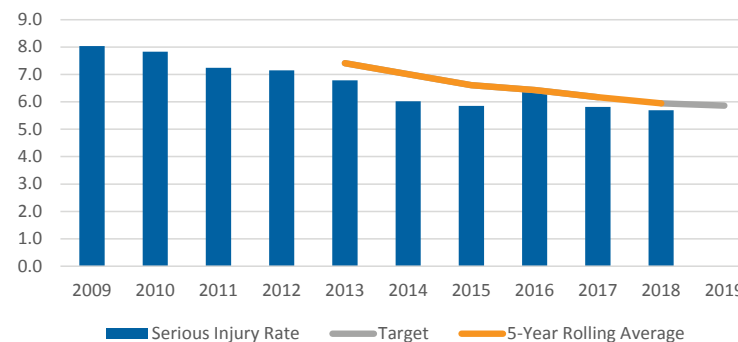


Figure 10: Serious Injury Rate per 100 million VMT, EWG Region



Non-Motorist Fatalities and Serious Injuries

Measure:

This measure tracks the five-year rolling average of the number of non-motorist fatalities and serious injuries resulting from traffic crashes.

Methodology:

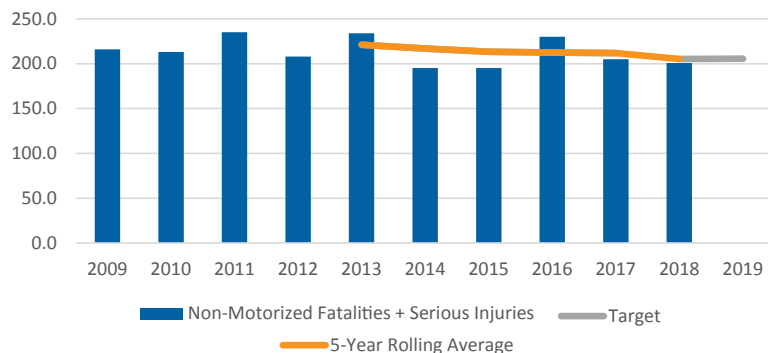
Traffic fatalities are identified in the Fatality Analysis Reporting System. Illinois and Missouri traffic crash data provided by IDOT and MoDOT are used to calculate the number of serious injuries that occur per year within the EWG region.

Proposed Targets:

2 percent reduction

To achieve a five-year rolling average (2015-2019) of regional non-motorized traffic fatalities and serious injuries of 205.7 by December 31, 2019 (Baseline 221.2) (Figure 11).

Figure 11: Non-Motorized Fatalities and Serious Injuries



Pavement and Bridge Condition

A well-maintained transportation system has been a long-term EWG priority. Given the maturity of the system in the St. Louis region, the majority of highway agency investment has been devoted to maintaining roads and bridges. As a result, over the past decade and a half, road and bridge condition has improved on the NHS, but that improvement is dependent on continued, adequate funding. Furthermore, many major reconstruction projects needed on the regional highway system remain unfunded.

After consulting with IDOT and MoDOT on upcoming levels of investment and priorities in preservation, EWG adopted gradually improving targets for pavements in Missouri while holding levels of good and poor bridge deck area steady at baseline levels.

For EWG's Illinois counties, targets of slightly increased good Interstate pavement condition, a decrease in non-Interstate NHS good condition pavements, increases in poor pavements on both Interstate and non-Interstate NHS, an increase in good bridge deck area percentage, and a decline in poor bridge area percentage were set.

National Highway System Pavement Condition

Measure:

This measures the percentage of NHS lane miles in the region that have “good” or “poor” ride quality. Good ride quality is defined by IRI score of less than 95, which measures the cumulative deviation from a smooth surface on a mile of roadway. Poor ride quality is defined by an IRI score of more than 170. Additional criteria include measures of faulting, cracking, and rutting. Ride quality provides a good measure of user experience of the facility. Note that while it is included in graphics below for context, there is no required performance measure for bridges or pavement addressing “fair” condition.

Methodology:

The IRI information comes from the Highway Performance Monitoring System (HPMS), and the lane miles for each classification are summed for all roads in the NHS. Interstate and non-Interstate roads are tracked separately.

Proposed Targets:

Interstate NHS

2022:

Illinois (**Figure 12**): 56 percent good, 1 percent poor

Missouri (**Figure 13**): 77.5 percent good, 0 percent poor

Non-Interstate NHS

2020:

Illinois (**Figure 14**): 48 percent good, 1 percent poor

Missouri (**Figure 15**): 41 percent good, 2 percent poor

2022:

Illinois (**Figure 14**): 46 percent good, 2 percent poor

Missouri (**Figure 15**): 43 percent good, 1 percent poor

Figure 12: Interstate NHS Pavement Condition Target, EWG Region, Illinois Counties

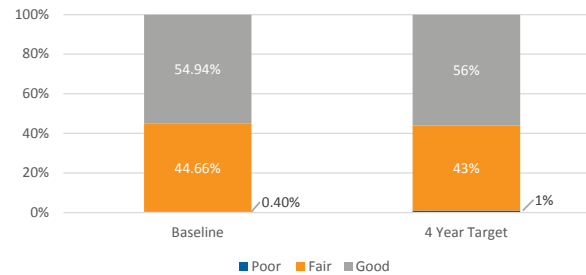


Figure 13: Interstate NHS Pavement Condition Target, EWG Region, Missouri Counties

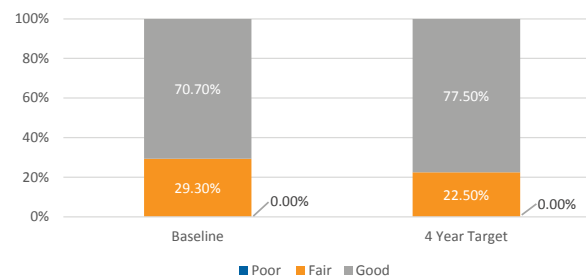


Figure 14: Non-Interstate NHS Pavement Condition Target, EWG Region, Illinois Counties

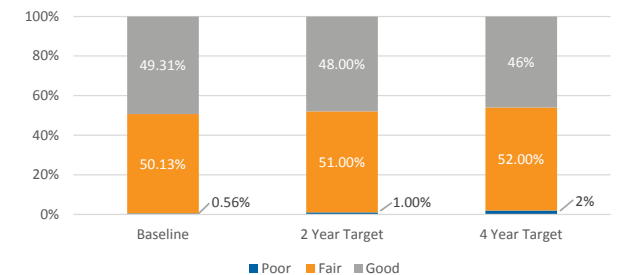
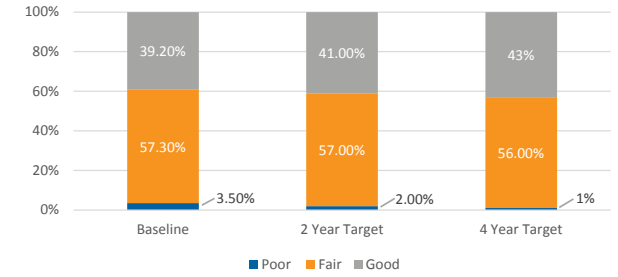


Figure 15: Non-Interstate NHS Pavement Condition Target, EWG Region, Missouri Counties



National Highway System Bridge Condition

Measure:

This measures the percentage of bridge deck area of NHS that are in “good” or “poor” condition. While a “poor” classification is the lowest condition rating for a bridge, it should be noted that it does not necessarily mean that a specific bridge is unsafe, only that it requires more frequent inspection.

Methodology:

Data come from the Federal Highway Administration’s (FHWA) annual National Bridge Inventory (NBI). NBI data is available for all bridges that carry NHS routes and that are over twenty feet in length. Bridge condition is determined through a scheduled inspection process and classified by the lowest rating of NBI condition ratings for deck, superstructure, substructure, or culvert. If the lowest rating is greater than or equal to 7, the bridge is classified as good; if it is less than or equal to 4, the classification is poor. Bridges with all components rated 5 or 6 are classified as fair.

Proposed Targets:

2020 (Figure 16):

Illinois: 40 percent good, 9 percent poor

Missouri: 31.4 percent good, 9.2 percent poor

2022 (Figure 17):

Illinois: 40 percent good, 8 percent poor

Missouri: 31.4 percent good, 9.2 percent poor

Figure 16: Bridge Condition Targets, EWG Region, Illinois Counties

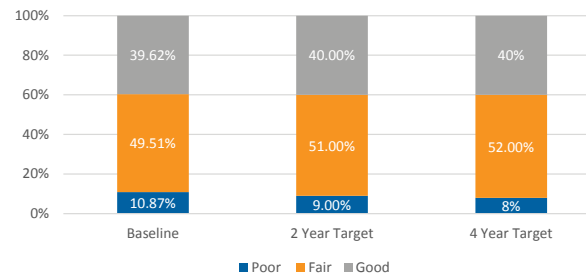
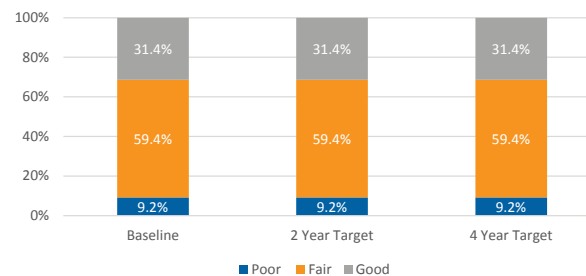


Figure 17: Bridge Condition Targets, EWG Region, Missouri Counties



System Performance

“System performance,” the term utilized in the federal performance measure rulemakings, includes a variety of measures relating to the effectiveness of the Congestion Mitigation and Air Quality Improvement program, truck travel time reliability, and use of alternative modes of transportation. These are relevant measures for the St. Louis region, and *Connected2045* emphasizes better utilization and management of the existing transportation system rather than significant capacity expansion. System enhancements typically have higher benefit to cost ratios than capacity expansion projects. Better utilizing the existing system means fewer single occupant trips, more reliable and less congested roads, and fewer toxic emissions. The St. Louis region is also a significant freight hub with \$55.5 billion in goods moving through the region each year; unreliable travel times not only impact commuters, but can impact the economic competitiveness of the region’s freight industry.

Percent Of Trips To Work Via Non-SOV Modes

Measure:

This measure tracks the share of trips to work by non-single occupancy vehicle (non-SOV) modes. These modes include carpooling, public transit, walking, “other means,” and working from home.

Methodology:

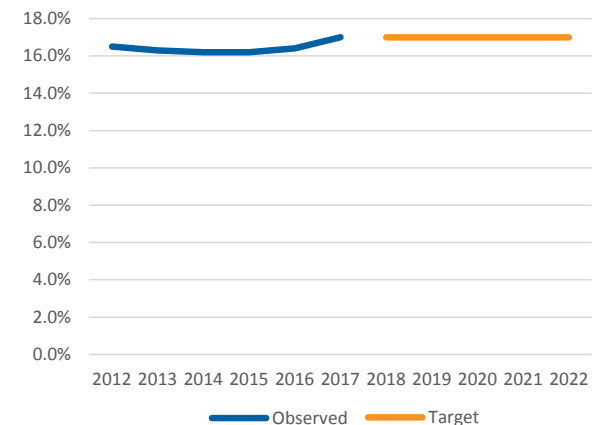
Five-year estimates from U.S. Census Bureau’s American Community Survey (ACS) dataset are used to track mode share in the urbanized area. This measure tracks the percentage of commuters that predominantly do not commute by driving alone in a car, van, or truck. **Figure 18** shows this data for 2012-2016.

Proposed Targets:

2020: 16.7 percent

2022: 17 percent

Figure 18: Non-SOV Mode Share



Highway Reliability

Measure:

The Level of Travel Time Reliability (LOTTR) is defined as the ratio of longer travel times (80th percentile) to a “normal” travel time (50th percentile) for a given roadway segment. The measure is the percentage of person-miles (vehicle miles multiplied by occupancy) traveled on the NHS where this ratio is less than 1.5, which is considered reliable. Using person-miles rather than vehicle-miles gives equal weight to all individuals using the roads.

Non-Interstate travel is generally more reliable than Interstate travel for several reasons. Reasonable alternative routes are more often available for trips on non-Interstates, especially in parts of the region with a grid street network. Lower volumes and speeds mean that incidents on non-Interstates typically have a smaller impact.

Methodology:

This measure is calculated using data from the FHWA's National Performance Management Research Data Set (NPMRDS). The NPMRDS provides travel time by road segment for the NHS in 15-minute intervals.

Travel times are provided for passenger, freight, and combined values. Along with the travel time information, a geographic file of the road segments is provided through the NPMRDS. The geographic file includes information for each road segment including length in miles, average annual daily traffic, functional classification, and other roadway attributes. The measure is calculated for both the Interstate and non-Interstate systems using the combined vehicle travel times.

The LOTTR ratio is generated by dividing the 80th percentile travel time of all vehicles by the normal travel time (50th percentile) of all vehicles for four reporting periods. The four reporting time periods include:

6 a.m. – 10 a.m. weekdays

10 a.m. – 4 p.m. weekdays

4 p.m. – 8 p.m. weekdays

6 a.m. – 8 p.m. weekends

The segment length is multiplied by the annual traffic volume of the segment and the occupancy factor for vehicles. An occupancy factor of 1.7 was used, following the guidance published by the FHWA.

The sum of reliable segments (LOTTR below 1.50 for all time periods) is divided by the total of all segments. This results in the ratio of person-miles of travel that are reliable to total person-miles of travel and expressed in the nearest 0.1 percent.

The data for NPMRDS was collected by HERE Technologies from 2014 to 2016. In 2017, the vendor for this data was changed to INRIX. This resulted in data that may not be comparable.

Due to the incompatibility of the data and the resulting inability to discern a trend, EWG adopted targets of maintaining current levels of travel time reliability, at least through the first mid performance period progress report in 2020, at which point there should be better available data to reset targets if necessary.

Proposed Targets:

Interstate NHS (Figure 19)

2020: 86.9 percent

2022: 86.9 percent

Non-Interstate NHS (Figure 20)

2022: 83.6 percent

Figure 19: Annual Interstate LOTTR in the St. Louis Region

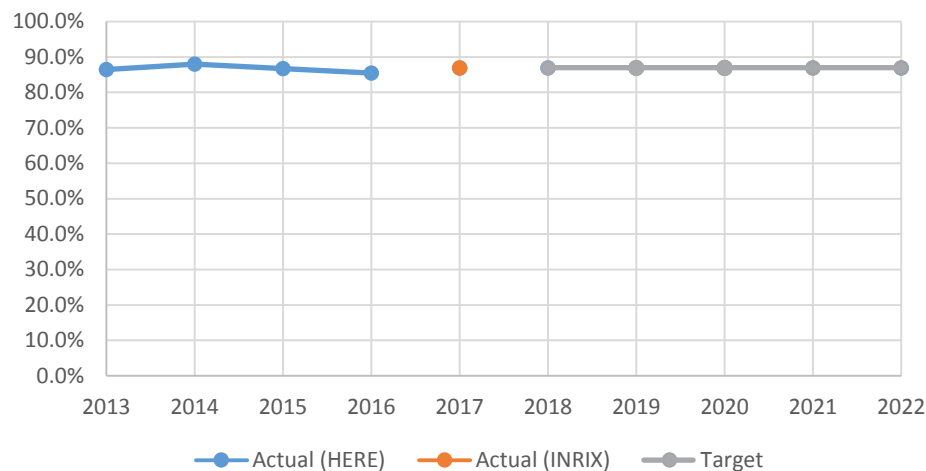
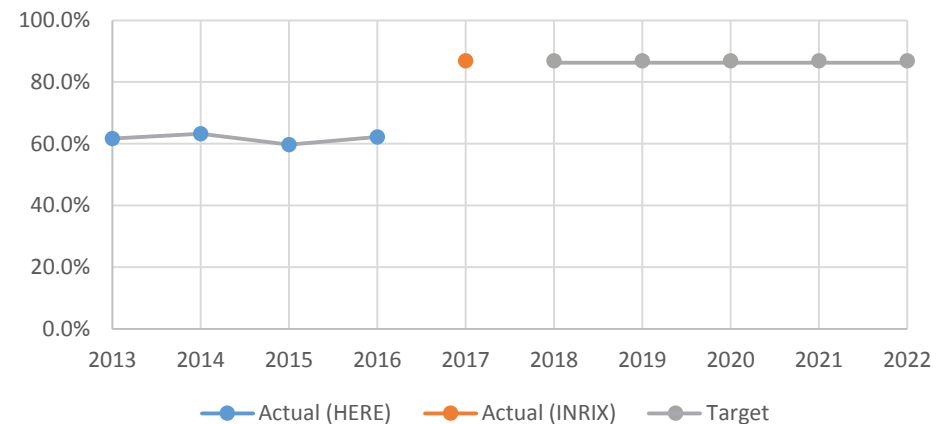


Figure 20: Annual Non-Interstate NHS LOTTR in the St. Louis Region



Annual Hours Of Peak Hour Excessive Delay Per Capita On The National Highway System

Measure:

The Peak Hour Excessive Delay (PHED) measures traffic congestion. It is the extra amount of time people spend in congested conditions in their urban area during peak periods. The PHED is calculated using the travel time of 20 mph or 60 percent of the speed limit on the NHS in the urbanized area. It is weighted by vehicle volume and occupancy.

This measure is calculated using data from the FHWA's NPMRDS. The NPMRDS provides travel time by road segment for the NHS in 15-minute intervals. Travel times are provided for passenger, freight, and combined values. Along with the travel time information, a geographic file of the road segments is provided through the NPMRDS.

The geographic file includes information for each road segment including length in miles, average annual daily traffic, functional classification, and other roadway attributes. A conflation process was used to assign a speed limit and bus route information to the NPMRDS data. The 4:00 p.m. – 8:00 p.m. evening peak is used.

The PHED is calculated for each 15-minute interval in the peak periods for all segments in the St. Louis urbanized area. The 15-minute interval PHED is calculated in the following steps:

- Segment length divided by a segment's speed threshold (larger of 20 mph, or 60 percent of speed limit) times 3,600
- Segment travel time minus the result from above step
- If result from above step greater than 0, then result divided by 3600
- Result from above step multiplied by the 15-minute volume and the average vehicle occupancy for the segment
- The results from the above steps are summed for the urbanized area and divided by the urbanized area population

The total PHED is divided by the urbanized area population to calculate the peak hour excessive delay per capita. IDOT and MoDOT provided access to the Regional Integrated Transportation Information System (RITIS) tool that was used to calculate this measure.

Development of regional reliability targets, per federal law, was conducted collectively between EWG, IDOT, and MoDOT. PHED data was only available for the previous year, making it impossible to discern a trend with regards to PHED. However, other EWG congestion analysis suggests potentially slight increases in congestion in certain areas of the region. Therefore EWG adopted a target of maintaining current levels of PHED (9.5 hours per year) at least through the first mid performance period progress report in 2020, at which point there should be better available data to reset targets if necessary.

Proposed Target:

2022 (Figure 21): 9.5 hours

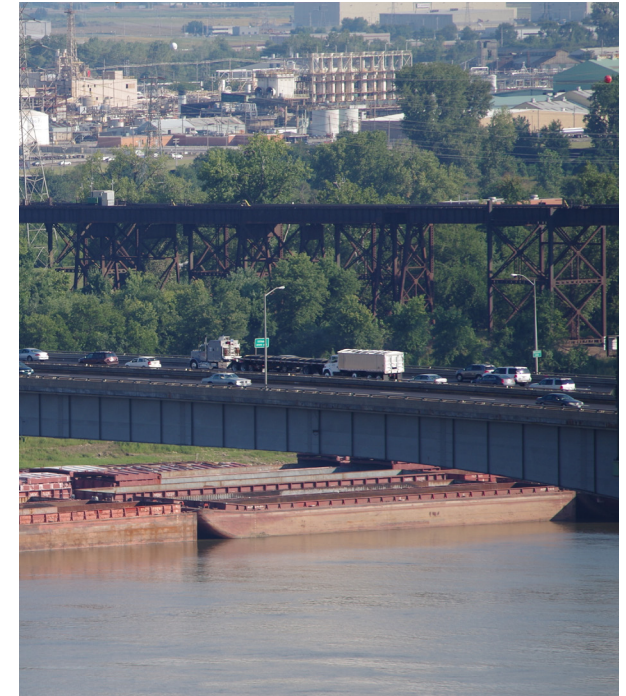
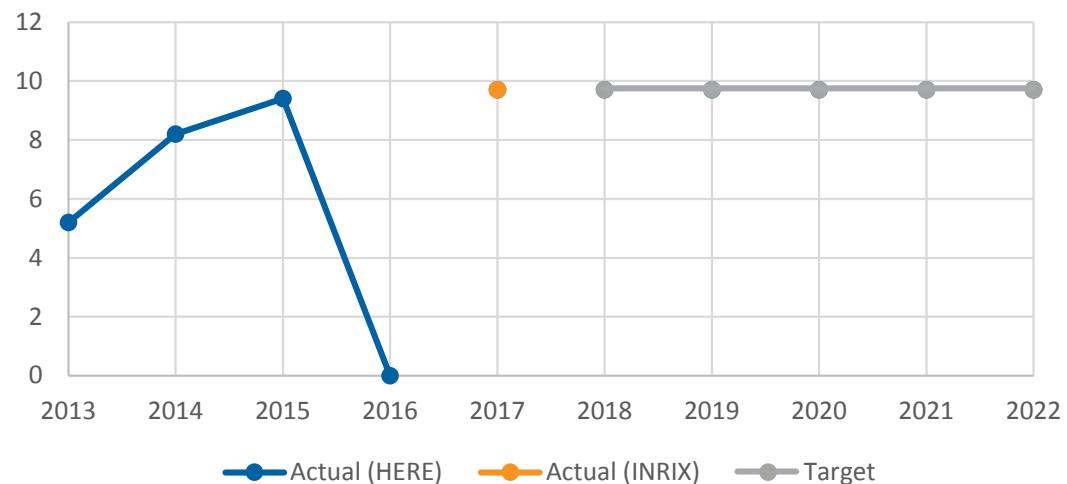


Figure 21: Annual Hours of Peak-Hour Excessive Delay per Capita



Total Emissions Reduction of On-Road Mobile Source Emissions

Measure:

This performance measure tracks the emissions reduced by transportation projects funded through the CMAQ program and is referred to as Total Emissions Reduction. The Total Emissions Reduction will need to be shown for the entire St. Louis urbanized area.

The St. Louis region's non-attainment criteria pollutants are Nitrogen Oxides, Volatile Organic Compounds, Particulate Matter 2.5, and Carbon Monoxide, as reported in the U.S. Environmental Protection Agency's Green Book.

Methodology:

The Total Emissions Reduction measure for each of the criteria pollutants or applicable precursors for all projects reported to FHWA's CMAQ Public Access System is calculated to the nearest one thousandths by using the daily kilograms of emission reductions. EWG calculates the daily kilograms of emission reductions as part of the project evaluation and selection process and provides that information to IDOT and MoDOT for entering into FHWA's CMAQ Public Access System.

Development of regional emissions targets, per federal law, was conducted collectively between staff, IDOT, and MoDOT, and the three agencies recommend setting expected emissions reductions from CMAQ projects in the Transportation Improvement Program (TIP) as regional emissions targets. While programmed projects may be delayed, advanced, added, or removed, accounting for what is in the TIP was considered the most reasonable approach for setting emissions targets.

Table 9: On-Road Mobile Source Emissions Targets

	Baseline: FY 2014-2017 Criteria Pollutants and Applicable Precursors from CMAQ Public Access System	2-year Target Reduction (kg/day)	4-year Target Reduction (kg/day)
Nitrogen Oxides (NOx)	1,202.290	151.9	152.9
Volatile Organic Compounds (VOC)	224.846	21.5	21.6
Particulate Matter (PM2.5)	32.121	6.9	6.9
Carbon Monoxide (CO)	—	15.7	201.9



Truck Travel Time Reliability (TTTR) Index

Measure:

The Truck Travel Time Reliability (TTTR) is defined as the ratio of the longer travel times (95th percentile) to a “normal” travel time (50th percentile) for a given segment on the Interstate system. Higher values for this measure indicate that Interstate travel is more unpredictable for local and national freight companies.

Methodology:

This measure is calculated using data from the FHWA's NPMRDS. The NPMRDS provides travel time by road segment for the NHS in 15-minute intervals. Travel times are provided for passenger, freight, and combined values. Along with the travel time information, a geographic file of the road segments is provided through the NPMRDS.

The geographic file includes information for each road segment including length in miles, average annual daily traffic, functional classification, and other roadway attributes. The measure is calculated using freight travel times. Travel time for all vehicles may be used where there are no data for trucks.

The TTTR ratio is generated by dividing the 95th percentile travel time by the normal travel time (50th percentile) for Interstate segments only for five reporting periods. The five reporting time periods include:

6 a.m. – 10 a.m. weekdays

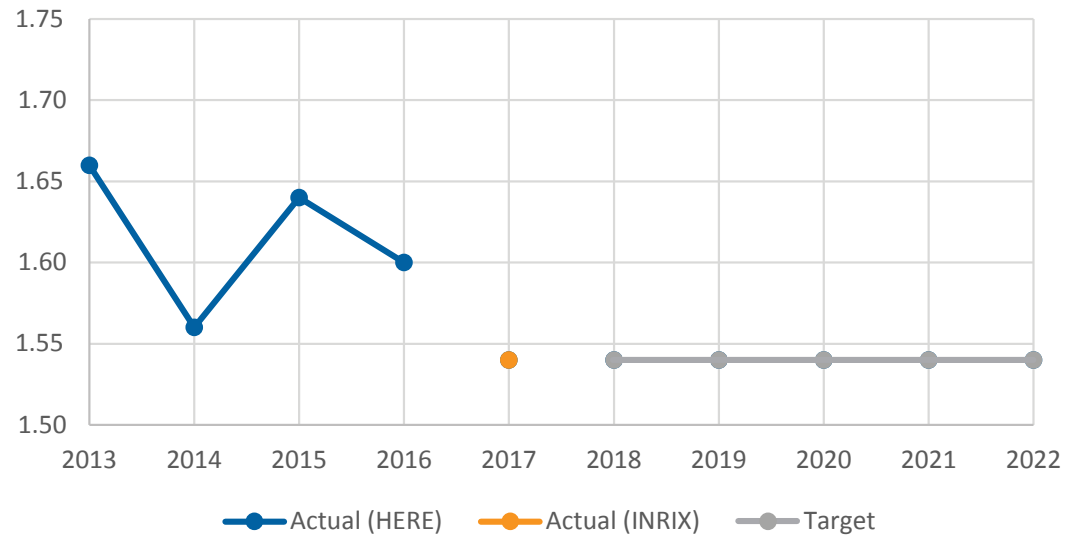
10 a.m. – 4 p.m. weekdays

4 p.m. – 8 p.m. weekdays

8 p.m. – 6 a.m. all days

6 a.m. – 8 p.m. weekends

Figure 22: Truck Travel Time Reliability



The maximum TTTR ratio of the five periods is selected and multiplied by the segment length. The sum of all segments is then divided by the total Interstate system mileage.

Proposed Targets (Figure 22):

2020: 1.54

2022: 1.54

Transit Asset Management

Every transit agency must develop a transit asset management (TAM) plan if it owns, operates, or manages capital assets used to provide public transportation and receives federal financial assistance under 49 U.S.C. Chapter 53 as a recipient or subrecipient.

Under FTA's TAM Final Rule, transit operators are required to track current performance and establish performance targets for the following asset categories in their TAM plan. MPOs are required to include TAM targets for transit providers serving their planning area in their System Performance Reports.

Facilities: The percentage of facilities within an asset class and for which agencies have capital rehab and replacement responsibility, rated below condition 3 on the FTA TERM (Transit Economic Requirements Model) scale.

Rolling Stock (Revenue Vehicles): The percentage of revenue vehicles by asset class that either meet or exceeded their Useful Life Benchmark (ULB).

Equipment (Service Vehicles): The percentage of nonrevenue, support-service, and maintenance vehicles that either meet or exceeded their ULB.

The EWG region is served by multiple transit providers, two of which (Madison County Transit and Oats Inc.) are designated as Tier II providers who have chosen to participate in group TAM plans sponsored by Illinois and Missouri, respectively. As a Tier I agency, Metro is required to set its own TAM performance targets. This section presents the performance targets for the Illinois and Missouri group plans as well as those identified by Metro in its TAM plan.

Final FY2019 Transit Asset Management Performance Targets

Based on the TERM Rating Scale for facilities, IDOT's target is to maintain a condition rating at "3" or above for 11 percent of parking facilities and 17 percent of administrative and maintenance buildings (**Table 10**).

IDOT's group plan targets for rolling stock and non-revenue vehicles vary by asset category and can be seen in **Tables 12 and 13**.

Based on the TERM Rating Scale for facilities, MoDOT's target is to maintain a condition rating at "3" or above for 25 percent of maintenance facilities and 30 percent of administrative buildings, passenger stations, and parking facilities (**Table 13**).

MoDOT's group plan target for rolling stock is to allow no more than 45 percent of revenue vehicles to exceed the ULB (**Table 14**).

Metro's facilities, rolling stock, and non-revenue performance targets are shown in **Tables 15, 16, and 17**. The targets vary considerably based on facility type and vehicle type.

Table 10: FY 19 IDOT Facilities Performance Targets

Facility Type	Facilities Rated Below 3.0	Total Facilities	% Rated Below 3.0
Admin/Maintenance	15	87	17%
Passenger/Parking	4	35	11%
Total	19	122	16%

Table 11: FY2019 IDOT Revenue Vehicles (Rolling Stock) Performance Targets

Vehicle Type	# of Vehicles At/Beyond ULB	Total Vehicles	% Vehicles At/Beyond ULB
Articulated bus	12	16	75%
Automobile	8	8	100%
Bus	160	526	30%
Ferryboat	3	3	100%
Minibus	82	171	48%
Minivan	163	243	67%
Other rubber tire vehicles	8	8	100%
Van	447	852	52%
Total	883	1,827	48%

Table 12: FY2019 IDOT Non-Revenue Vehicles (Equipment) Performance Targets

Vehicle Type	# of Vehicles At/Beyond ULB	Total Vehicles	% Vehicles At/Beyond ULB
Automobile	52	112	46%
Minivan	28	50	56%
Other rubber tire vehicles	6	6	100%
Van	0	4	0%
Total	86	172	50%

Table 13: 2019 MoDOT TAM Facilities Targets

Facility Type	# of Units	% Rated Below 3.0	Targets
Administration	19	0%	30%
Maintenance	10	0%	25%
Passenger	1	0%	30%

Table 14: 2019 MoDOT TAM Rolling Stock Targets (Revenue Vehicles)

Vehicle Type	# of Units	% Vehicles Exceeding ULB	Targets
Automobiles	29	2%	45%
Buses	35	30%	45%
Cutaways	641	15%	45%
Minivans	321	33%	45%
Vans	224	51%	45%

Table 15: 2019 Metro TAM Facilities Targets

Facility Type	Target FY2019 TERM Score	FY2018 TERM Score
Radio Towers	3.60	3.60
Ewing Rail Maintenance Facility	3.50	3.82
29th Street Rail Maintenance Facility	3.75	3.90
Central Bus Maintenance Facility	3.80	3.29
Brentwood Bus Maintenance Facility	3.75	3.49
Illinois Bus Maintenance Facility	3.30	3.14
DeBaliviere Bus Maintenance Facility	3.20	2.87
DeBaliviere Power House	2.93	2.93
Swansea Maintenance Facility	3.00	3.06
Sarah Yard	3.00	2.00
Parking Facilities	4.00	3.83
Rail Passenger Facilities	3.97	3.77
Passenger Transit Centers	3.91	3.84
Elevators/Escalator*		

*Evaluation and TERM Score will be available in the FY 2019 TAM Plan

Table 16: 2019 Metro TAM Rolling Stock Targets (Revenue Vehicles)

Vehicle Type	Target FY2019 in Years	% Vehicles At/Beyond ULB
Bus	14	16%
Van	8	42%
Light Rail	31	0%

Table 17: 2019 Metro TAM Equipment Targets (Service Vehicles)

Vehicle Type	ULB FY2018 in Years	% Vehicles At/Beyond ULB
Over 1 Ton	14	40%
Under 1 Ton	8	56%
Trailers	14	45%
Off-Road Equipment	14	40%
Forklift	14	50%
TUG/Mule Vehicles	14	83%
Snow Remove Equipment	14	6%

Table 18: 2019 Metro TAM Infrastructure Targets by Department

Department	Target FY2019 Term Score	FY2018 TERM Score
LRT Communication	2.39	2.31
RF Communication Facilities	4.20	3.90
VMD Communication Maintenance Systems	4.00	3.40
Traction Power	3.84	3.53
Signal	4.52	3.49
Track	3.00	3.49

Table 19: 2019 Metro TAM Infrastructure Targets by Structure

Structure	Target FY2019 Term Score	FY2018 Term Score
RF Communication Facilities	4.20	3.90
VMD Communication Maintenance Systems	4.00	3.40
Traction Power	3.84	3.53
Signal	4.52	3.49
Track	3.00	3.49

Chapter 3: Preservation



Preservation

Bridge Conditions

Bridges are an essential element of regional infrastructure and economic development, and preservation of the existing system is the region's top priority for transportation investment. Therefore, maintenance, rehabilitation, and replacement of deficient bridges is vital.

Trends and Analysis

A crucial preservation issue is bridge maintenance, especially in light of declining transportation funds. Bridge closures not only affect the routes the bridges traverse but can also put added strain on alternative routes. Timely bridge maintenance helps preserve this infrastructure without incurring the additional costs of major reconstruction. In addition, investments toward the upkeep of bridges pay dividends by improving mobility, accessibility and safety, as well as the prosperity of the region.

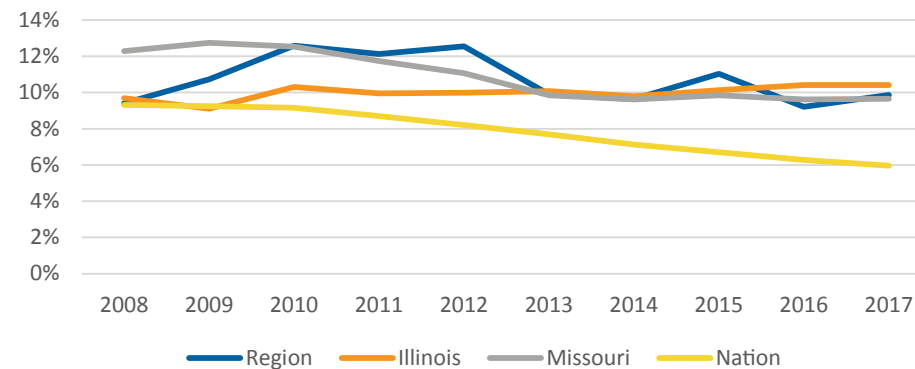
Bridges are defined as deficient when parts have weakened due to wear and tear. Tracking deficiencies helps prioritize infrastructure spending and preserve the integrity of the transportation system as a whole. As a measure to aid state and local efforts, the Federal Highway Administration (FHWA) collects bridge data from a variety of agencies and stores the results in a centralized database, the National Bridge Inventory (NBI). In 2017 there were 615,002 bridges nationwide. The states of Illinois and Missouri have 26,775 and 24,487 bridges, respectively, or a combined 8.3 percent of the nationwide total. **Map 4** depicts the deficient bridges in the region, spread throughout the eight counties.

Figure 23 shows bridge condition trends for the nation, Illinois, Missouri and the region from 2008 through 2017. It should be noted that the FHWA no longer tracks functionally obsolete bridges as part of deficient bridges. Consequently, bridge conditions found in this section are not comparable to previous long-range plans for the EWG region. Locally, IDOT and MoDOT maintained roughly 52.3 percent of the 3,386 bridges within the eight-county region in 2017.

As shown by **Table 20**, about 7.2 percent of those bridges were deficient in 2017, with 5.8 percent of state maintained bridges and 8.7 percent of non-state maintained bridges deficient, respectively. On the Illinois side, 7.8 and 6.1 percent of non-state and state maintained bridges, respectively, were deficient. In Missouri, 5.6 percent of state maintained bridges were deficient, while 9.2 percent of non-state bridges were deficient. Nearly 7 percent of all bridges in the

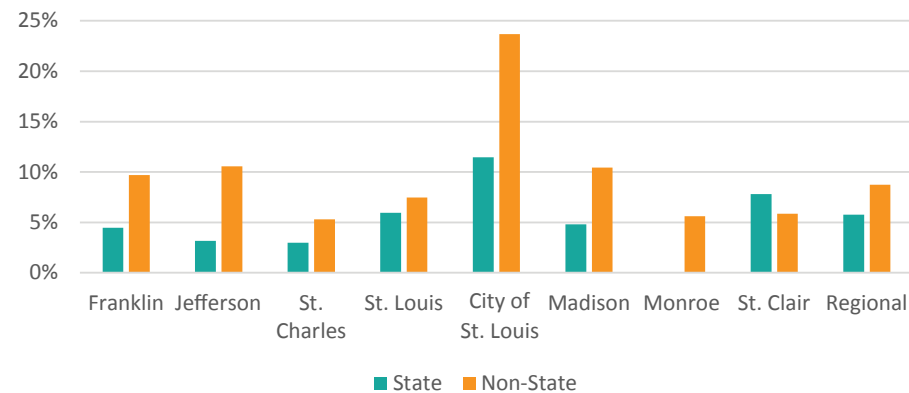
urbanized area of the region were deficient, compared to only 8 percent of rural bridges. **Figure 24** displays the percent of deficient bridges by county and maintenance responsibility. The highest percentages of state-maintained deficient bridges were found in the city of St. Louis (11.4 percent) and St. Clair County (7.8 percent). **Map 4** shows that while deficient bridges are distributed throughout the region, a greater concentration exists within the core, where infrastructure is generally oldest.

Figure 23: Percent of Total Bridge Deck Area that is Deficient, 2008-2017



Source: FHWA, National Bridge Inventory

Figure 24: Percent of Bridges that are Deficient Missouri and Illinois Counties, 2017



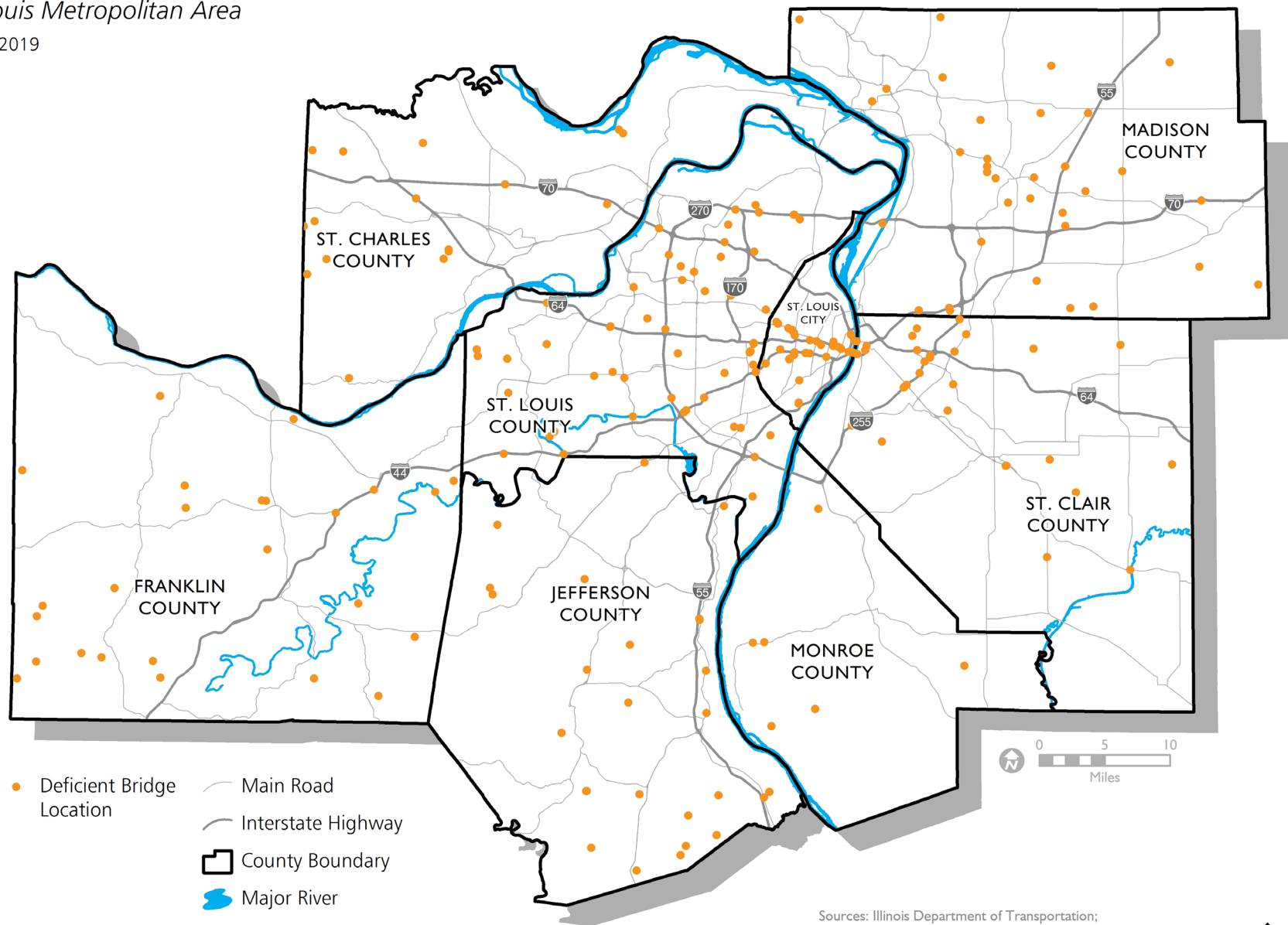
Source: FHWA, National Bridge Inventory

Map 4:

Structurally Deficient Bridges

St. Louis Metropolitan Area

March 2019



Sources: Illinois Department of Transportation;
Missouri Department of Transportation;
East-West Gateway Council of Governments


EAST-WEST GATEWAY
Council of Governments

Table 20: Deficient Bridges

		Total			Urban			Rural		
		Deficient Bridges	Total Bridges	Percent Deficient	Deficient Bridges	Total Bridges	Percent Deficient	Deficient Bridges	Total Bridges	Percent Deficient
Missouri	Non-State	100	1089	9.2	56	748	7.5	44	341	12.9
	State	65	1162	5.6	56	949	5.9	9	213	4.2
	Combined	165	2251	7.3	112	1697	6.6	53	554	9.6
Illinois	Non-State	41	525	7.8	23	216	10.6	18	309	5.8
	State	37	610	6.1	31	506	6.1	6	104	5.8
	Combined	78	1135	6.9	54	722	7.5	24	413	5.8
Region	Non-State	141	1614	8.7	79	964	8.2	62	650	9.5
	State	102	1772	5.8	87	1455	6.0	15	317	4.7
	Combined	243	3386	7.2	166	2419	6.9	77	967	8.0

Source: Federal Highway Administration, National Bridge Inventory 2017

Pavement Conditions

As with bridges, good pavement conditions are a necessary component for the seamless movement of people and goods. Poor conditions can cause congestion and safety problems. Additionally, deferred maintenance increases the costs of repair.

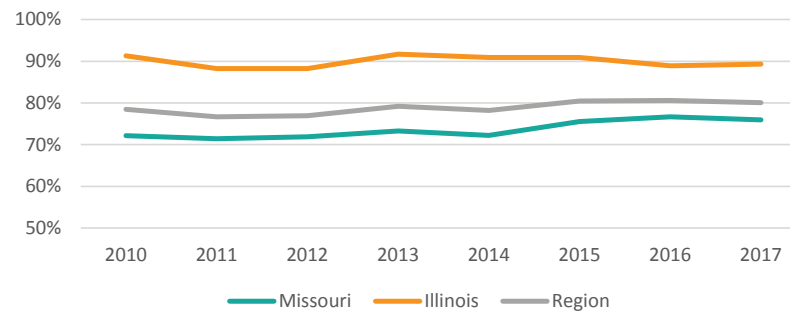
Trends and Analysis

The basic assessment of surface roughness is based on the amount of cracking, rutting, raveling, patching, and a number of other deficiencies that collectively characterize the overall condition of the pavement. Throughout the region, roadways are evaluated based on smoothness and physical conditions. When analyzing pavement conditions, roadway quality is categorized as acceptable and not acceptable, based on IDOT and MoDOT local evaluation criteria. In all, there are 6,294 lane miles of pavement maintained by MoDOT and 2,787 lane miles maintained by IDOT.

Map 5 shows that while almost seven eighths of the lane miles are in acceptable condition, there are pockets of roadways in poor condition. In the more rural areas, particularly on the Missouri side, a larger proportion of the roadways tend to be in unacceptable condition.

In addition to looking at point-in-time data, studying trends shows the direction pavement conditions are going. Examining data between 2010 and 2017, it is evident that pavement has been mostly maintained at the acceptable level, a result of strategies prioritizing pavement preservation (**Figure 25**).

Figure 25: Percent of State Maintained Road Lane Miles with Acceptable Pavement Conditions, 2010-2017



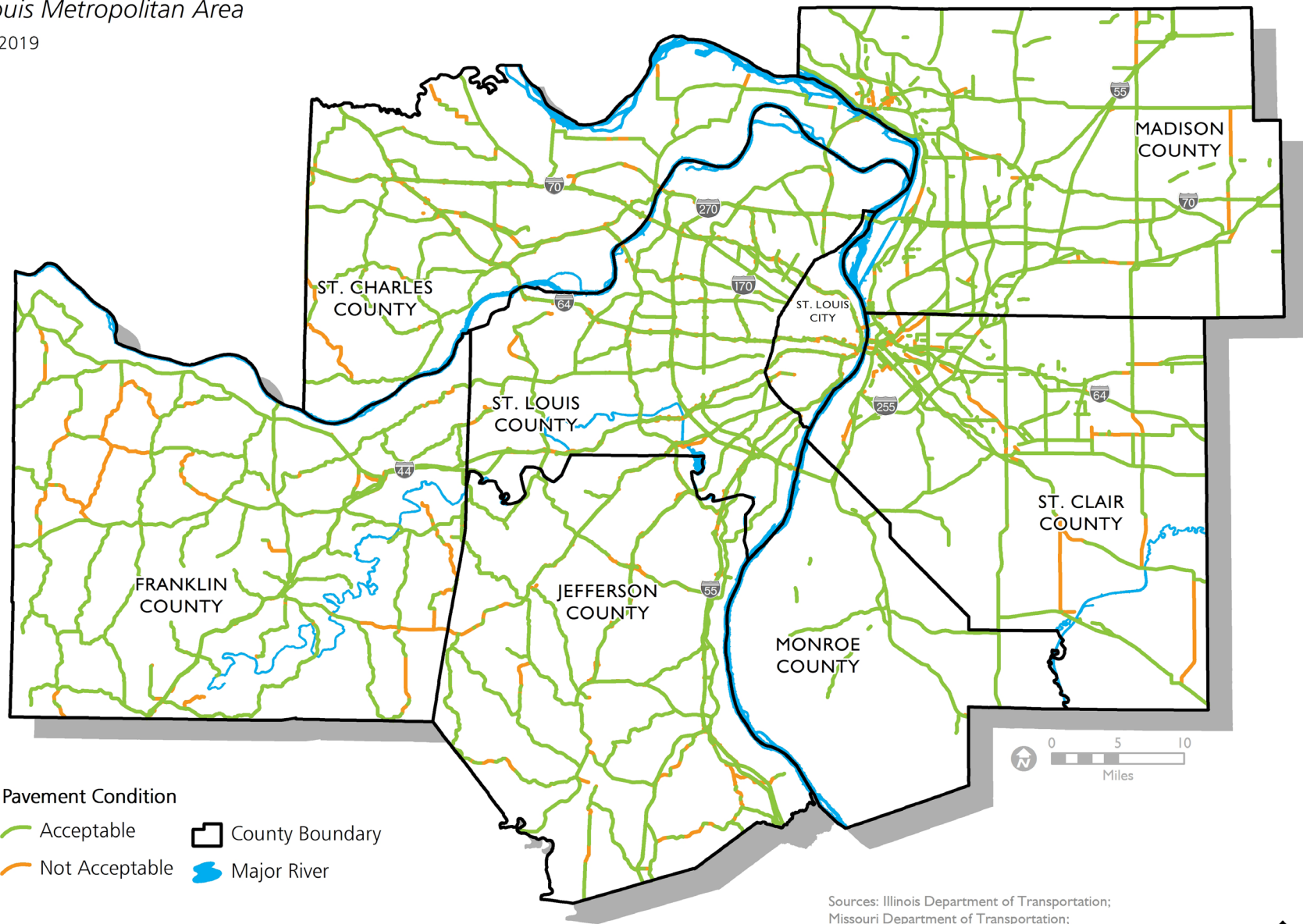
Source: IDOT, MoDOT

Map 5:

Pavement Condition, 2017

St. Louis Metropolitan Area

March 2019



Sources: Illinois Department of Transportation;
Missouri Department of Transportation;
East-West Gateway Council of Governments


EAST-WEST GATEWAY
Council of Governments

Table 21 shows the condition of pavement for the state-owned system within the region in 2017. Though some disparity in pavement conditions exists between states by functional classification, about 76 percent of Missouri state-maintained roadways and 89 percent of Illinois state-maintained roadways are in acceptable condition. Within the departments of transportation preservation efforts, higher priorities have been affixed to roadways carrying more traffic. Consequently, Interstates and principal arterial roads have higher acceptable ratings than other roads, which include mostly minor arterials and collectors. In Missouri, 75 and 91 percent of Interstate and arterial lane miles, respectively, are in acceptable condition. In Illinois, for those facility types, 100 and 85 percent are in acceptable condition, respectively. **Table 21** displays pavement conditions for urban and rural areas of the region. In Missouri, 75 percent of state maintained roadways within the urbanized area are in acceptable condition, while 80 percent of rural roadways are rated acceptable. In Illinois, for urban and rural, 90 and 87 percent of lane miles, respectively, are in acceptable condition. **Figure 26** illustrates that Monroe County has the highest percentage of state-maintained pavement in acceptable condition (essentially 100 percent) among the region's counties. Conversely, the city of St. Louis has the highest percentage of state-maintained roadways in unacceptable condition (39 percent). **Figure 26** also shows that over 85 percent of the roadway lane miles in Madison and St. Clair counties are in acceptable condition.

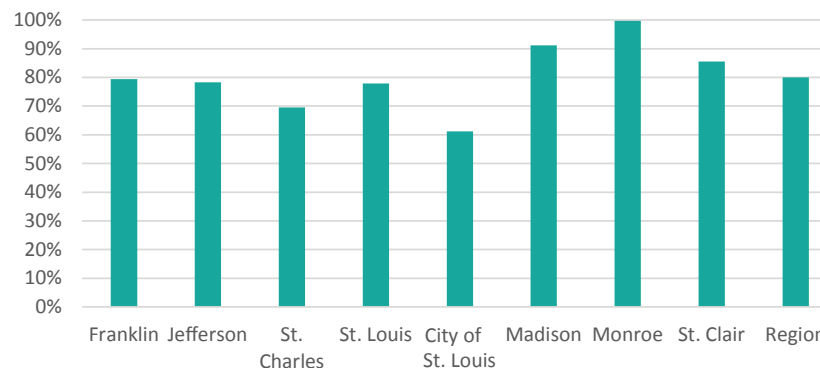
It is important to note that MoDOT and IDOT evaluate the quality of the pavement on roads using different rating systems. The rating systems include the International Roughness Index (IRI), Pavement Condition, and Critical Rating System (CRS). The IRI is the most commonly used pavement roughness assessment methodology worldwide and FHWA encourages its use. MoDOT employs a combination of the IRI and pavement condition analysis. They rate their pavement as "good" and "not good" as a means to prioritize roadways for maintenance. Since MoDOT changed to its current rating system in 2008, caution should be used when comparing findings from this

edition and editions of State of the System published prior to that date. IDOT uses a CRS which includes IRI, rutting and faulting analysis, as well as high resolution digital images of pavement. This system classifies pavements as "excellent," "good," "fair," and "poor."

Table 21: Pavement Condition by Road Type, 2017

		Total		Urban		Rural	
		Good	Not Good	Good	Not Good	Good	Not Good
Missouri	Interstate/Freeway	74.5	25.5	73.0	27.0	89.3	10.7
	Principal Arterial	91.0	9.0	92.2	7.8	85.7	14.3
	Other	69.3	30.7	59.7	40.3	76.6	23.4
	Total	75.9	24.1	74.5	25.5	79.5	20.5
Illinois	Interstate/Freeway	99.8	0.2	99.7	0.3	100.0	0.0
	Principal Arterial	84.6	15.4	84.8	15.2	83.9	16.1
	Other	86.3	13.7	87.1	12.9	84.4	15.6
	Total	89.3	10.7	90.0	10.0	87.1	12.9
Region							
	Interstate/Freeway	80.0	20.0	78.5	21.5	92.8	7.2
	Principal Arterial	88.3	11.7	89.1	10.9	84.9	15.1
	Other	74.9	25.1	71.7	28.3	78.3	21.7
	Total	80.0	20.0	79.5	20.5	81.5	18.5

Figure 26: Percent of Road Lane Miles with Acceptable Pavement Condition by County, 2010-2017



Source: IDOT, MoDOT

Investment in preservation of existing infrastructure is of paramount importance to the region and has a strong history of prioritizing preservation projects. With limited funding for both new construction and preservation, serious consideration must be given to the costs associated with each. As shown in **Figure 27**, the cost for deferring pavement maintenance increases significantly as conditions deteriorate. Consistent funding of projects that preserve and maintain the region's infrastructure is critical to ensuring safety and supporting the economy.

Transit Fleet Conditions

Metro and Madison County Transit (MCT) provide transit service within the St Louis area. The modes of transportation provided include light rail, bus, vanpool and demand response (paratransit service). Metro operates three integrated fixed route transit system services—MetroBus, MetroLink, and Metro Call-A-Ride (paratransit service). The MetroBus system serves the city of St Louis, St. Louis County, and St. Clair County. MetroLink extends 46 miles across both sides of the river and includes 37 stations.

MCT provides fixed route bus service throughout Madison County, Illinois, including service to the East St Louis MetroLink stop in St. Clair County and to downtown St. Louis. In addition, MCT provides paratransit vans and a bus service called Agency for Community Transit (ACT) that serves elderly and disabled individuals in Madison County.

Figure 27: Cost of Deferred Maintenance

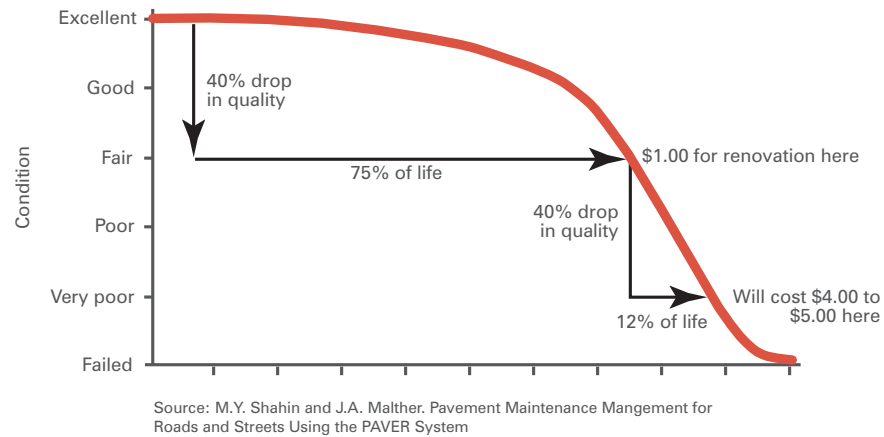


Table 22: Metro Transit Fleet Conditions, 2017

Vehicle Type	Number of Vehicles	Useful Life (Years)	Average Age in Years	Percent of Useful Life	Number Beyond Useful Life
All Buses	361.0	15.0	7.3	48.6	57.0
Light Rail	87.0	30.0	18.3	61.0	0.0
Vans	105.0	7.0	5.6	80.0	19.0
Articulated Bus	15.0	15.0	14.6	97.3	3.0
Bus	346.0	15.0	7.0	46.5	54.0
Cutaway	68.0	15.0	7.6	50.4	0.0
Light Rail Vehicle	87.0	30.0	18.3	61.0	0.0
Van	37.0	7.0	2.0	28.6	0.0

Note: Metro Standards are based on its maintenance program operational program policy: light rail = 30 years; all buses = 15 years, 750,000 miles; vans = 7 years, 350,000 miles. Source: National Transit Database.

Trends and Analysis

The Metro service cutbacks of 2009 removed nearly half the number of routes and a quarter of the bus stops. Voters subsequently approved a sales tax in 2010 which restored and expanded routes and increased the frequency of MetroLink trains. Other recent service improvements have included adding articulated buses to the Grand route in 2014, supplying all uncovered MetroLink stations with heaters (2011), as well as infrastructure improvements to both the North Hanley and Grand MetroLink stops. A new MetroLink station at Cortex opened in 2018 and MCT continues to link routes with Metro serving downtown St. Louis and St. Clair County.

Despite fiscal challenges common to transit agencies across the United States, both agencies effectively manage their capital assets. The management of assets covers fixed route facilities and system components, vehicles (revenue and non-revenue), and advanced technologies. The Metro fleet consists of 87 light rail vehicles, with all vehicles and stations accessible to customers with disabilities. Approximately 14 percent of Metro’s buses, light rail, and vans are beyond their useful life (Table 22). The MCT fleet consists of 76 buses and 109 vans. Almost 11 percent of the vehicles are beyond their useful life (see Table 23).

Moving forward, the public transit agencies are strongly committed to providing services that respond to economic, recreational, and environmental needs within the region. Metro continues to promote connection and access through its planned light rail expansion and opportunities for transit oriented development. MCT operates the regional ridesharing program, Ridefinders. It also connects passengers to its trail system, Madison County Trails, promoting public health and increasing the reach of transit.

Table 23: Madison County Transit Fleet Conditions, 2017

Vehicle Type	Number of Vehicles	Useful Life (Year)	Average Age in Years	Percent of Useful Life	Number Beyond Useful Life
Bus	76	12	6.2	52.0	0
Van	109	5	4.7	93.9	20

Note: MCT fleet conditions are based on Transit Administration Standards: light rail = 20 year; 35-40’ buses = 12 years, 500,000 miles; 30’ buses = 10 years, 300,000 miles; vans = 5 years, 150,000 miles. Source: National Transit Database.

Chapter 4: Public Transportation



Regional Transit System

According to data from the 2012 Urban Mobility Report by the Texas Transportation Institute, the region would see a 6.5 percent increase in peak hour delay on the regional highway system if public transportation service were discontinued. The regional transit system could have a key role in reducing congestion on the highways in the future, as well as improving regional economic vitality and quality of life, through improvements in operations and system capacity expansion. Recent efforts by Metro in that direction include:

- A comprehensive operational analysis of Missouri MetroBus service, due to be implemented in late 2019 (see Metro Reimagined section)
- The opening of major MetroBus transit facilities like the brand new North County Transit Center (2016) and the redesigned Civic Center Transit Center (2017)
- The opening of the Cortex MetroLink Station (2018), which is the first infill light rail station since the system opened 25 years ago
- The acquisition of the first battery electric vehicles in the Metro fleet, with buses due to arrive in 2020-2021

The current regional transit system is shown in **Map 6**.

Ridership Trends

In mid-2010 Metro reestablished full service subsequent to previous service cut-backs made due to financial constraints. **Figure 28** tabulates Metro and Madison County Transit yearly ridership numbers for the years of 1997 through 2017. Despite the reestablishment of full service, ridership has been trending downwards, potentially due to factors such as a strong economy, low gasoline prices, and competition from services such as Uber and Lyft.

Metro Reimagined

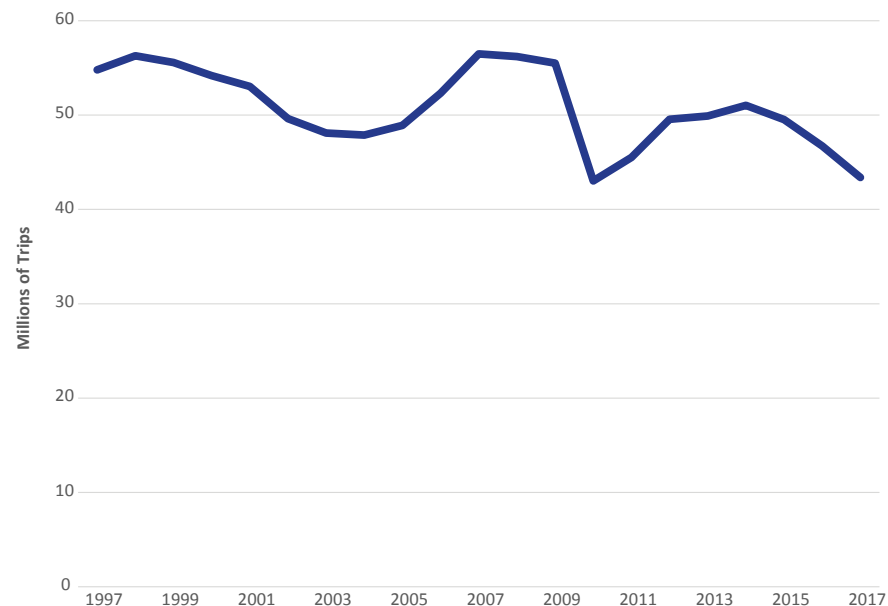
Metro launched Metro Reimagined, an in-depth study of the Metro Transit system, in July 2017 to ensure Metro is positioned to meet the evolving transportation needs of the St. Louis region.

In late 2018, Metro released a revised Metro Reimagined final draft plan, incorporating public comment, and designed to overhaul bus service in its Missouri counties. This comprehensive operational analysis has allowed Metro to better match a mobility service to any given market's transportation demands, and is resulting in a plan that emphasizes more frequent bus service with improved on-street connections. This planning process has reallocated the MetroBus operations resources to prioritize improving the customer experience, maintaining cost efficiency, and increasing ridership. This project has occurred within Metro's existing financial capacity.

Features of the plan include:

- Shorter waits with 12 high-frequency MetroBus routes operating every 15 minutes or better during the day —currently, there is only one route that operates 15 minutes or faster, and only three routes operating 20 minutes or faster
- 35 local MetroBus routes operating every 30 minutes, instead of the 40-minute or 60-minute service that many of today's routes operate
- Service added to the plan in response to customer feedback
- Introducing Wi-Fi, mobile ticketing, and other new technology to improve the transit experience
- Exploring new innovative transportation options like demand-responsive service for areas where a 40-foot bus does not make sense

Figure 28: St. Louis Area Transit Ridership, 1997-2017



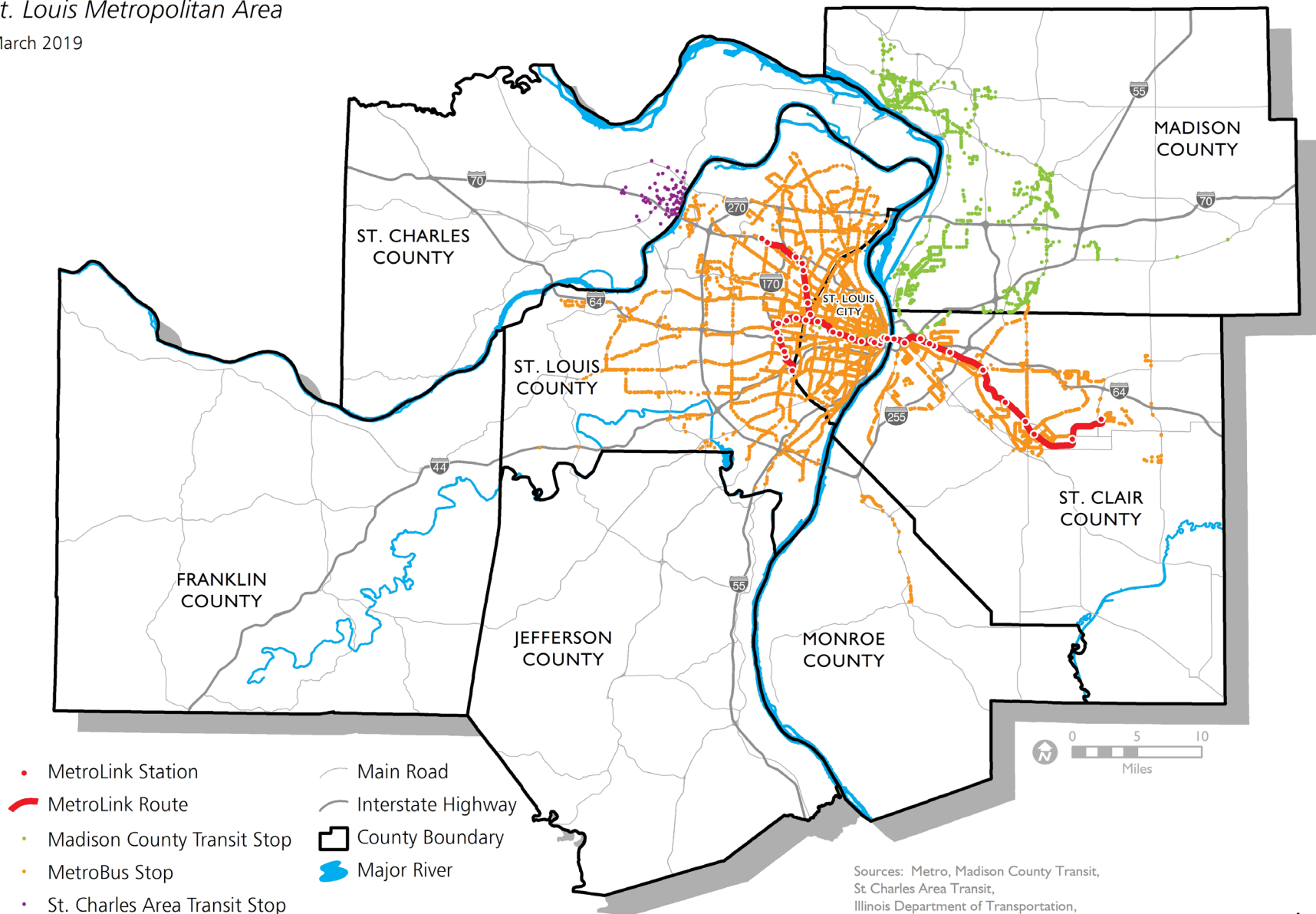
Source: National Transit Database

Map 6:

Regional Transit System

St. Louis Metropolitan Area

March 2019



Sources: Metro, Madison County Transit, St. Charles Area Transit, Illinois Department of Transportation, Missouri Department of Transportation, East-West Gateway Council of Governments

Northside-Southside Light Rail

The Northside-Southside Study was an 18-month effort, led by EWG, to study light rail (LRT) investment in the corridor connecting Goodfellow and I-70 on the north side of St. Louis to Bayless and I-55 on the south side. This study builds on the recommendations of the 2008 Northside-Southside Study. Following extensive technical analysis and community outreach, a recommended first phase of Northside-Southside LRT investment has been identified, as shown in **Map 7**.

The proposed light rail would operate in dedicated lanes in the middle of the street between Grand Boulevard on the Northside, along 9th and 10th Streets downtown, to Chippewa Street on the Southside. There are two alignment options (Cass or Florissant Avenues) through North St. Louis that will be studied in future project phases; Cass Avenue is the preferred alignment going into that analysis.

NS-SS Transit-Oriented Development Study

In 2018-2019, Metro and its partners at the city of St. Louis and EWG embarked on a study to create a blueprint for how to best encourage economic development in the corridor of the future Northside-Southside transit alignment.

I-64 Bus Rapid Transit (BRT)

A recommendation of the 2015 Rapid Transit Connector Study (RTCS), the 23-mile I-64 BRT would operate between the city of Chesterfield and downtown St. Louis. It would run within the I-64 right-of-way between Chesterfield Mall and the Boyle Street interchange; at Boyle it would exit I-64 to Forest Park Avenue, then travel east into downtown St. Louis. The more dispersed land use patterns in the western section of the corridor would require shuttles to carry riders to their end destinations. The corridor hosts major employment centers, large universities and hospitals, and many of the region's most-visited cultural attractions, along with 163,000 jobs and nearly 55,000 people within one half-mile. The I-64 BRT would provide the region's first single-seat transit ride between west St. Louis County and downtown St. Louis, and is projected to improve transit travel time by 30 percent, from 76 minutes to 53 minutes.

West Florissant-Natural Bridge BRT

Also recommended in the RTCS, the 16-mile West Florissant-Natural Bridge (WFNB) corridor is composed of several urban and suburban roads between the new North County Transit Center and downtown St. Louis. It would operate exclusively on arterial roadways. Land uses are largely residential, coupled with pockets of commercial development and community amenities

such as parks, libraries, schools, and healthcare. This corridor is relatively high-density and lower-income. Total population approaches 70,000 within a half-mile; the combined corridor hosts nearly 6,500 zero-car households and has a median household income of \$30,000. The WFNB BRT would reduce transit travel time between north St. Louis County and downtown St. Louis by 40 percent, from 70 minutes to 42 minutes.

Map 7: Northside-Southside Light Rail Alignment Options



Chapter 5: Equity



Background

EWG is committed to providing an open and transparent planning process. Through its public engagement activities, the agency makes an effort to specifically reach out to traditionally underrepresented and underserved population groups. Additionally, transportation decision-making and prioritization are guided by research and analysis that consider the needs of these population groups.

Equity in transportation planning seeks to meet the accessibility and mobility needs of all users of the system. Furthermore, addressing equity requires considering the abilities of all population groups to access opportunities affordably, safely, and in a timely manner. The planning process must therefore consider the specific needs of the following traditionally underserved or underrepresented population groups: those who reside in Environmental Justice (EJ) areas, low-income, minority, elderly, limited English proficiency (LEP), zero vehicle households, and persons with disabilities.¹ This section summarizes some of the data that EWG uses to understand the needs of these population groups and discusses specific EWG programs that address equity in transportation.

In the EWG region, underserved population groups are concentrated in the central part of the region—the city of St. Louis, St. Louis County, and St. Clair County. A major challenge facing the transportation system is providing affordable, effective transportation options from these areas to opportunities throughout the region.

Research and Analysis

Demographic Profile: Traditionally underserved population groups reside in all counties of the region, but are concentrated in the northern and southeastern parts of the city of St. Louis, the northeastern portions of St. Louis County, and the northwestern portion of St. Clair County.

Table 24 provides the breakdown of the underrepresented populations by county for the region.

- A majority (70 percent) of the population that lives below the poverty level in the region resides in the city of St. Louis, St. Louis County, and St. Clair County.
- There is some overlap of the low-income population and other disadvantaged groups. About 44 percent of the impoverished population in the region is also black (including those of Hispanic and Latino origin) and 9 percent are aged 65 and older.
- About one-third of the low-income population 16 years and older is in the labor force.
- More than two-thirds of the zero-vehicle households in the region are in the city of St. Louis and St. Louis County with an additional 12 percent in St. Clair County.
- The most common mode of transportation to work for households without a vehicle available is public transportation (36 percent). The second most common mode is driving alone (33 percent), which suggests households are borrowing a vehicle. Another 12 percent of those without access to a vehicle carpooled and 11 percent walked to work.

- About half of the LEP population in the region resides in St. Louis County, with another quarter in the city of St. Louis, and about 8 percent each in St. Clair and St. Charles counties.
- The disabled population is more spread out across the region than the other underserved population groups, but the largest proportion of residents with disabilities is in the core, with 37 percent residing in St. Louis County and 15 percent in the city of St. Louis, and 11 percent in St. Clair County.
- About 40 percent of the disabled population in the region is elderly and about one-quarter of the disabled population is black.

For a more detailed analysis, see the demographic profile in the EWG Title VI Plan, including 76 maps documenting EJ areas as well as the location of residences of the following populations: elderly, LEP, low-income, minority, persons with disabilities, and zero-vehicle households.²

Table 24: Distribution of Underrepresented Population Groups
Percent of population group by county and population total for the EWG Region, 2017

County	Poverty	Black (including Hispanic and Latino)	Zero-Vehicle Households	Disabled	Elderly	Limited English Proficiency Households (LEP)
Madison	11.3	4.4	8.2	10.9	10.3	3.5
Monroe	0.6	0.0	0.7	1.0	1.4	0.2
St. Clair	14.3	15.7	11.8	10.6	11.2	8.1
Franklin	3.5	0.2	2.3	4.0	4.6	0.5
Jefferson	7.8	0.4	4.0	8.9	7.5	1.9
St. Charles	6.9	3.2	5.0	11.9	8.0	8.4
St. Louis	31.0	46.7	33.5	37.4	35.4	52.7
City of St. Louis	24.7	29.5	34.5	15.3	21.6	24.6
EWG Region	309,881	496,144	83,748	316,380	27,976	12,550

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates, 2013-2017

¹ https://www.fhwa.dot.gov/environment/environmental_justice/equity/

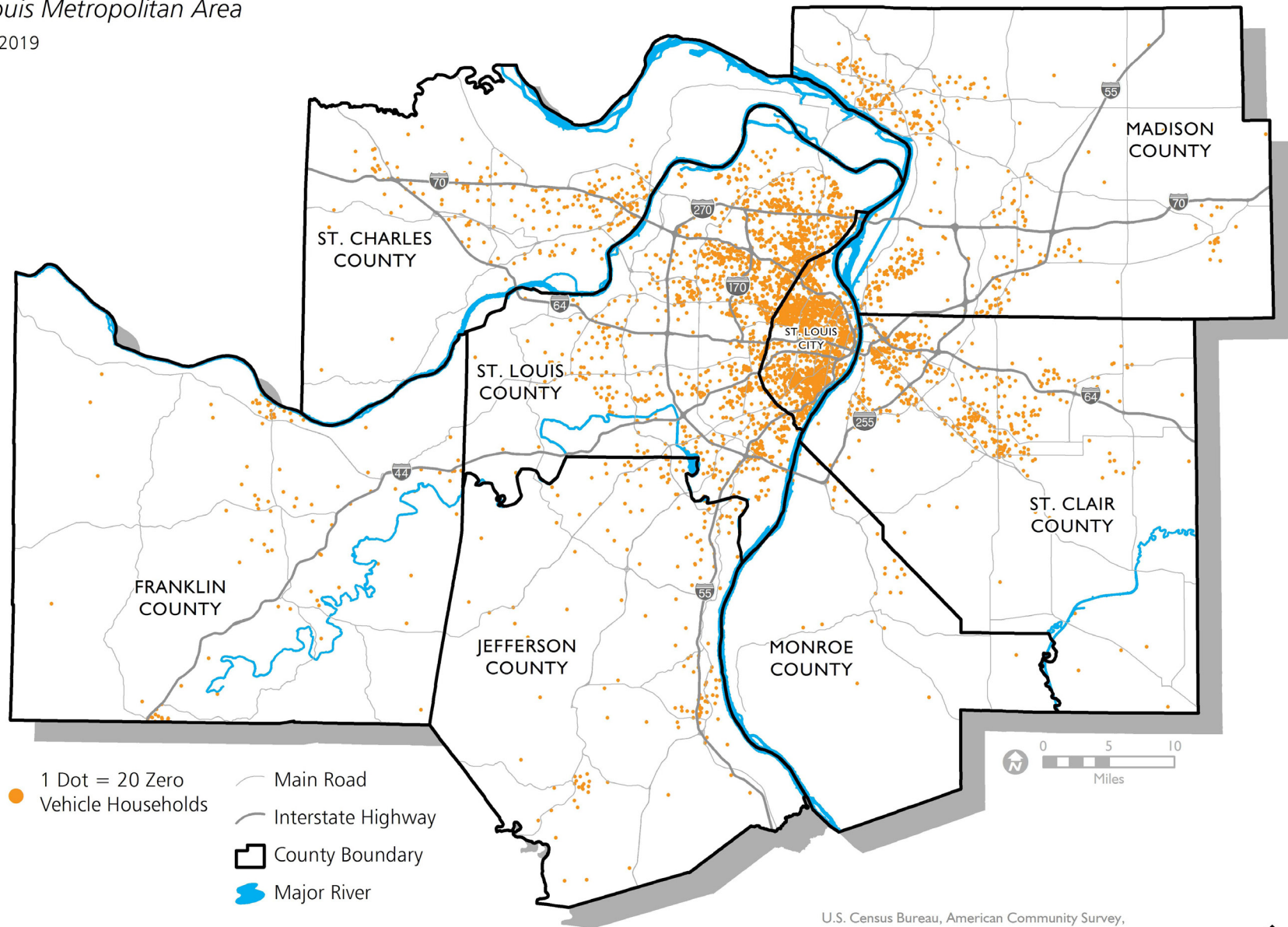
² <https://www.ewgateway.org/about-us/what-we-do/title-vi/>

Map 8:

Zero-Vehicle Households

St. Louis Metropolitan Area

March 2019



U.S. Census Bureau, American Community Survey,
5-Year Estimates (2013 - 2017);
East-West Gateway Council of Governments


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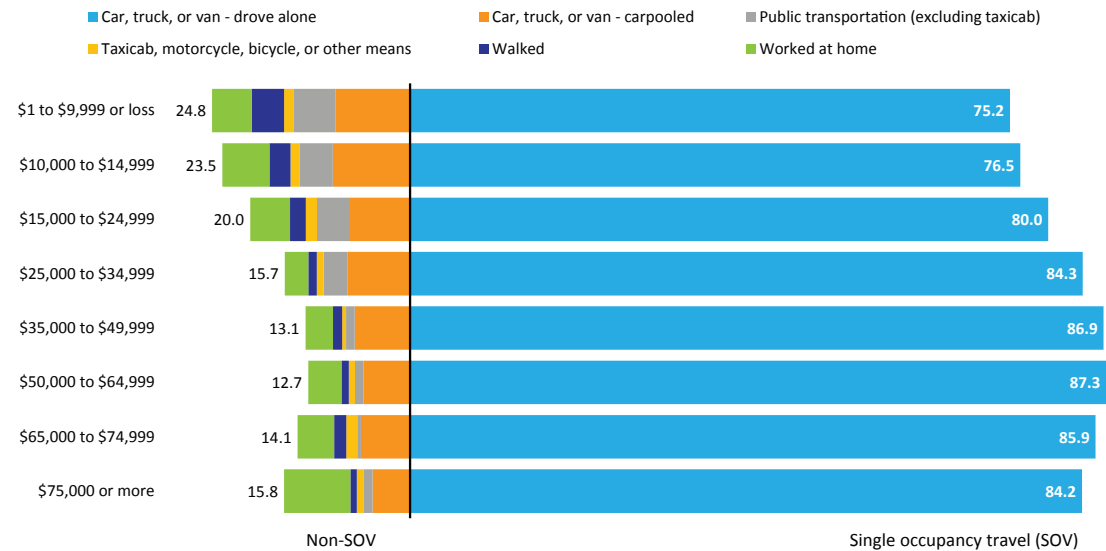
Commute Mode: Low-income and minority workers are less likely to drive alone to work and more likely to take public transportation than those with higher incomes and white non-Hispanic workers.

Figure 29 shows commute modes by income level for the St. Louis MSA. The bars to the right of the black line represent the percentage of workers at each income level who commute by driving alone to work. The bars to the left of the black line represent commute modes other than single-occupancy vehicle (SOV) travel, including walking, biking, carpooling, public transportation, or working from home.

The figure shows that workers with lower incomes are more likely to use non-SOV modes to commute to work. Among workers with higher levels of income, a higher percentage drive alone to work, although the percentage of workers driving alone to work drops off slightly with the highest income levels, likely due to the fact that greater percentage of workers with high-income levels work from home.

Figure 30 shows commute mode by race and ethnicity. The majority of commuters for all population groups drive alone to work, with white workers being the most likely to choose this mode. About a quarter of the other three population groups use non-SOV modes to commute, with carpooling being the dominant mode for Asians and Hispanics or Latinos. For non-Hispanic blacks, about the same percentage carpool as take public transportation. Non-Hispanic blacks are the most likely to take public transportation (9 percent of commuters). While some people choose to not own a vehicle and others may not have a need for a car, black workers are about five times more likely to live in a zero-vehicle households than white workers in the St. Louis MSA—21 and 4 percent, respectively. This indicates that blacks are far more likely to be dependent on public transportation than their white counterparts.

Figure 29: Commute Mode by Income
St. Louis MSA, 2017



Source: U.S. Census Bureau, American Community Survey 1-Year Estimates (B08119)

Average commute times by mode: The average commute time by public transportation in the MSA takes twice as long as the average commute by car.

Figure 31 shows average commute times for workers who either drive or take public transportation to work. In the St. Louis region, the average commute by car, truck, or van takes about 25 minutes, whereas the average commute by public transportation takes 50 minutes. St. Louis is similar to the rest of the country in this regard—the average commute times for the nation as a whole are the same as for St. Louis for these two modes.

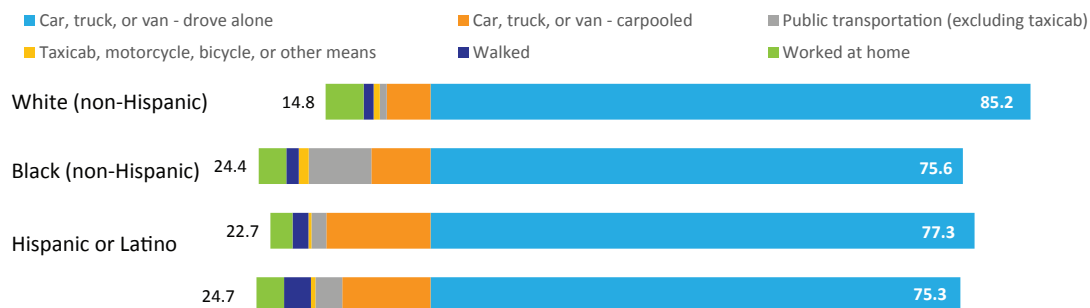
Residential and Employment Transit Access: While a majority of jobs are accessible by transit, less than half of residents in the region live close to a transit stop.

Less than half (43 percent) of residents in the region live within a 1/4 mile of a transit stop. That 1/4 mile distance is considered to represent a comfortable walking time of about 10 minutes. **Map 9** shows that many households in the city of St. Louis have transit access and that there are corridors of access in most of the other counties, but large areas of the region are without reasonable household access to transit.

A majority (67.8 percent) of jobs in the St. Louis region are located within 1/4 mile of a transit stop. As shown on **Map 10**, a majority of these jobs are in the center of the region.

Figure 30: Commute Mode by Race and Ethnicity

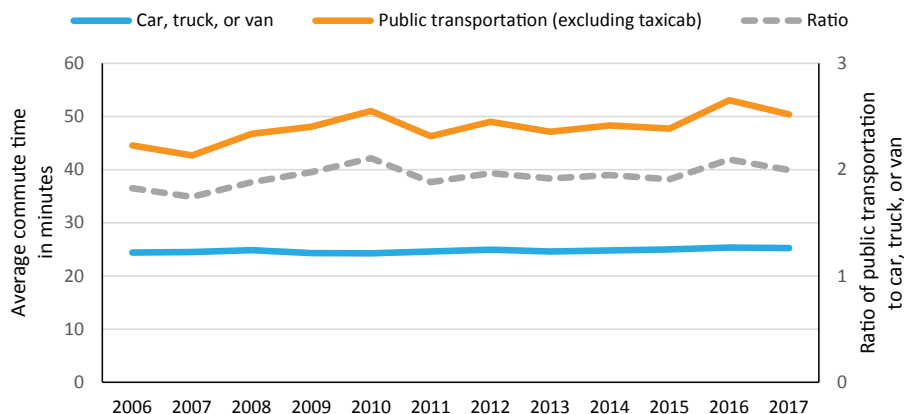
St. Louis MSA, 2017



Source: U.S. Census Bureau, American Community Survey 1-Year Estimates (S0201, B08105D, B08105I)

Figure 31: Average Commute Times by Mode

St. Louis MSA, 2006-2017



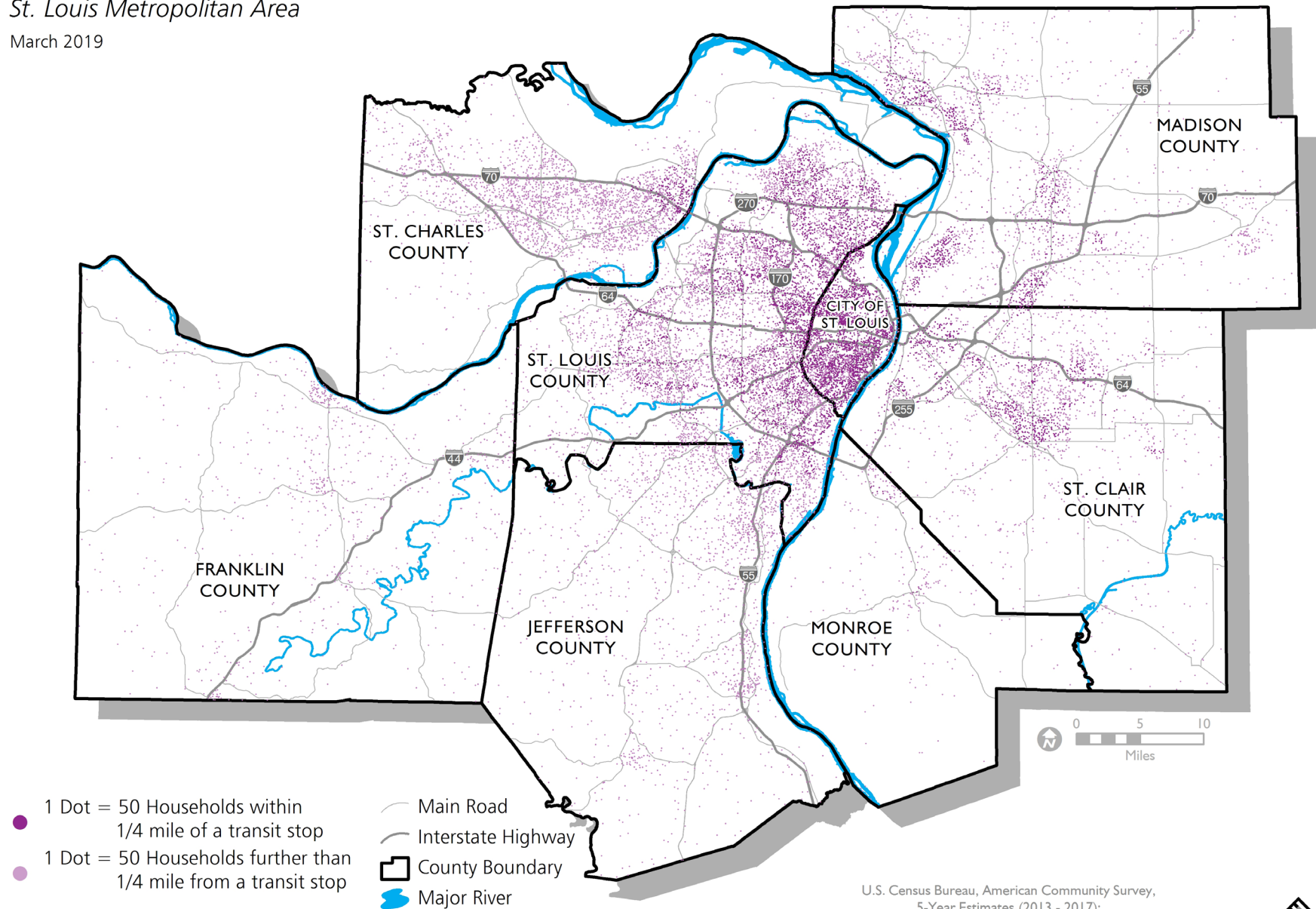
Source: U.S. Census Bureau, American Community Survey 1-Year Estimates (B08301, B08136)

Map 9:

Household Transit Access

St. Louis Metropolitan Area

March 2019



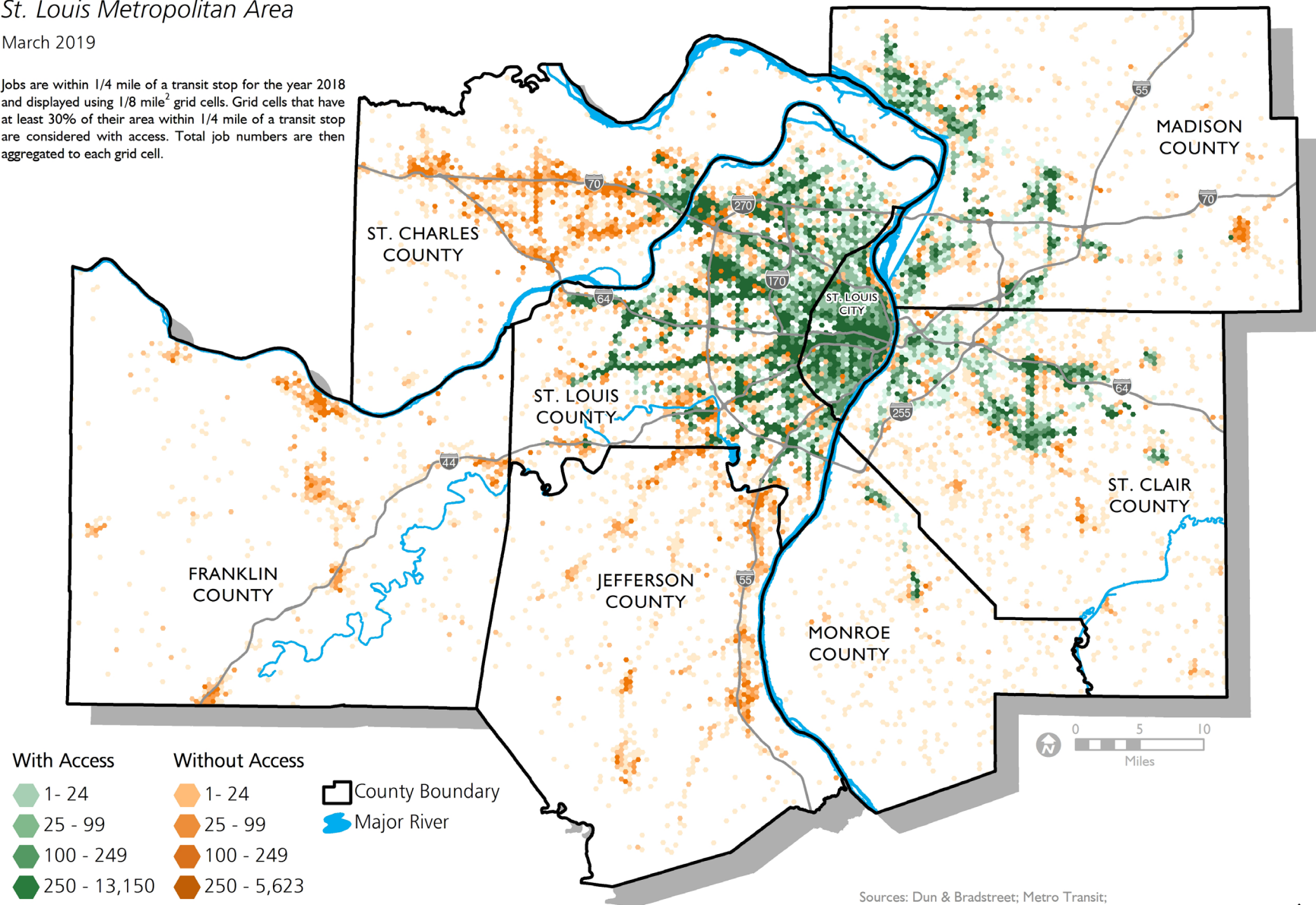
Map 10:

Employment Transit Access

St. Louis Metropolitan Area

March 2019

Jobs are within 1/4 mile of a transit stop for the year 2018 and displayed using 1/8 mile² grid cells. Grid cells that have at least 30% of their area within 1/4 mile of a transit stop are considered with access. Total job numbers are then aggregated to each grid cell.



Sources: Dun & Bradstreet; Metro Transit;
St. Charles Area Transit; Madison County Transit;
East-West Gateway Council of Governments


EAST-WEST GATEWAY
Council of Governments

Table 25:**Access to Healthy Food Choices**

Percent of low-income population that lives in a low-income census tract and resides far* from a supermarket or large grocery store, 2015

1	Atlanta	28.5
2	San Antonio	26.8
3	Memphis	26.4
4	Jacksonville	25.7
5	Birmingham	23.5
6	New Orleans	22.7
7	Richmond	22.4
8	Orlando	22.0
9	Austin	22.0
10	Columbus	21.9
11	Cincinnati	21.5
12	Charlotte	21.5
13	Kansas City	20.7
14	Tampa	20.1
15	Pittsburgh	19.9
16	St. Louis	19.7
17	Riverside	19.1
18	Oklahoma City	18.7
19	Indianapolis	18.6
20	Dallas	18.2
21	Nashville	17.5
22	Virginia Beach	17.1
23	Raleigh	16.6
24	Houston	16.4
25	Phoenix	16.3
26	Minneapolis	14.8
27	Hartford	13.3
28	Denver	12.9
29	Buffalo	12.2
30	Seattle	12.1
31	Salt Lake City	12.0
	Peer Average	11.7
32	Cleveland	11.5
33	Louisville	11.1
34	Detroit	10.1
35	Las Vegas	9.4
36	Sacramento	9.2
37	Philadelphia	8.6
38	Washington, D.C.	8.4
39	Providence	7.7
40	Boston	7.7
41	Chicago	7.2
42	Milwaukee	6.9
43	Portland	6.5
44	Baltimore	6.4
45	Miami	5.5
46	San Francisco	3.7
47	San Diego	3.5
48	Los Angeles	2.8
49	New York	2.4
50	San Jose	2.2

Source: U.S. Department of Agriculture, Food Access Research Atlas

*More than one mile in urban census tracts and more than 10 miles in rural census tracts

Access to Food: About 20 percent of low-income residents in the St. Louis MSA live far from a grocery store or supermarket.

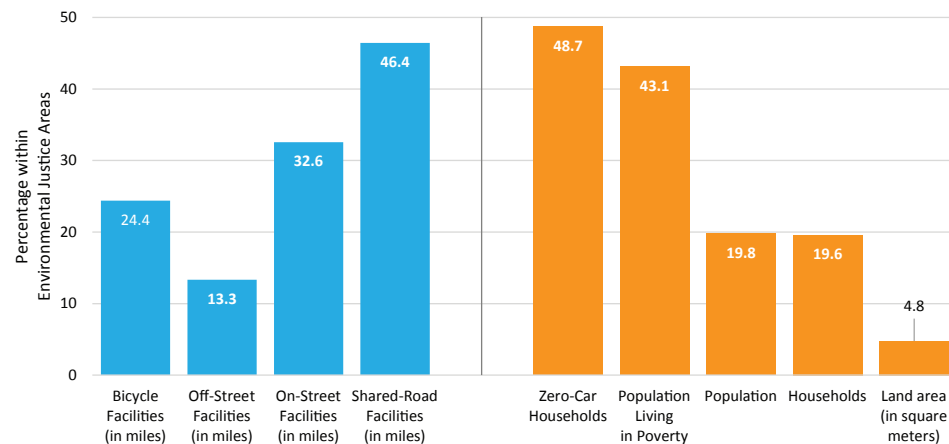
It is essential that the transportation system provide access to destinations other than employment opportunities. An example is access to healthy food choices, which is important for quality of life in the region. About 20 percent of the low-income population live in a low-income census tract and reside far from a grocery store, with “far” defined as more than one mile in urban census tracts and more than 10 miles in rural census tracts. **Table 25** shows that the St. Louis MSA ranks 16th among the 50 most populous regions on access to healthy food, with a larger proportion of the population lacking access than in many of the peer regions.

This is also one of the metrics tracked as part of the region’s plan for sustainable development, OneSTL. More on the OneSTL metric can be found at <http://www.onestl.org/indicators>.

Bicycle Facilities by EJ Area: The bicycle network provides fairly good access from EJ areas.

In total, there are over 938 miles of bicycle facilities located in the eight counties served by EWG. This total includes 551 miles of off-street facilities, 178 miles of on-street facilities, and 209 miles of share-the-road markings.

There are 229 miles of bicycle facilities, approximately a quarter of regional mileage, located within EJ areas in St. Louis, including 73 miles of off-street facilities, 58 miles of on-street facilities, and 97 miles of share-the-road markings (**Figure 32**).

Figure 32: Bicycle Facilities within Environmental Justice Areas
EWG Region, 2017

Source: Great Rivers Greenway, Metro-East Parks & Recreation, HeartLands Conservancy, and East-West Gateway Council of Governments

EWG Programs and Policies

EWG considers equity in transportation planning in multiple ways. The following are some of the specific programs where the agency incorporates equity concerns into its work:

The Title VI Program outlines strategies and processes that the agency uses in its programs and activities to ensure they are implemented in a nondiscriminatory manner. The plan relies on data and analysis to document the needs of typically underrepresented and difficult to reach populations, including those who are low-income, live in zero-vehicle households, are members of a minority group, are limited English proficient, are elderly, or have one or more disabilities.

The plan is used to guide the agency's processes and procedures to adhere to its commitment to nondiscrimination. Included in the program is information on how the public can file a complaint with EWG regarding discrimination, how the agency ensures nondiscrimination among subrecipients of federal funds, a detailed profile of disadvantaged populations, and a summary of the distribution of transportation funding allocated to Environmental Justice areas.

The program document is available at https://www.ewgateway.org/wp-content/uploads/2018/06/2018-Title-VI-Program_BOD-Approved_Plan-Doc_with-Appendices.pdf.

The Public Involvement Plan (PIP) guides EWG staff on how to provide opportunities to engage in the transportation planning process for the diverse population of the region. The plan recognizes the importance of informing and involving all perspectives and outlines how the agency engages different population groups to gain their input. The agency uses multiple methods to engage the public, including specifically reaching out to organizations that serve underrepresented populations to engage them in the planning process. The agency ensures all public meetings are hosted at locations that accommodate disabled people and in locations that are accessible to people from throughout the region. While the LEP population in the region is small, the agency is prepared to meet any language need that arises, including

providing interpreters at public events as well as oral or written translation of documents. Additionally, the agency provides several documents in multiple languages on a regular basis.³

The Transportation Improvement Program (TIP) is a schedule of all projects that will use federal funds over the next four years, or those that are of regional significance. The TIP is updated annually and the projects must be consistent with the goals of the long range transportation plan. Local Program applications (i.e., Surface Transportation Block Grant – Suballocated and Transportation Alternatives) are evaluated based on a set of criteria that relate to the guiding principles of the LRTP. EJ areas are addressed under the principle “support neighborhoods and communities.” Proposed projects that are located in EJ areas earn points based on whether the EJ population includes a high concentration of low-income or minority persons, zero-vehicle households, or seniors and people with disabilities. A project that imposes a burden on EJ populations earns zero points for this category, reducing the chances of receiving funding.

The Coordinated Human Services Transportation Plan (CHSTP) is developed to be consistent with the LRTP and guides the allocation of the Federal Transit Administration Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310) funding. The CHSTP is developed in coordination with human service agencies and public transportation providers to establish funding priorities for projects and programs that serve these population groups by identifying the gaps in transportation services for seniors and persons with disabilities. It also includes an inventory of currently available services, and strategies for addressing any gaps between the available services and needs.⁴

³ https://www.ewgateway.org/wp-content/uploads/2018/06/2018-Title-VI-Program_BOD-Approved_Appendix-4.pdf

⁴ <https://www.ewgateway.org/wp-content/uploads/2017/07/CHSTP-June2016.pdf>

Housing and Transportation: An Index to Assess Affordability

Historically, the standard for housing affordability has been 30 percent of household income. This standard has excluded transportation costs. Recent research has provided a rationale for including transportation costs in measures of housing affordability. This literature has demonstrated that transportation costs can be significant.

The Center for Neighborhood Technology (CNT) has made available a web application showing a transportation and housing affordability index for 917 metropolitan and micropolitan regions.⁶ The affordability index is known as the Housing + Transportation, or H + T index. This tool allows users to analyze housing and transportation costs within metropolitan areas. Under CNT's definition, an area is considered "affordable" if the combined costs of housing plus transportation are less than 45 percent of the metropolitan area's median household income.

An analysis conducted for *Connected2045* builds upon the method pioneered by CNT. The study uses the 2013-2017 American Community Survey to estimate housing costs for small areas known as Transportation Analysis Zones (TAZ). The EWG travel demand model is used to estimate the average amount of driving done by households in each TAZ. The Consumer Expenditure Survey is used to estimate other transportation costs.

Additionally, this analysis includes a Transportation Affordability Index which identifies those areas where households spend under 15 percent or more on transportation expenses.

This analysis addresses three questions:

- 1) Which parts of the region are affordable to a median income household? Two scenarios are examined: current gasoline prices and \$5 per gallon gasoline. Additionally, the analysis of the impact of transportation costs alone was conducted with current gasoline prices.
- 2) Which parts of the region are affordable to the households that currently reside in those communities? Again, the current gasoline prices and \$5 gasoline scenarios are examined, with the analysis of transportation costs alone conducted using current gasoline prices.
- 3) How are urbanized areas, rural areas, and EJ areas affected by rising gasoline prices?

Question 1: Which areas in the region are affordable to a median income household?

The first question asks which parts of the region would be affordable to a typical household, or a median income household. In places with little affordable housing, low- and moderate-income workers, such as teachers, retail workers, and correctional officers may have difficulty finding housing close to their place of employment. In cases such as this, low- and moderate-income workers will be forced to absorb large commute costs. Higher gasoline prices would impose greater costs on persons who work in these areas.

Map 11 shows areas for which average housing and transportation costs exceed 45 percent of the region's median income. By this criterion, affordable housing is concentrated near the urban core and other areas of employment clusters. These areas are comprised of the city of St. Louis, riverfront communities of Madison and St. Clair counties, Scott Air Force Base, West Alton, St. Charles County along the I-70 corridor, southeast and north St. Louis County, and parts of Jefferson and Franklin counties. When examining transportation costs alone, areas that fall under 15 percent are predominately near the region's transit network and employment centers (**Map 12**).

The effects of \$5 per gallon gasoline are shown in **Map 13**. The major differences between this map and the one showing current gasoline prices are among areas away from major transit lines. Southwest St. Louis County, eastern St. Clair County, western St. Charles County, and Jefferson and Franklin counties all show noticeable loss of areas of affordability.

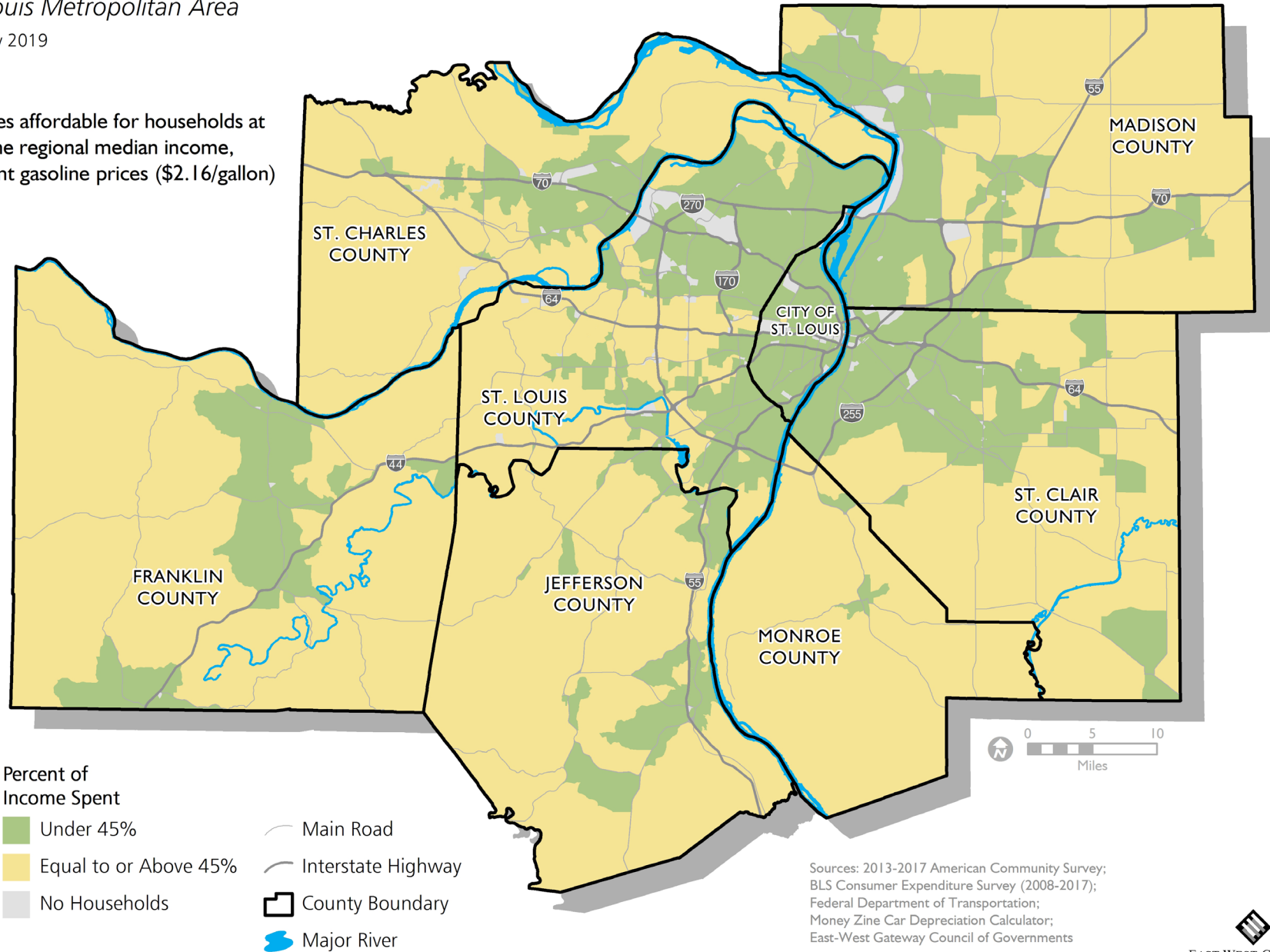
Map 11:

Housing + Transportation Affordability Index

St. Louis Metropolitan Area

January 2019

Places affordable for households at the regional median income, current gasoline prices (\$2.16/gallon)



Sources: 2013-2017 American Community Survey;
BLS Consumer Expenditure Survey (2008-2017);
Federal Department of Transportation;
Money Zine Car Depreciation Calculator;
East-West Gateway Council of Governments

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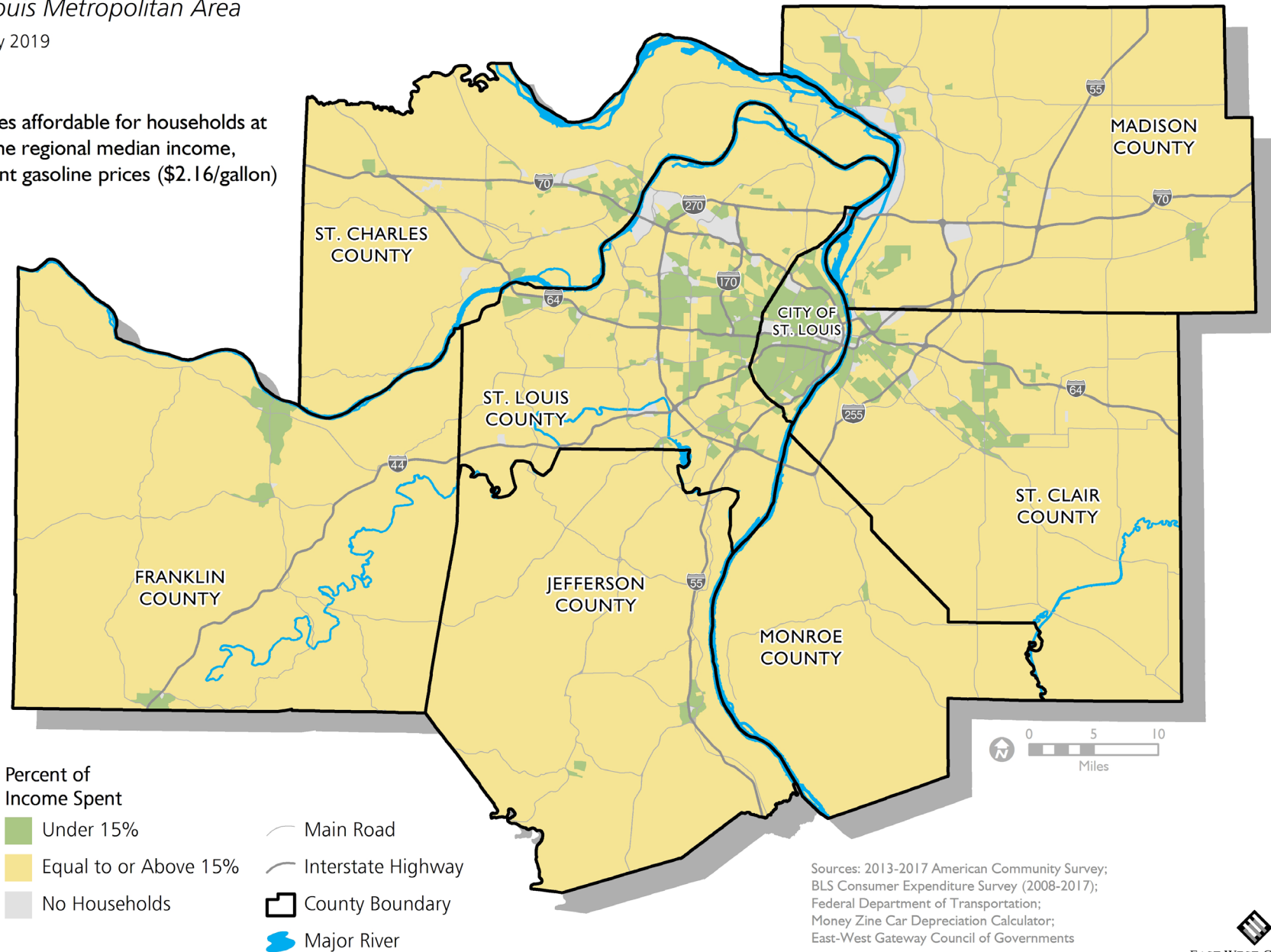
Map 12:

Transportation Affordability Index

St. Louis Metropolitan Area

January 2019

Places affordable for households at the regional median income, current gasoline prices (\$2.16/gallon)



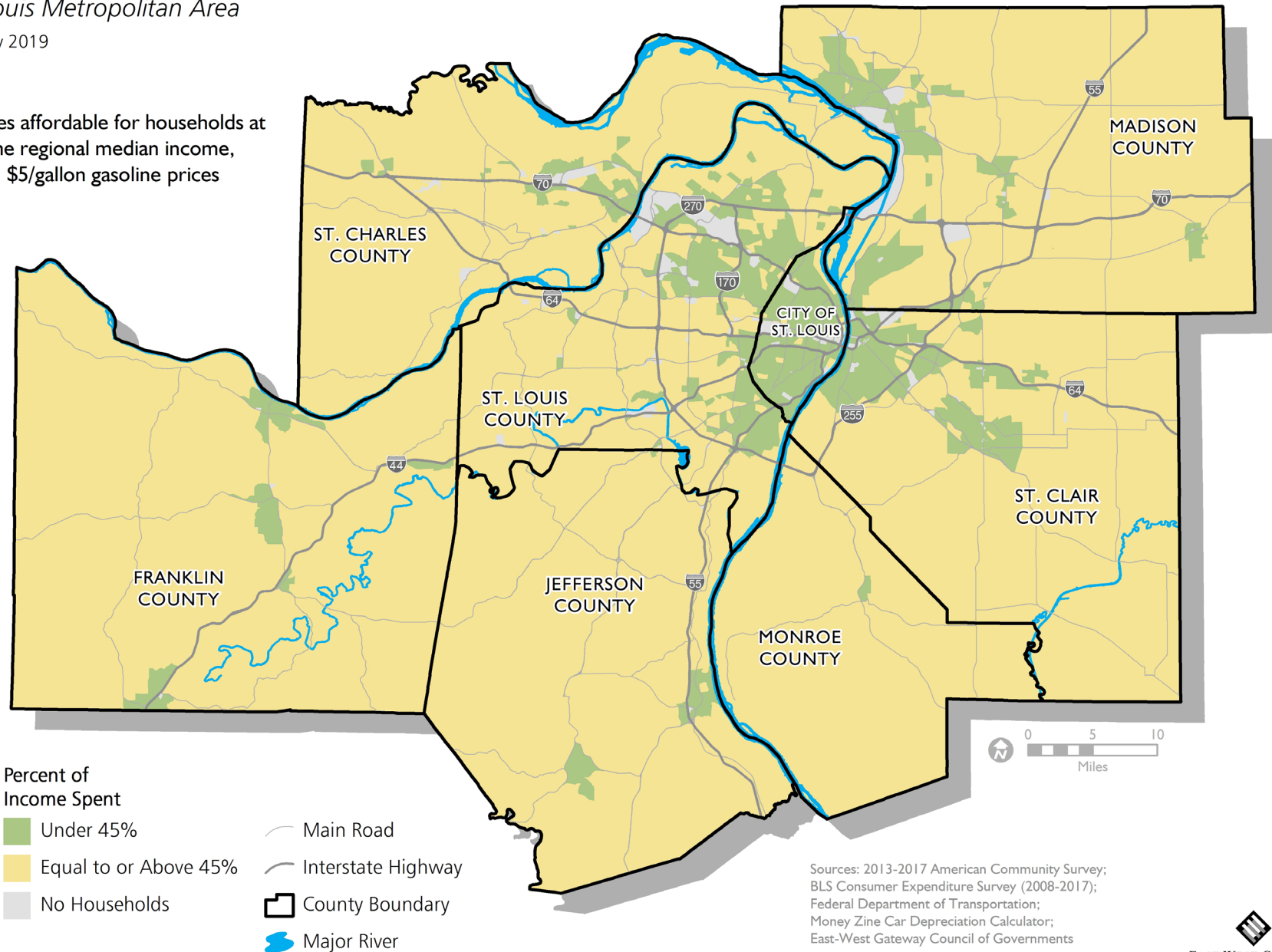
Map 13:

Housing + Transportation Affordability Index

St. Louis Metropolitan Area

January 2019

Places affordable for households at
the regional median income,
\$5/gallon gasoline prices



Sources: 2013-2017 American Community Survey;
BLS Consumer Expenditure Survey (2008-2017);
Federal Department of Transportation;
Money Zine Car Depreciation Calculator;
East-West Gateway Council of Governments

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Question 2: Which areas of the region are affordable to persons who currently reside in those communities?

The second question asks which parts of the region currently have residents that are spending more than 45 percent of their income on housing and transportation. Higher gasoline costs would impose a greater burden on persons who currently live in these areas. **Map 14** shows areas in which housing and transportation costs exceed 45 percent of the localized median income of current residents. By this definition, large portions of the region are affordable. This includes south St. Louis city, most of Madison and St. Clair counties, and large portions of Franklin, Jefferson, and St. Charles counties. Gasoline priced at \$5 per gallon mostly affects Franklin, Jefferson, and portions of Madison and St. Clair counties (**Map 15**). Local transportation cost affordability is similar to its regional median income counterpart. Areas no longer affordable can be found throughout the region with a majority away from the core as well as in St. Clair County near the riverfront (**Map 16**).

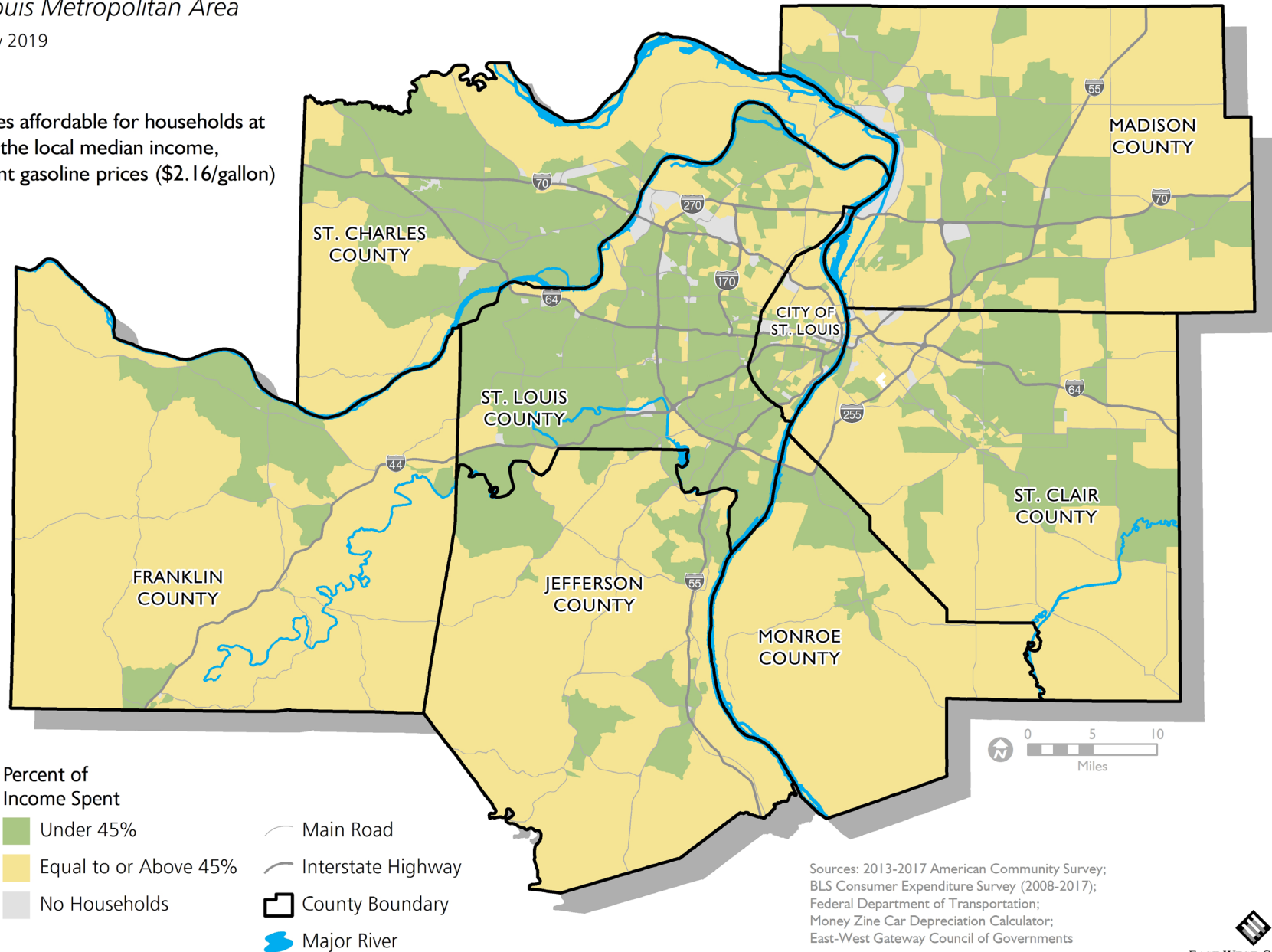
Map 14:

Housing + Transportation Affordability Index

St. Louis Metropolitan Area

January 2019

Places affordable for households at the local median income, current gasoline prices (\$2.16/gallon)



Sources: 2013-2017 American Community Survey;
BLS Consumer Expenditure Survey (2008-2017);
Federal Department of Transportation;
Money Zine Car Depreciation Calculator;
East-West Gateway Council of Governments

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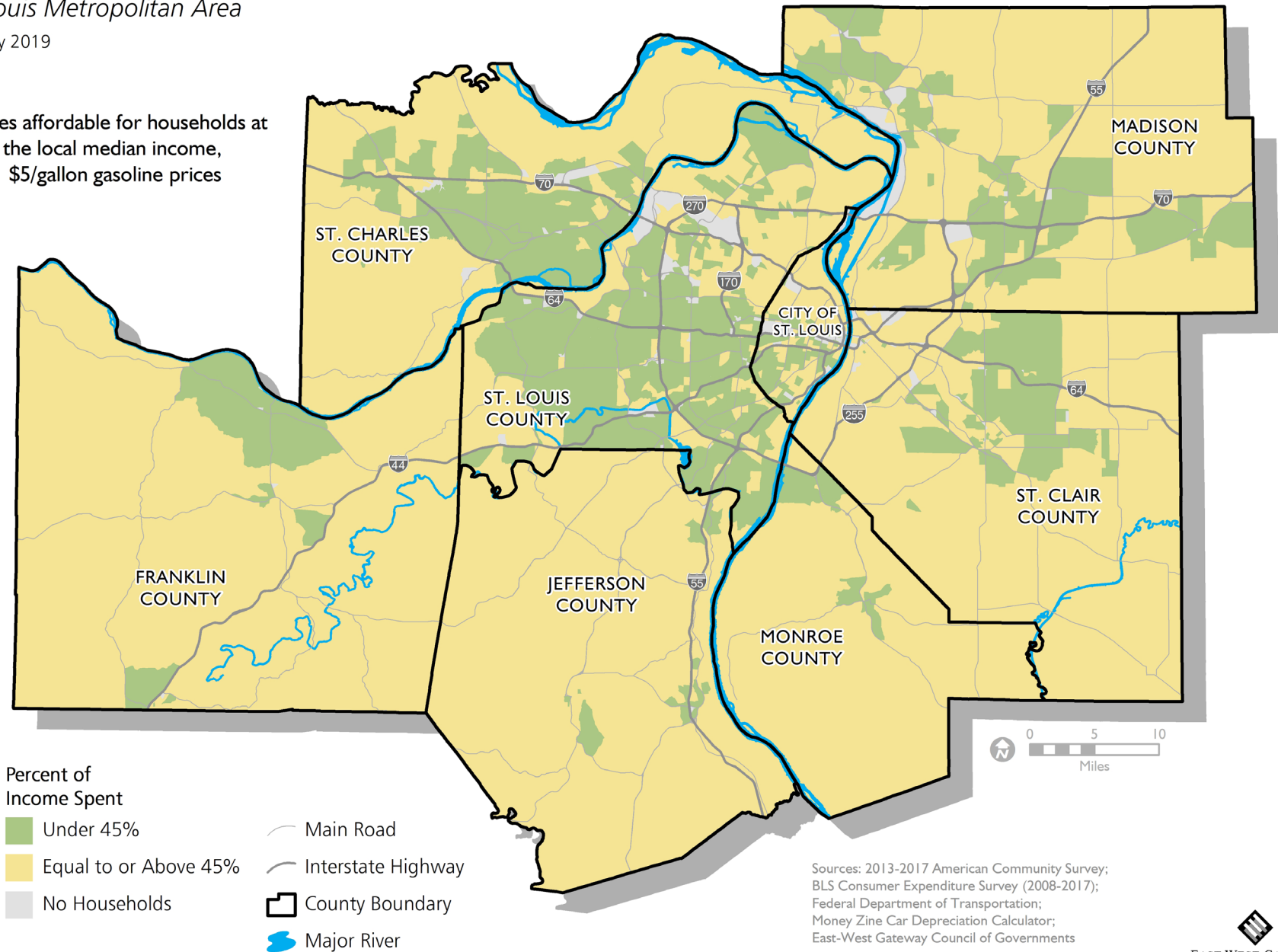
Map 15:

Housing + Transportation Affordability Index

St. Louis Metropolitan Area

January 2019

Places affordable for households at the local median income, \$5/gallon gasoline prices



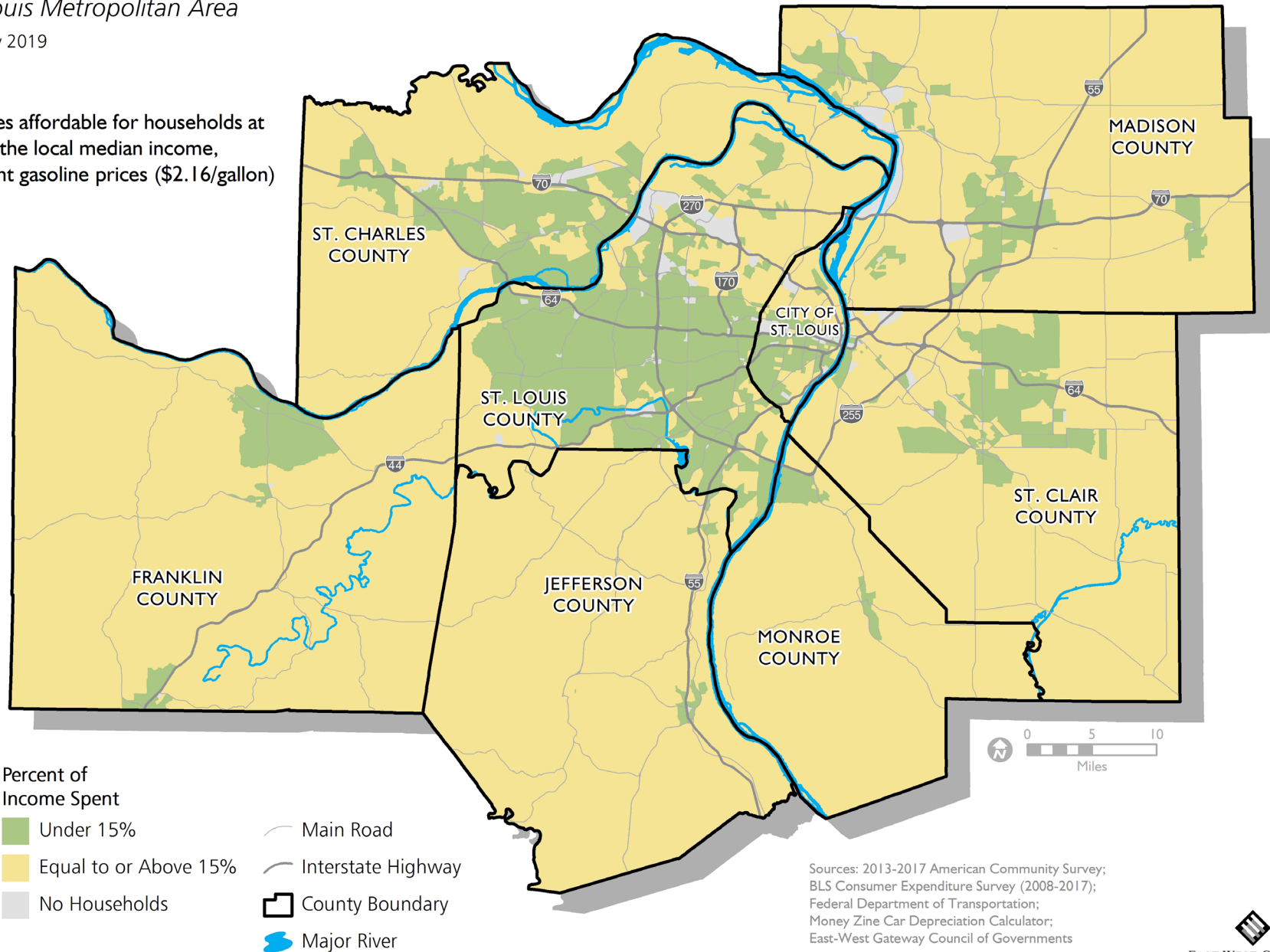
Map 16:

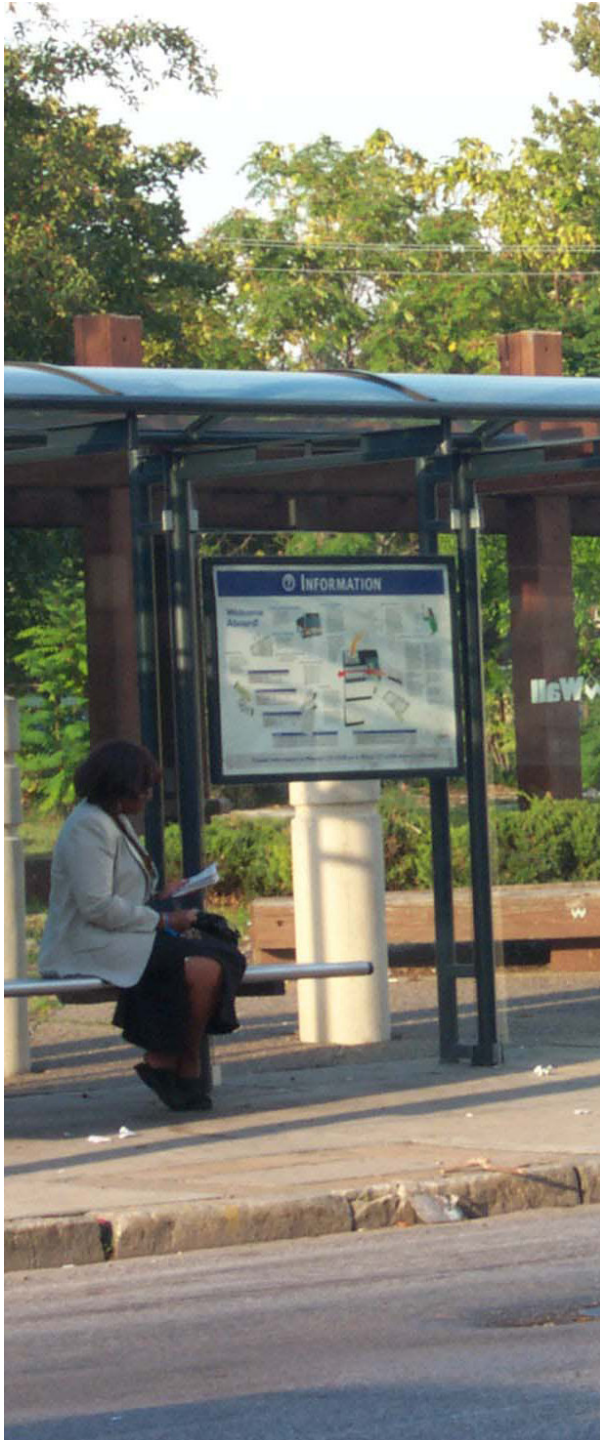
Transportation Affordability Index

St. Louis Metropolitan Area

January 2019

Places affordable for households at the local median income, current gasoline prices (\$2.16/gallon)





Question 3: How would higher gasoline prices affect urban, rural, and Environmental Justice communities?

Map 17 shows urban and rural areas in the eight-county region. Environmental Justice areas are shown in **Map 18**. EJ areas are places that have high concentrations of minorities or persons in poverty.

Table 26 shows how changes in gasoline prices would affect the persons living in urban, rural, and EJ areas. The two columns on the right show the percentage of residents' incomes that would be spent on housing and transportation combined under different gasoline pricing scenarios. Residents of EJ areas and rural residents currently spend the most on housing and transportation and would spend two-thirds of their incomes on housing and transportation combined if gasoline were to cost \$5 per gallon.

Table 26: Percent Of Residents' Income Spent On Housing and Transportation Costs Combined

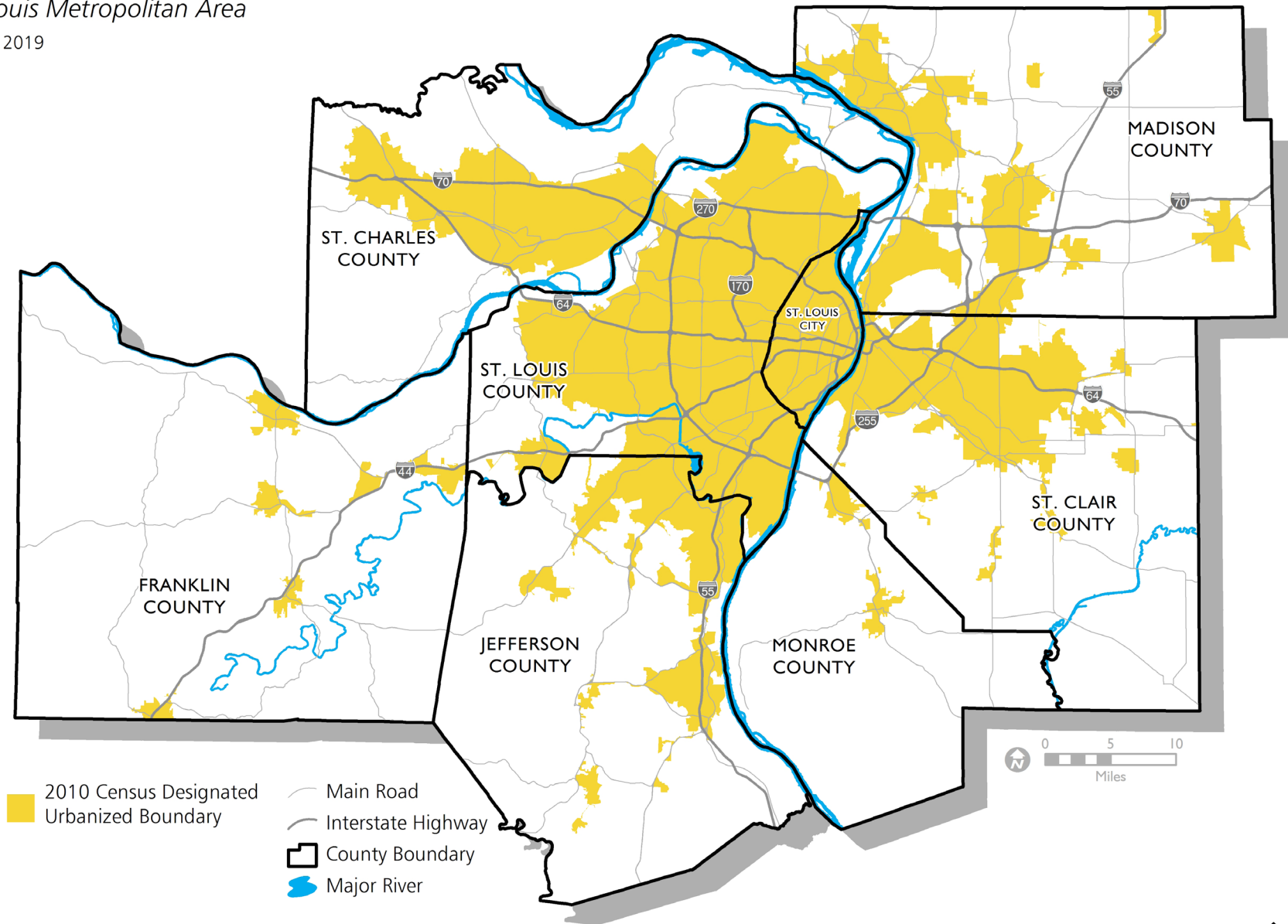
	Median Income (\$)	Current Gasoline Prices (\$)	\$5.00 per gallon gasoline
Eight-County Region	59,322	45.1	50.1
Environmental Justice Area	34,815	60.2	66.6
Non-Environmental Justice Area	66,847	41.9	46.5
Urban Areas	58,714	43.4	47.9
Non-Urban Areas	66,076	59.0	67.6

Map 17:

2010 Urbanized Boundary

St. Louis Metropolitan Area

March 2019



Source: United State Census Bureau;
East-West Gateway Council of Governments

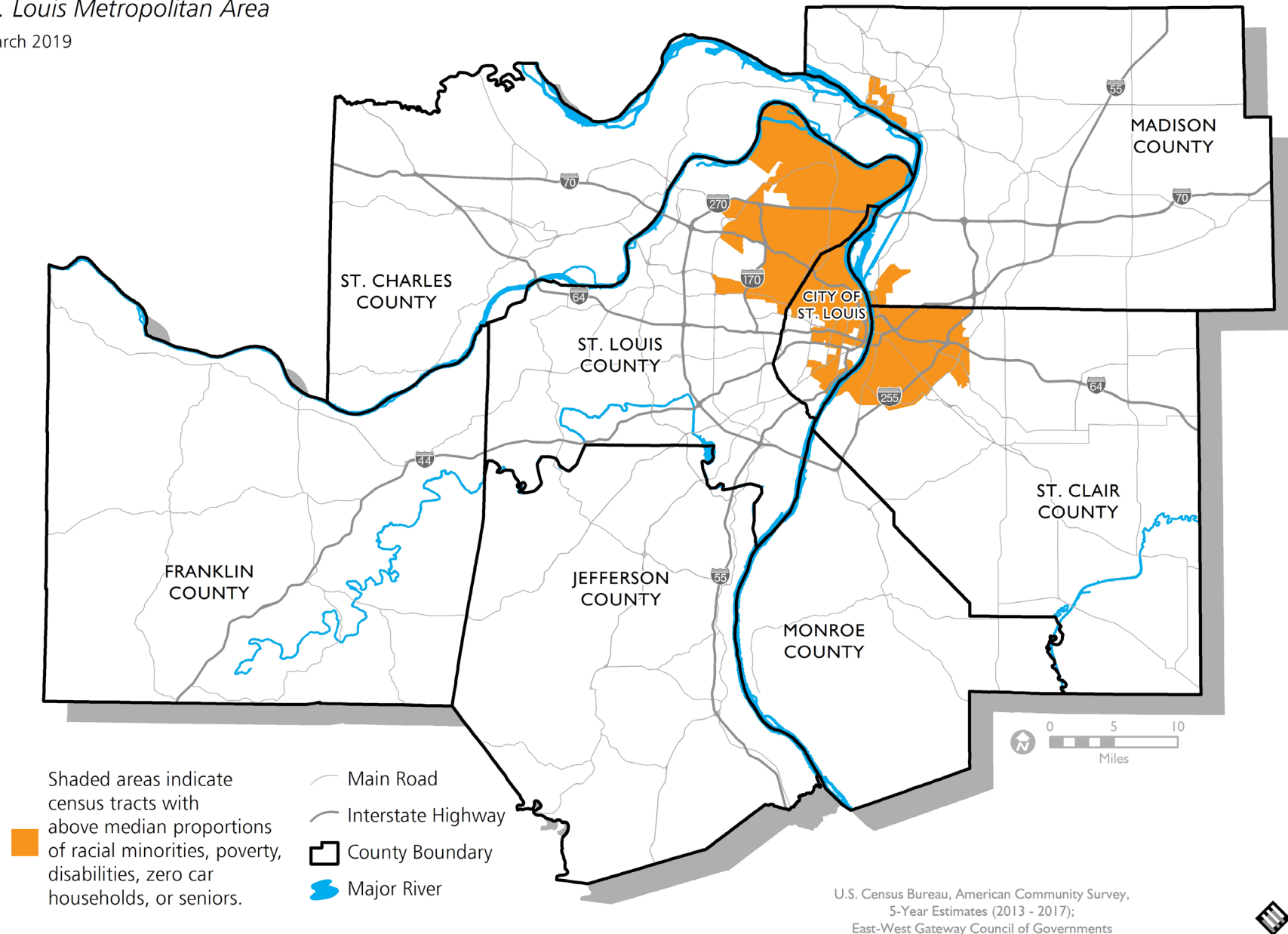

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Map 18:

Environmental Justice Populations by Census Tract

St. Louis Metropolitan Area

March 2019



Chapter 6: Bicycle and Pedestrian Human Services Transportation



Biking and Walking

Background

A high-quality walking and bicycling environment is an essential component of a healthy and prosperous region. Active transportation options (those that connect people of all ages and abilities to destinations using active modes such as walking and bicycling) allow people to travel without contributing to or being stuck in congestion, help improve air quality and public health, provide access to mass transit, and contribute to an improved quality of life.

Just over 8 percent of households in the St. Louis region, and 21 percent of households in the city of St. Louis, do not own a vehicle and rely on active modes of transportation,¹ whether by choice, because they elect to not use a car, or because they cannot afford a car. Even households that own a vehicle make bicycle and pedestrian trips, for example walking from a transit stop to work or biking to work. In 2016, the city of St. Louis ranked 32nd out of 70 large cities based on the percentage of bicycle commuters.² This was lower than the city's 2012 ranking (21st), but there was still an increase of 140 percent in the share of bicycle commuters between 2011 and 2016, though it should be noted that there is significant fluctuation in the data due to small sample sizes. Regardless, active transportation facilities such as sidewalks, on-street bicycle facilities, shared use paths, accessible transit stops, and wayfinding signage are becoming more common throughout the St. Louis region. As of 2018, approximately 931 miles of bike facilities had been built—including 178 miles of on-street facilities, 548 miles of off-street facilities, and 204 miles of shared lanes.

Map 19 depicts the St. Louis region's bicycle and pedestrian system, made up of regional trails, and local networks of off-road trails, on-street bikeways, and sidewalks. In addition, there are two national trails that span the St. Louis region, the American Discovery

Trail (ADT) and the Mississippi River Trail (MRT). The ADT stretches from California to Delaware while the MRT connects Minnesota to the Gulf of Mexico. Both trails are comprised of shared-use paths and on-road facilities.

Recent data from the American Community Survey (ACS) indicates that walking and biking trips account for 1.9 percent of all commute trips in the St. Louis region. Although bicycling can accommodate longer trips, walking accounts for a higher percentage of all trips region wide (1.6 percent) than biking (0.3 percent), and is, logically, the start and end to trips by any mode. The city of St. Louis had the highest percentage of walking and biking trips in the region, at 4.3 percent and 0.9 percent, respectively. However, missing, poorly maintained, or damaged sidewalks can create barriers to walking, and incorporating sidewalks into roadway construction projects can help complete the sidewalk system by filling in gaps. Usable sidewalks are also important to people with disabilities, and the Americans with Disabilities Act of 1990 (ADA) requires local governments to construct accessible rights-of-way to meet the needs of those disabled citizens. Sidewalk construction is one way to increase the walkability of a community, but safety improvements such as lighting and high-visibility crosswalk markings also play a crucial role in enhancing the pedestrian environment.

Walking and bicycling trips tend to be relatively short, averaging about one-quarter to one-half mile for walking (approximately five to 10 minutes), and between one and three miles for bicycling. About 35 percent of all daily trips in the region are less than three miles long and many of these three-mile trips could be made by bicycle, and some of the shorter trips could be completed by walking. Furthermore, walking and bicycling facilities can be part of the solution to the “last mile” problem, which refers to the situation in which a person's place of work or home is located one mile, or more than a ten-minute walk, away from the closest transit stop. Connecting walking and bicycling facilities with transit infrastructure can expand the reach

of the transit system and gives area residents more transportation choices. Metro, St. Clair County Transit District (SCCTD), and Madison County Transit (MCT) have bicycle racks mounted on the front of each bus in their respective fleets, and bicycles are allowed to be brought onboard MetroLink light rail trains.

Adding and improving connections between bicycle and pedestrian facilities, as well as the overall connectivity of the network remains a high priority for EWG, and in 2017 the agency completed a bicycling and walking survey which received a total of 671 responses. While the survey results showed a clear desire for new and improved bicycle and pedestrian facilities, many of the themes that emerged from the survey results are also the subject of current conversations and initiatives with regional partners, such as safely crossing roadways and intersections, connectivity, and maintenance of existing infrastructure. Maintenance of existing facilities has repeatedly surfaced as an issue that can also impact connectivity, for example when striping for bike lanes or crosswalks wears thin and visibility is reduced, utility work leaves uneven pavement behind, sidewalks are not cleared of ice and snow, or bike lanes are not regularly cleared of debris. Even with appropriate facilities in place, these kinds of issues make them difficult to use and negatively impact connectivity. Another critical element in the bicycle and pedestrian network is intersections—those without sufficient infrastructure to provide safe crossings (e.g. high visibility crosswalks, refuge islands, pedestrian signals and timing, etc.) create a break in the network and can be a barrier.

While regional discussion on these topics is ongoing, EWG has developed informational tools to better understand safety and risk factors, and to assist local partners and agencies as they work to address issues of safety and accessibility. In 2018, EWG released a Bicycle and Pedestrian Crash Analysis, which examines safety through regional crash data by tracking existing and emerging trends, analyzing data spatially to identify problem areas, and providing established safety countermeasures and strategies on how to reduce crashes and plan for safe biking and walking facilities.

1 2016 5 Year American Community Survey

2 Where We Ride: Analysis of Bicycling in American Cities; League of American Bicyclists; 2016:

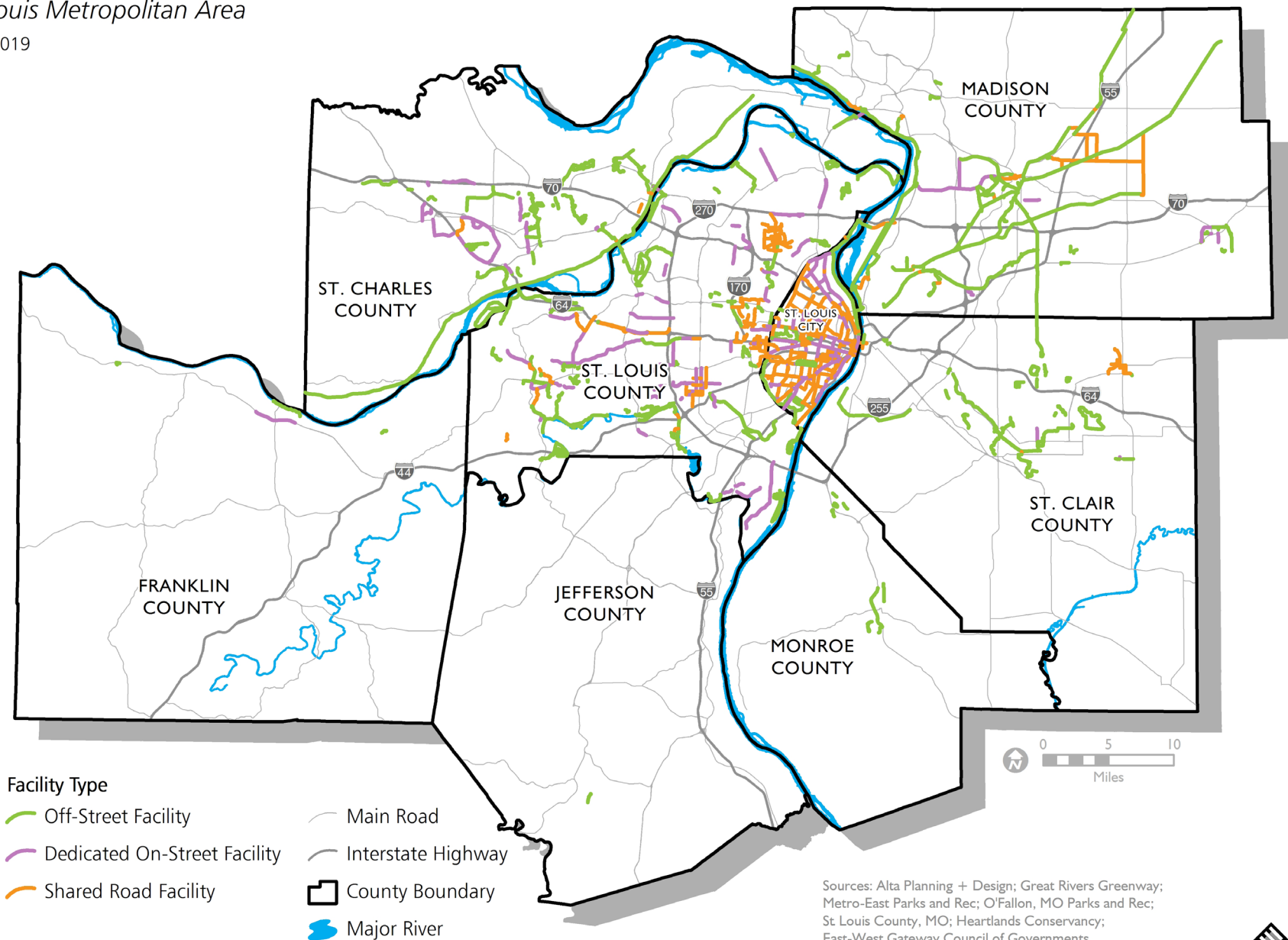
http://www.bikeleague.org/sites/default/files/LAB_Where_We_Ride_2016.pdf

Map 19:

Bike Facilities

St. Louis Metropolitan Area

April 2019



Sources: Alta Planning + Design; Great Rivers Greenway; Metro-East Parks and Rec; O'Fallon, MO Parks and Rec; St. Louis County, MO; Heartlands Conservancy; East-West Gateway Council of Governments

Awareness and education is fundamental in increasing the amount of biking and walking, while also improving safety. Trailnet, St. Louis Bike Works, Great Rivers Greenway District (GRG), and CyclingSavvy all provide community education on safety and the rules, rights, and responsibilities of bicycling and walking. EWG provides education to local municipalities on national best practices for creating low-stress bicycling and walking facilities, and strategies for incorporating active transportation into roadway projects. Furthermore, EWG released its Bicycle Planning Guide in 2018, providing additional resources and guidance for local public agencies as they plan bicycle facilities and networks.

Federal and State

At the federal level, the U.S. Department of Transportation (US DOT) issued an updated Policy Statement on Bicycle and Pedestrian Accommodation to support the development of fully integrated active transportation networks in March 2010. The policy calls for transportation agencies to plan, fund, and implement improvements to biking and walking facilities, including linkages to transit. In August 2013, the Federal Highway Administration (FHWA) issued formal support for the American Association of State Highway and Transportation Officials (AASHTO) bicycle and pedestrian design guides, National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide, and the Institute of Transportation Engineers (ITE) Designing Urban Walkable Thoroughfares report. Additionally, US DOT launched the Safer People, Safer Streets Initiative in 2015 in an effort to address non-motorized transportation safety. The initiative is focused on helping communities create safer, better connected bicycling and walking networks by providing a variety of resources, research, and tools for transportation professionals. FHWA encourages agencies to use these guides to help achieve the aims of the 2010 US DOT Policy Statement on Bicycle and Pedestrian Accommodation. EWG encourages partner agencies to go beyond minimum standards for safe and convenient bicycling and walking facilities and training workshops have been held in the region to educate planners, engineers, and decision makers about implementing national best practices

At the state level, the Illinois Department of Transportation (IDOT) completed the first ever statewide bicycle plan for the state of Illinois in February 2014. The plan provides policies, best practices, and strategic direction for implementing a multimodal transportation system in Illinois. IDOT administers the statewide Illinois Transportation Enhancement Program (ITEP) which local agencies in Madison, Monroe, and St. Clair counties are eligible to apply for to develop on- and off-road facilities for pedestrians and bicyclists.

MoDOT has also been focusing on connectivity and removing barriers by improving bicycle and pedestrian access over one of the region's largest natural barriers, the Missouri River. In 2016, a separated bicycle and pedestrian path was added to the I-64 Daniel Boone Bridge, connecting the Monarch Levee Trail and the Katy Trail—a locally and nationally significant bicycle route, and the longest rails-to-trails project completed in the United States. The replacement of the Route 47 Bridge in Washington, Missouri, is the result of a joint effort between MoDOT, the city of Washington, Franklin County, Warren County, the Boonslick Regional Planning Commission, and EWG. The new bridge includes a 10-foot shared-use path on one side, with a protective concrete barrier and scenic river overlook.

The Discovery Bridge, connecting St. Louis and St. Charles counties via MO 370, is also getting a much needed safety improvement with the addition of a shared-use path on one side of the bridge, separated by a zipper barrier. The facility is a portion of the Mississippi River Trail, and connects to the Boschert Greenway, the Earth City Levee Trail, and the Katy Trail. Construction of both projects is expected to be completed in 2019.

Regional and Local

At the regional level, EWG administers a competitive process for allocating the Surface Transportation Block Grant Program-Suballocated (STP-S), Transportation Alternatives Program (TAP), and Congestion Mitigation and Air Quality Improvement Program (CMAQ) funding. Bicycle and pedestrian projects, including Safe Routes to School projects, are eligible under these federal programs and all applicants are encouraged to consider all modes of transportation in their projects.

EWG established the Bicycle and Pedestrian Advisory Committee (BPAC) in 1995 to advise EWG on bicycle- and pedestrian related investment, development, and policy issues and it consists of representative members from the eight-county region. The BPAC supports the enhanced access, safety, comfort, and mobility for people walking and bicycling throughout the region by encouraging the coordinated development of bicycle- and pedestrian-friendly facilities, programs, and activities.

Since its inception in 2000, GRG has spearheaded the development of a “River Ring,” a network of 600 miles of greenways connecting the city of St. Louis, St. Louis County, and St. Charles County. To date, GRG has completed 117 miles of greenways and partnered with the city of St. Louis to develop the on-street Bike St. Louis network. From 2005 to 2015, three phases of Bike St. Louis were implemented in the city of St. Louis and St. Louis County, adding 125 miles of on-street bike facilities, as well as wayfinding signage and bike corrals. In 2017, GRG launched an international design competition to help develop its next major project, the Chouteau Greenway, which will provide a critical link in the bicycle/pedestrian network, connecting Forest Park to downtown St. Louis and the Gateway Arch National Park. An off-street, shared-use path will accommodate people walking and bicycling to many popular destinations within the Central Corridor, as well as the new MetroLink station at the Cortex Innovation District.

GRG also led the collaborative and cooperative effort between EWG, the city of St. Louis, St. Louis County, St. Charles County, Bi-State Development, Trailnet, and the Missouri Department of Transportation (MoDOT) to develop the Gateway Bike Plan (GBP). Since the GBP was completed in 2011, it has provided a long-term vision for building a network of on-road bicycle routes connecting communities, transit, greenways, and trails in the city of St. Louis, St. Louis County, and St. Charles County. In addition to identifying a regional system of on-road bikeways, the GBP includes strategies for education, encouragement, and enforcement to make bicycling safe for residents of all ages and abilities. The Gateway Bike Plan-Working Group (GBP-WG) was established by EWG and GRG in 2013 as a subcommittee to the BPAC, to advise the BPAC on the implementation and assessment of the GBP, and other matters relating to the use of the bicycle as a means of transportation. Currently, the GBP-WG is focusing on transitioning the plan from the short-term goals outlined for the first five years of plan implementation (2012-2017) to the medium- and long-term goals set for the next five to 10 years.

The Metro East Park and Recreation District (MEPRD) is responsible for the development of parks, greenways, and trails in Madison and St. Clair counties. MEPRD supplements the efforts of local agencies and other jurisdictions who are already engaged in the construction and management of these projects through their Park and Trail Grant Matching Program. The mission of the program is to develop a public system of interconnecting parks and trails throughout MEPRD's planning area. To date, MEPRD has committed roughly \$22 million to 115 projects already completed—including trails, bike lanes, and signed shared roads—and another 36 projects currently under development. Recently, MEPRD, in partnership with MCT, utilized ITEP funds to construct the Troy-O'Fallon Bike Trail Connector project. That seven-mile shared-use trail connects the Madison County Bikeway System to O'Fallon, Illinois, and will eventually tie into the 14-mile Metro Bike-Link Trail at the Shiloh/Scott Metro Station south of O'Fallon, Illinois.

In April 2018, the city of St. Louis launched the region's first bike share program. Four years earlier, in 2014, the city of St. Louis, St. Louis County, Bi-State Development, EWG, and other key stakeholders formed a partnership and completed a Bike Share Feasibility Study to determine if the region could support a bike share program, and how it might operate. Bi-State Development furthered the conversation on bike share in 2017 by establishing a working group of regional stakeholders and seeking potential funding sources for implementation. After a year of coordination, St. Louis welcomed dockless bike share to the city, which was replaced shortly thereafter by dockless electric scooter share. By utilizing a permitting process that allows private companies to apply for a permit to operate within the city limits under certain conditions, the city was able to move implementation forward without the need for significant, up-front public funding. Both bike and scooter share are part of the recent and rapidly growing trend of shared micro-mobility, which allows users to pay for access to a bike or scooter on an as-needed basis. Dockless options differ from traditional docked bike share programs by using GPS and electric locking mechanisms to locate and secure bikes and scooters, instead of designated docking stations. As part of the transportation system, shared micro-mobility can replace short vehicles trips, increase mobility options, and contribute to the reduction of VMT. The introduction of bike and scooter share has spurred region-wide interest, with surrounding counties and municipalities looking to the city's model as they consider their own shared mobility systems. In addition, the social equity and inclusion component of the city's permit process has garnered national attention for its efforts to ensure equitable distribution of these new transportation services by requiring companies to maintain a certain percentage of their bikes and scooters within target neighborhoods. These neighborhoods were identified based in part on the results of the 2014 feasibility study, and include areas with high concentrations of low-income households, people of color, households without access to a vehicle, non-English speakers, as well as their proximity to the MetroLink system.

The Gateway Arch Park Foundation was founded in 2009 to support and coordinate the CityArchRiver project, which was completed in July 2018. The project has made the Gateway Arch National Park more accessible for bicyclists and pedestrians by featuring safer access over Interstate 44, implementing shared-use paths throughout the park, and adding a cycle track along Leonor K. Sullivan Boulevard.

At the local level, several counties and municipalities have developed and adopted plans that support bicycling and walking, or adopted Complete Streets policies. Trailnet and Heartlands Conservancy have helped 41 communities throughout the region develop their own bicycle and pedestrian plans, and 22 local governments have Complete Streets policies in place. St. Louis County is currently working on a county-wide Action Plan for Walking and Bicycling; the plan will take into account several concurrent efforts to improve transportation options in the county, including its Complete Streets Policy, Age Friendly Community Action Plan, ADA Transition Plan, and the GBP. The entire bicycle and pedestrian network will be considered, although the plan's focus will be on collector and arterial roadways, improving connectivity, and identifying long- and short-term strategies for implementation. As it reviews projects for potential funding, EWG prioritizes projects that are supported or specifically listed in a local plan or policy such as those discussed above.

Trailnet launched the Calm Streets Project in 2014 with funding assistance from the Environmental Protection Agency (EPA) to promote Calm Streets in the city of St. Louis. Calm Streets are typically low-volume, low-speed residential or neighborhood streets that utilize traffic calming techniques to create a low-stress walking and bicycling environment, and encourage non-motorized transportation. In 2016, the city of St. Louis adopted a traffic calming policy that addresses speeding and traffic safety concerns and worked with partner agencies to develop a Calm Streets Plan. In 2017, the city of St. Louis secured TAP funding for its Calm Streets pilot project on Louisiana Avenue which includes traffic circles, speed humps, bump outs, and enhanced crosswalks. It is expected to begin construction in 2020.

In addition, in 2016 Trailnet began work on Connecting St. Louis—a vision to connect the region with a network of on-street, protected bikeways. The planning process started with community surveys and outreach to identify plan priorities and possible destinations. Based on this feedback, stakeholder committees drafted recommendations in four key areas: design and placemaking, destinations and routes, funding and governance, and land use. With the Chouteau Greenway on track to provide an essential east-west route through the heart of the city, Connecting St. Louis aims to intersect and complement that effort with a much-needed north-south corridor that will fill mobility gaps, provide convenient transportation options, and create a cohesive multimodal network. The ultimate goal of the project is to enhance the quality of life for all St. Louisans.

The Downtown Multimodal Transportation Study was completed in March 2018, following a year-long effort that included extensive data analysis, stakeholder engagement, and multiple public open houses. The study was intended to address the unique needs of the downtown area and the many large events hosted there, as well as changing transportation patterns resulting from several recently completed projects, such as the CityArchRiver project and the Stan Musial Veterans Memorial Bridge. The purpose of the study was to enhance mobility and connectivity for all modes of transportation—people walking, biking, driving, and taking transit—while simultaneously easing congestion and spurring economic growth. The final report will inform future decision-making and transportation planning for the study area.

Tracking Progress

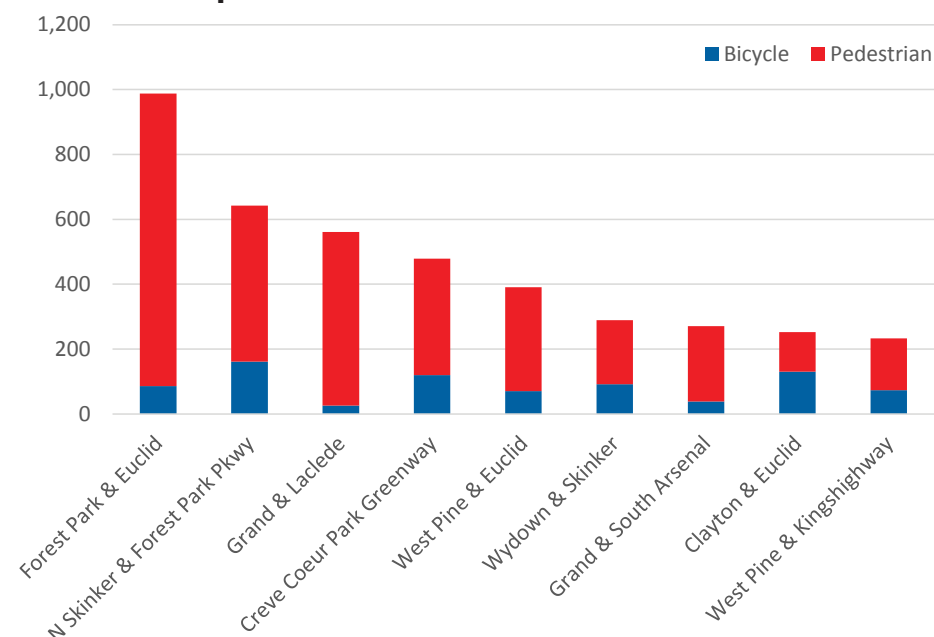
One of the greatest challenges for measuring the benefits of walking and bicycling investments is the lack of documentation on usage and demand. GRG, through its work on the Gateway Bike Plan, issues annual report cards evaluating the plan's success in meeting its goals. Also, since 2012, GRG and Trailnet have participated in the National Bicycle and Pedestrian Documentation Project (NBPDP) to record the number of people walking and bicycling at strategic locations

in the GRG planning area, which includes the city of St. Louis, St. Louis County, and St. Charles County. The NBPDP provides a standardized methodology for counting and surveying bicyclists and pedestrians; the information collected is valuable for identifying future bicycle and walking facilities and connections, and for evaluating the effectiveness of such facilities. Since the first counts conducted in 2012, the number of locations with counts has grown significantly, from 39 locations in 2012 to 70 in 2018, and an all-time high of 79 locations covered in 2016. Because the NBPDP depends on volunteer hours, location coverage varies from year to year. Weather conditions, construction projects, and other activities near count locations also contribute to annual variations in the numbers recorded. The 10 locations with the highest average number of bicyclists and pedestrians recorded over the last seven years are shown in **Figure 33**. In addition to the annual bicycling and walking counts, 2018 saw the introduction of a category for people traveling by “other” means, such as scooter, skateboard, or in-line skates. As shown in **Figure 34**, this category represents approximately 3 percent of the total counts in 2018, and will continue to

be tracked to identify any emerging trends. GRG also added two new eco-counters to its trail system in 2017, with the completion of the River Des Peres Greenway extension from the Shrewsbury MetroLink station to Francis R. Slay Park. The eco-counters were installed in two separate locations, and will help capture activity on the recently expanded greenway.

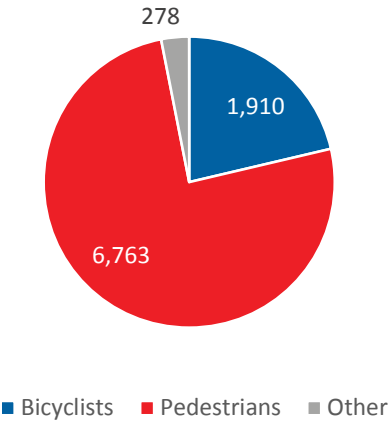
Each year, the League of American Cyclists recognizes communities, businesses, and universities for their work to improve bikeability with its Bicycle Friendly Community awards. To date, both Ferguson and Clayton have received the Bronze level award, and the city of St. Louis was recently upgraded to the Silver level award. These designations represent significant local commitments to bicycling in the St. Louis region and serve as a benchmark to identify improvements yet to be made. Additionally, 11 local businesses and organizations have been recognized with bicycle friendly designations, including Trailnet, the Saint Louis Zoo, and Washington University in St. Louis.

Figure 33: Average Bicycle and Pedestrian Count Volumes, 2012-2018: Top 10 Locations



Source: National Bicycle and Pedestrian Documentation Project.

Figure 34: Two-Hour Count Volume by Mode, All Locations, 2018



Human Service Transportation

Human service transportation includes a broad range of transportation service options designed to meet the needs of target populations, specifically seniors and individuals with disabilities. Human service transportation also entails understanding the needs and gaps in transportation services of these target populations.

The Coordinated Human Services Transportation Plan (CHSTP), updated in 2016, provides guidance for improving mobility options for seniors and individuals with disabilities. The CHSTP includes an inventory of existing transportation services, identifies gaps and barriers in existing transportation services and regional coordination, and provides a list of goals and strategies that aim to address the noted gaps in service.

Another important element of the CHSTP is understanding the demographic profile of the target populations. Approximately 312,000 individuals—12.2 percent of the population—have a physical, sensory, or cognitive disability, and over 380,000 people in the region—14.7 percent of the population—are over 65 years old.³ The city of St. Louis, with only 12.2 percent of the region's population, has the highest proportion of individuals with disabilities. St. Louis County comprises 38.7 percent of the region's population and has the highest proportion of seniors.

Seniors and individuals with disabilities often times have limited access to some transportation options, such as personally owned vehicles, and require more specialized transportation options that are affordable, can accommodate the individual's disability, or do not restrict trip types or require advance scheduling. Depending on the individual's situation, a lack of viable transportation options has the potential to create a large barrier in finding work, accessing critical medical appointments, shopping for groceries, or participating in social activities.

For the portions of the urbanized area that have access to the public transit system, pedestrian infrastructure that is in accordance with the ADA is important to the

target populations in order to utilize the service. The ADA requires public transit agencies that provide fixed-route service to provide “complementary paratransit” curb-to-curb service to individuals with disabilities who cannot access the fixed-route bus or rail service. However, some individuals are too frail to utilize curb-to-curb service and require greater assistance, such as demand response door-to-door service. These types of trips are generally for specific trip purposes, like medical trips, and there are a variety of specialized transportation service providers in the St. Louis region that provide this service. Unfortunately, seniors and individuals with disabilities living in rural areas typically have fewer transportation service options.

In addition to transportation service options, awareness on available services and travel training can greatly improve human service transportation. After the completion of the CHSTP, Bi-State Development (Metro) established the Disability Transportation Resource Network to serve as a regional resource and networking group for agencies and organizations whose mission includes disability transportation and access.

EWG administers the Enhanced Mobility of Seniors and Individuals with Disabilities Program (Section 5310). Section 5310 provides funding to help improve mobility for seniors and individuals with disabilities by removing barriers to transportation services and expanding available transportation mobility options. Since 2012, EWG has awarded over \$11.5 million dollars in Section 5310 funds to maintain and enhance transportation services for target populations throughout the St. Louis region.

The St. Louis Urbanized Area receives an annual allocation of approximately \$1.9 million dollars in Section 5310 funds. Over the last six years (FY 2013-FY 2018), the majority of projects were capital investments, including the acquisition of accessible vehicles and bus stop improvements, at 72.7 percent. Operating expenses to support trip-based services made up 18 percent of the program. The remaining 9.2 percent of the program was allocated to grant administration (**Figure 35**).

CHSTP Overarching Goals and High Priority Strategies

Goal 1: Sustain Existing Services

- a) Maintain or replace vehicles and equipment needed to sustain existing services.
- b) Ensure that procured vehicles support the demand and type of transportation service offered.

Goal 2: Enhanced Services

- c) Provide new or expanded service to the underserved geographic areas or populations.

Goal 3: Education and Outreach

- d) Improve information on existing services and provide in appropriate formats to customers and human service transportation providers.

Goal 4: Coordination

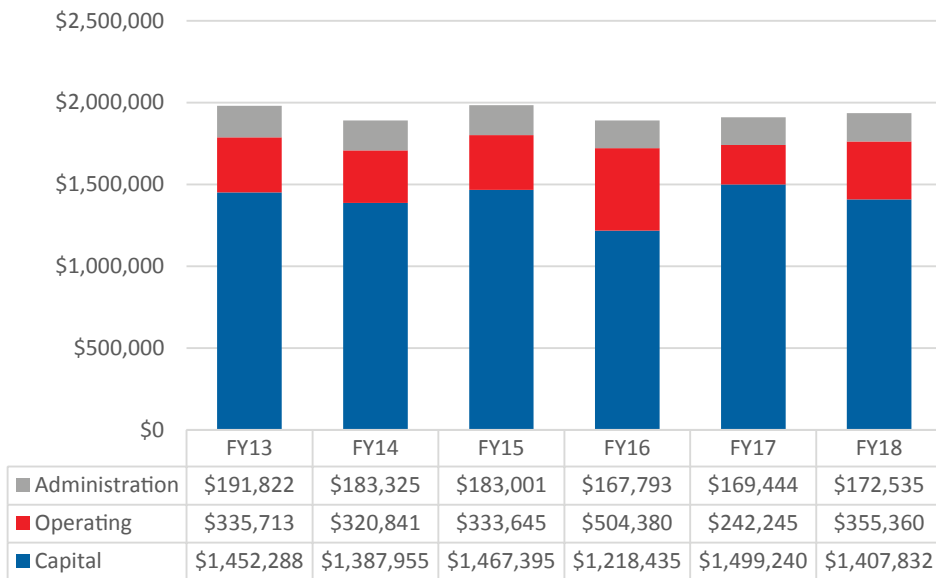
- e) Create new and maintain existing partnerships that regularly address the identified gaps in the CHSTP.

Goal 5: Independence

- f) Updated vehicles as needed to address the special needs of seniors and individuals with disabilities.
- g) Promote walkable communities with improved pedestrian accessibility to public transportation options and enhanced amenities at transit facilities.

³ Source: U.S. Census 2016 5-Year American Community Survey.

Figure 35: Section 5310 Funded Projects, FY 2013 to FY 2018



Examples of Section 5310 funded projects include:

- Door-to-door or door-through-door demand response transportation, which provides extra safety and assistance to riders who need support to travel.
- Replacement and expansion of accessible vehicles operated by non-profit agencies; 158 vehicles have been funded to provide specialized service across the region since 2012.
- ADA and wayfinding bus stop enhancements.
- Volunteer driver programs for any trip type where fixed-route transit is not available or sufficient.
- Deviated bus service for target areas and populations.





Great Streets Program

Over the past several decades, as municipal planning resources have dwindled and public roadway investments have primarily been focused on moving automobiles, many streets have stopped serving all users, while planning for local walkability, economic vitality, place making, and the quality of the environment have often been neglected. During this time, changes in market trends, local governance practices, understanding of infrastructure, and the evolving expectations of homebuyers and renters have changed how people need and want their community streets to function. Consequently, EWG began the Great Streets planning assistance program in 2006 to help address the diversity of activities and users on community streets.

The first step in the Great Streets process is to engage with the community to clearly define its vision for itself, based on a technical expectation of what is likely to succeed, its local identity, and community aspirations. Then, a multi-disciplinary planning team continues to work with the community to develop land use, environmental, transportation, place making, and governance systems to cultivate and maintain that vision.

The program has proven to be applicable to a wide diversity of street and place types and has been used across a variety of contexts within the region. Through Great Streets planning assistance, EWG facilitates thorough detailed plans, higher level strategic planning efforts, and technical assistance for communities pursuing their own efforts.

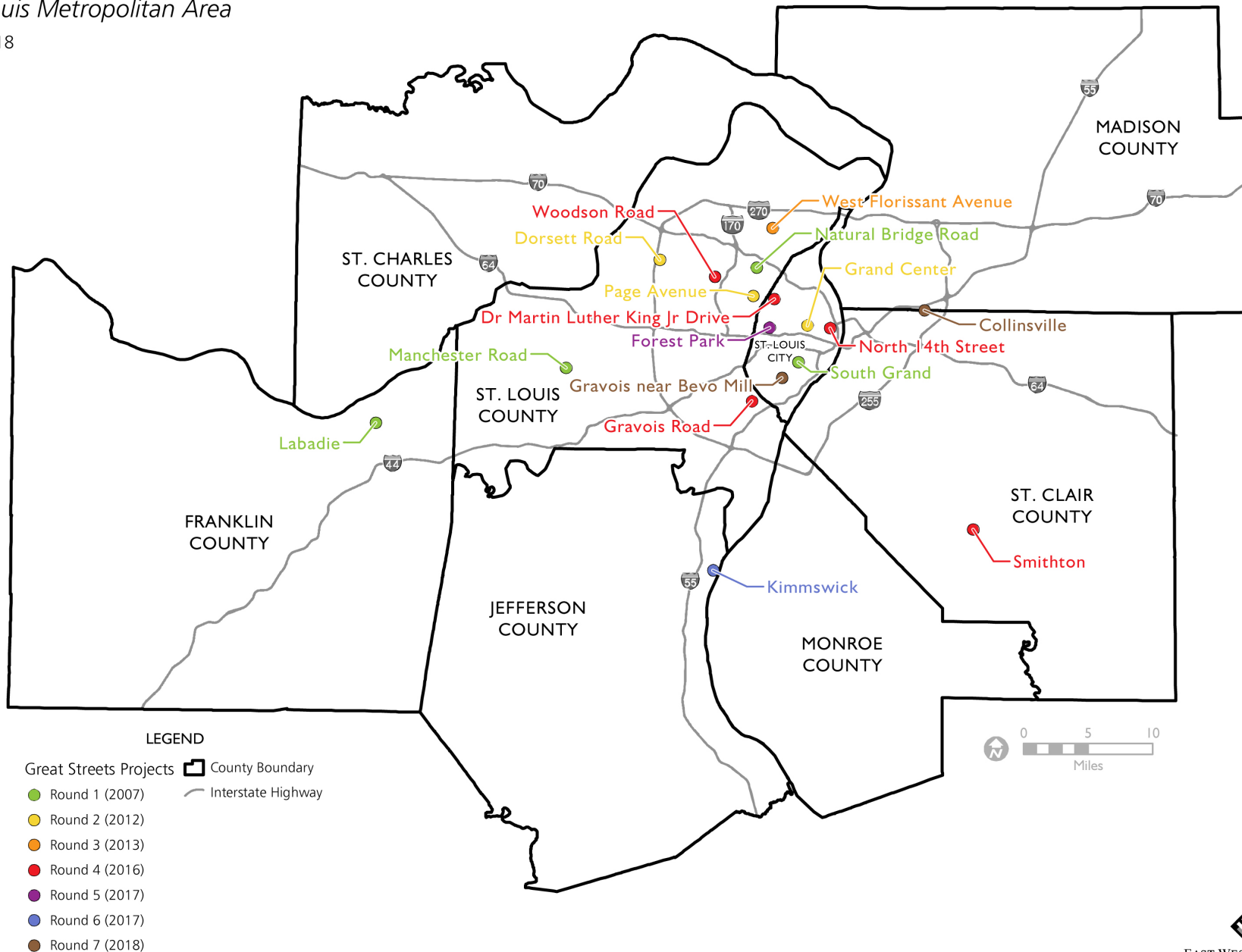
EWG, through the TIP application process, encourages all communities to incorporate Great Streets principles into their roadway projects. **Map 20** shows all of the Great Streets project locations throughout the region between 2007 and 2018.

Map 20:

Great Streets Projects 2007-2018

St. Louis Metropolitan Area

July 2018



Source: East-West Gateway Council of Governments

EAST-WEST GATEWAY
Council of Governments



Chapter 7: Safety



Transportation Safety

Safety throughout the system—for motorists, transit, emergency response, freight movement and nonmotorized users such as bicyclists and pedestrians—must be a top priority in transportation planning. In addition to causing preventable deaths and serious injuries, motor vehicle crashes across the region are a cause of major economic losses and disruptions to the transportation system—the comprehensive cost of motor vehicle crashes in the St. Louis region alone was estimated at \$11 billion in 2016. This comprehensive cost includes five economic cost components:¹

- Wage and productivity losses, which include wages, fringe benefits, household production, and travel delay
- Medical expenses, including emergency service costs
- Administrative expenses, which include the administrative cost of private and public insurance plus police and legal costs
- Motor vehicle damage, including the value of damage to property
- Uninsured employer costs for crashes involving workers, but also a measure of the value of lost quality of life associated with the deaths and injuries.

Trends and Analysis

The Illinois and Missouri departments of transportation and local public agencies have increased their use of crash reports and crash trends to identify high-crash corridors as well as crash types that can be addressed systemically along their roadways. Crash data is being used more often than in the past to help make engineering, enforcement, and educational decisions and inform policies about roadway improvements.

Table 27: Regional Crash Statistics, 2012 to 2016

Year	All Crashes	Number of Fatal Crashes	Number of Fatalities	Number of Injury Crashes
2012	70,783	230	250	14,924
2013	65,984	209	234	14,477
2014	66,227	230	246	14,598
2015	76,073	258	277	16,862
2016	83,924	271	296	18,535
Average	72,598	240	261	15,879

Source: IDOT, MoDOT

Table 27 provides a summary of crash data for the region from 2012-2016. The St. Louis region has seen an increase in the number of overall crashes, number of fatal crashes, number of fatalities, and the number of serious injury crashes. On average, the region lost 261 lives each year with nearly 50 more deaths on the region's roads in 2016 than in 2012.

Figure 36 displays the share of crashes by county between 2012 and 2016, with St. Louis County accounting for 43 percent of regional crashes over that time.

Figure 37 shows the crash rate by county for the region, by 100,000 population and 100 million vehicle miles traveled (VMT). The risk of being involved in a motor vehicle crash, relative to both VMT and population, is highest in the city of St. Louis and lowest in Monroe County.

Map 21 depicts all fatal and serious injury crashes on the local- and state-owned systems from 2012 to 2016.

Figure 36: Crashes by County, 2012 to 2016

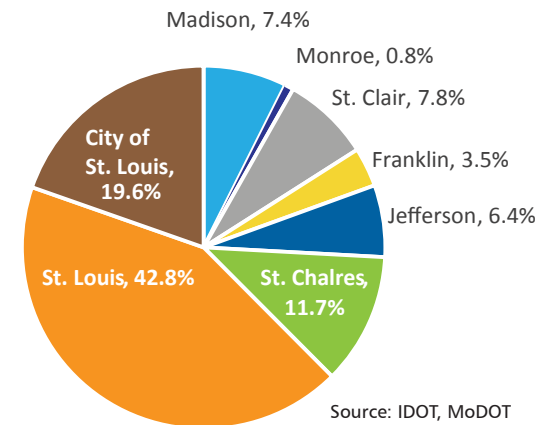
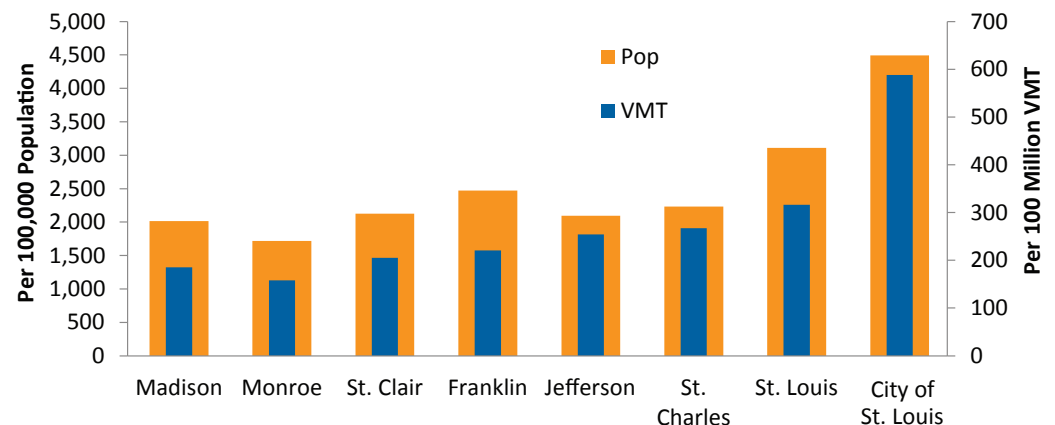


Figure 37: Crash Rate by Population and VMT, 2012 to 2016



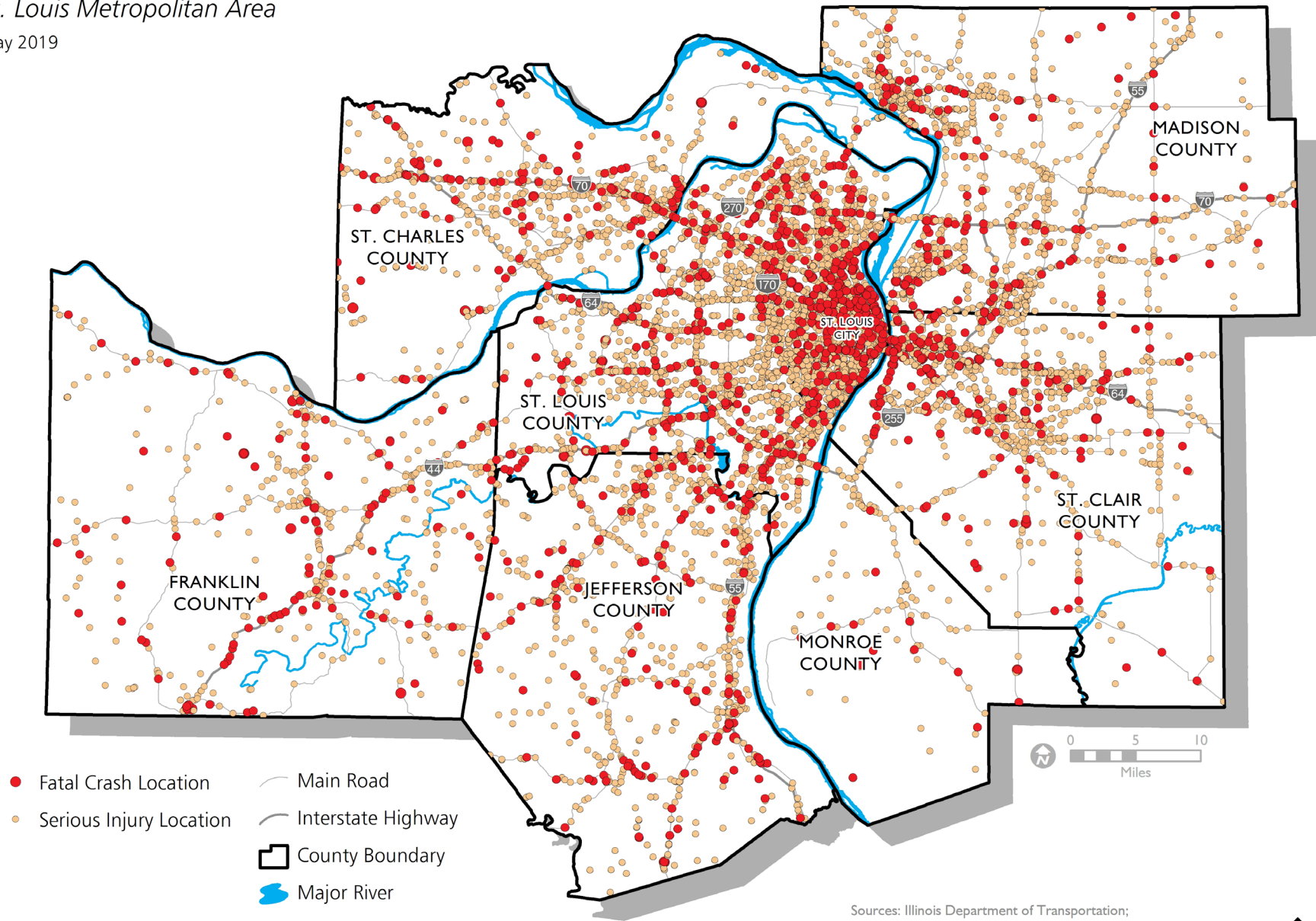
¹ National Safety Council Injury Facts 2017 Edition: <http://viewer.zmags.com/publication/20020222>

Map 21:

Motor Vehicle Crashes, 2012-2016

St. Louis Metropolitan Area

May 2019



Sources: Illinois Department of Transportation;
Missouri Department of Transportation;
East-West Gateway Council of Governments



EAST-WEST GATEWAY
Council of Governments

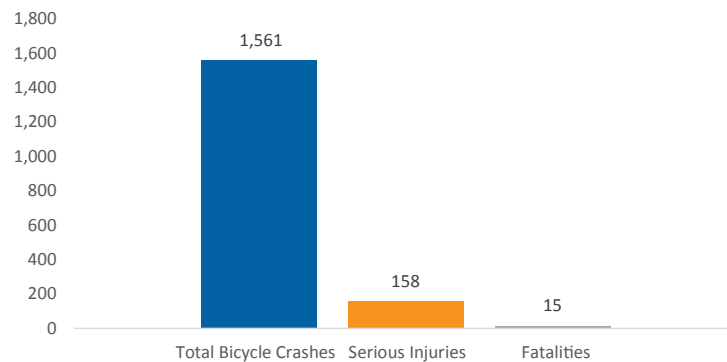


Bicycle and Pedestrian Safety

Nationwide, people bicycling and walking account for more than 16 percent of crash fatalities, but only 11 percent of all trips.² Developed in response to the persistent rise in crashes involving bicyclists and pedestrians in the St. Louis region, EWG released bicycle and pedestrian crash analyses in 2018.

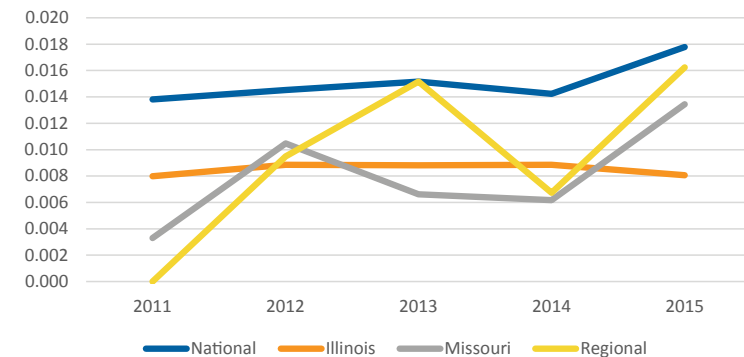
Over a recent five year period (2011-2015) the St. Louis region saw an average of 312 bicycle crashes per year.

Figure 38: Bicycle Crashes, St. Louis Region, 2011-2015



Source: IDOT, MoDOT

Figure 39: Fatalities as Percent of Total Bicycle Crashes

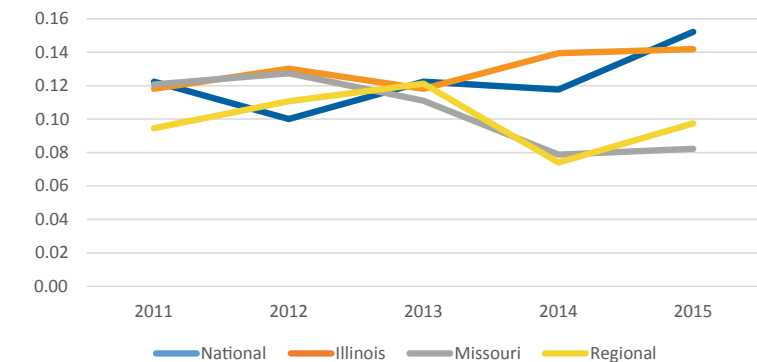


Source: IDOT, MoDOT, FHWA

Of the 1,561 total bicycle crashes, roughly 10 percent resulted in a serious injury and 1 percent resulted in a fatality (**Figure 38**). These numbers fall squarely within state and national trends, which show fatality rates between 0.3 percent and 1.8 percent (**Figure 39**) and serious injury rates between 8 percent and 15 percent (**Figure 40**). With total bicycle crashes per 100,000 residents hovering around 12 for the St. Louis area, the region is on par with Missouri (~10) and the United States as whole (~15) but well below Illinois, which is an outlier at an average of approximately 25 crashes per 100,000 residents (**Figure 41**).

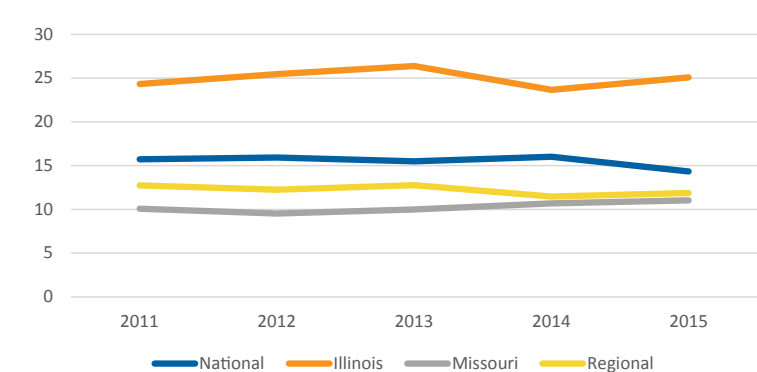
Map 22 shows that bicycle crashes in the region are concentrated in the city of St. Louis, within the I-270 belt loop in St. Louis County, north St. Louis County, in clusters along major arterial roads and areas with a higher density of population and/or employment, and smaller pockets in outlying cities. Automobile crashes are more dispersed throughout the region and are more concentrated on Interstates, other highways, and state routes.

Figure 40: Serious Injuries as Percent of Total Bicycle Crashes



Source: IDOT, MoDOT, FHWA

Figure 41: Bicycle Crashes per 100,000 Residents



Source: IDOT, MoDOT, FHWA

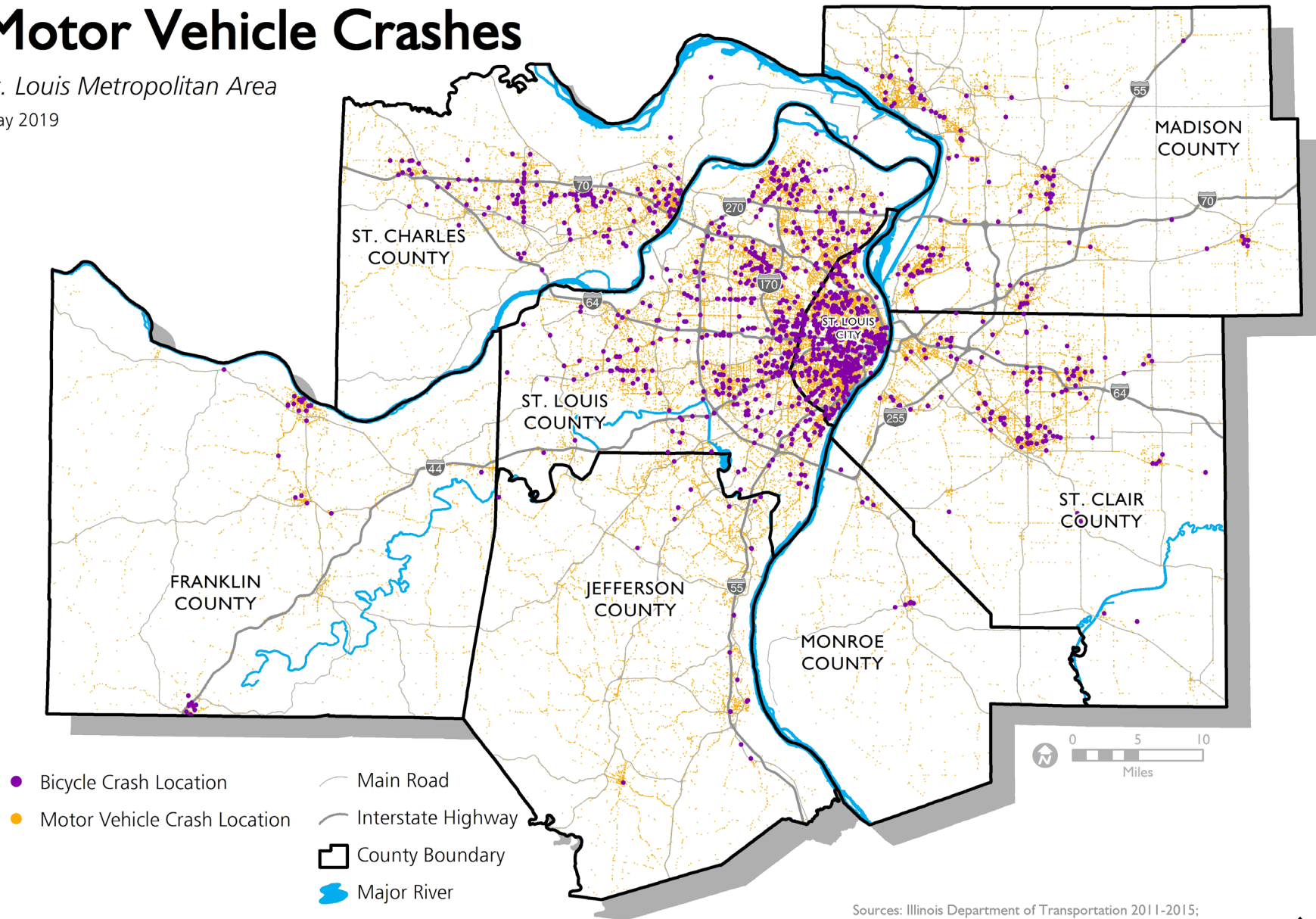
² Source: <http://www.pedbikeinfo.org/topics/completestreets.cfm>.

Map 22:

Bicycle Crashes with Motor Vehicle Crashes

St. Louis Metropolitan Area

May 2019



Sources: Illinois Department of Transportation 2011-2015;
Missouri Department of Transportation 2011-2015;
East-West Gateway Council of Governments

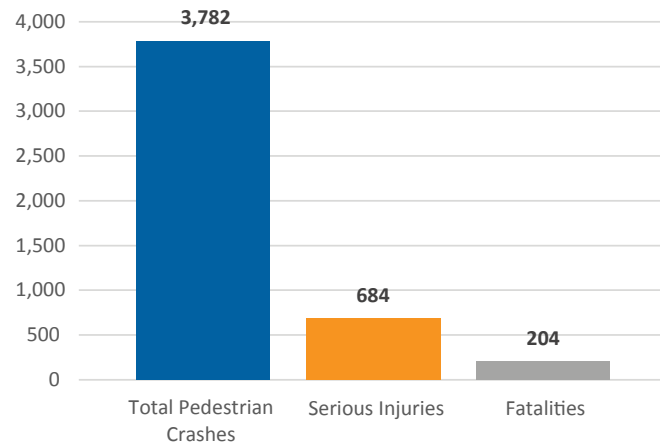


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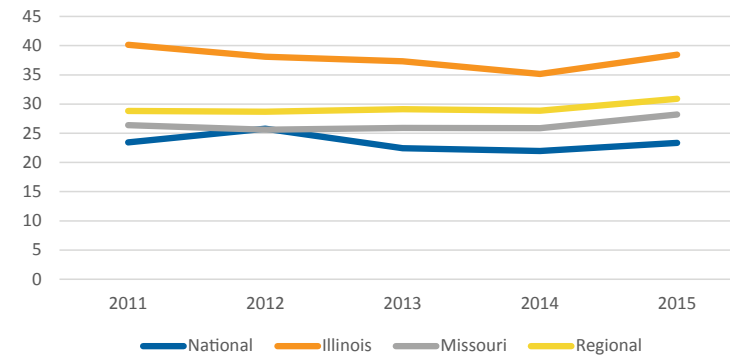
From 2011 to 2015 the St. Louis region saw an average of 756 crashes involving pedestrians annually (**Figure 42**). When comparing the St. Louis region to state and national figures, the region is experiencing a higher five year average of pedestrian crashes per 100,000 residents (29.3) than the state of Missouri (26.4) and the United States (23.4). The state of Illinois ranks higher than the U.S. as a whole, with 37.8 pedestrian crashes per 100,000 residents (**Figure 43**). From 2011-2015, fatality rates for pedestrian crashes were between 0.5 percent and 0.7 percent and serious injury rates were within a range of 0.15 percent and 0.20 percent (**Figure 44 and Figure 45**). **Map 23** shows an overwhelmingly high concentration of pedestrian crashes in the city of St. Louis and north St. Louis County, but looking at the region as a whole, there are clusters of pedestrian crashes in many areas with higher population and employment densities.

Figure 42: Pedestrian Crashes, St. Louis Region 2011-2015



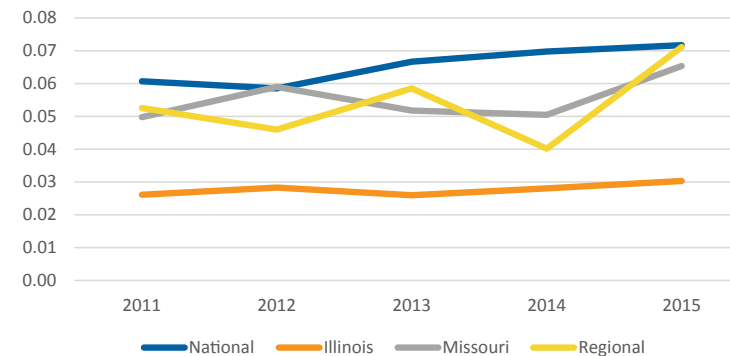
Source: IDOT, MoDOT

Figure 43: Pedestrian Crashes per 100,000 Residents



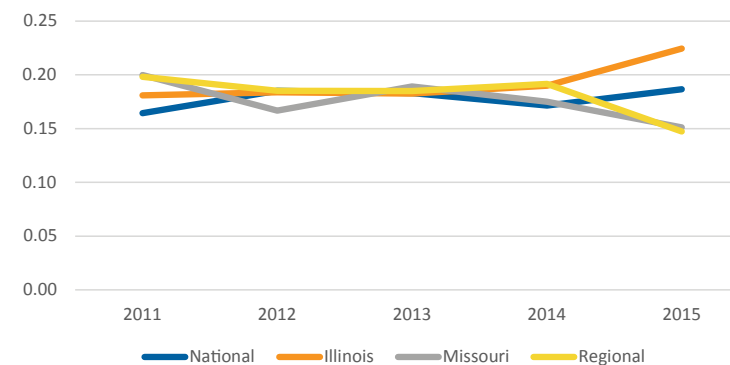
Source: IDOT, MoDOT, FHWA

Figure 44: Fatalities as Percent of Total Pedestrian Crashes



Source: IDOT, MoDOT, FHWA

Figure 45: Serious Injuries as Percent of Total Pedestrian Crashes



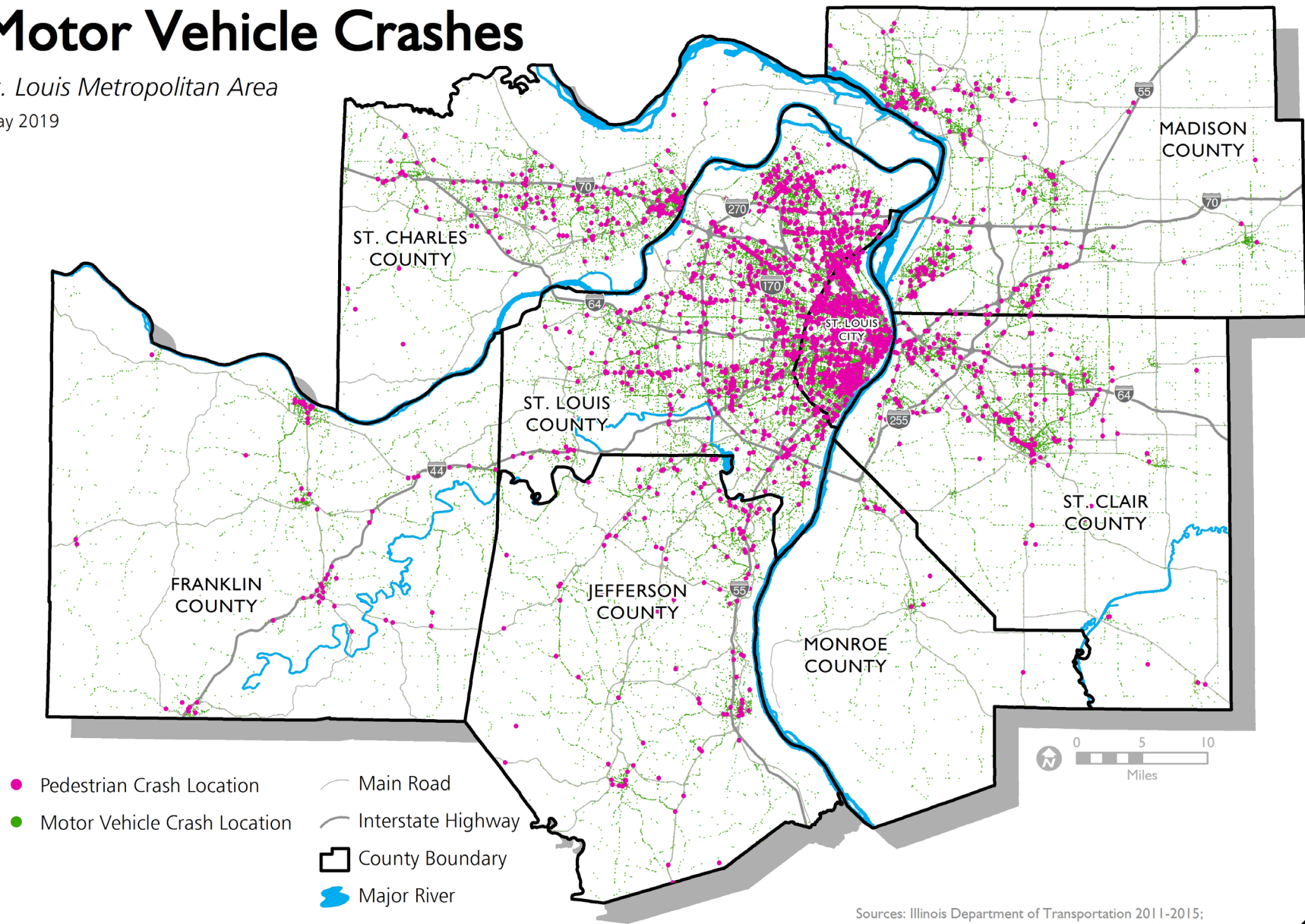
Source: IDOT, MoDOT, FHWA

Map 23:

Pedestrian Crashes with Motor Vehicle Crashes

St. Louis Metropolitan Area

May 2019



Sources: Illinois Department of Transportation 2011-2015;
Missouri Department of Transportation 2011-2015;
East-West Gateway Council of Governments


EAST-WEST GATEWAY
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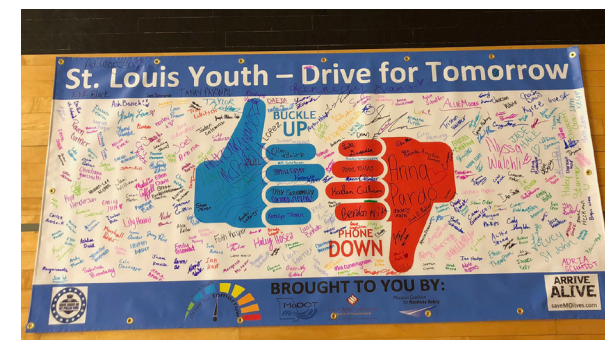
St. Louis Youth—Drive for Tomorrow

Traffic crashes are the leading cause of death among youth in Illinois and Missouri—between 2012 and 2014, 369 people lost their lives in Missouri traffic crashes involving a teen driver and 410 people died in Illinois traffic crashes involving a teen driver.

These early years are of particular concern because of driver inexperience and the high frequency of risky behaviors such as speeding, distracted and drowsy driving, alcohol/drug use, and failing to use safety belts.

Although only comprising approximately 8 percent of Missouri licensed drivers, young drivers were involved in nearly 20 percent of fatal and serious injury crashes during 2015-2017.³ In Illinois, young drivers involved fatalities and serious injuries represent 20 percent of overall fatalities and serious injuries.⁴

EWG, the Missouri Coalition for Roadway Safety and the Missouri Department of Transportation partnered together to create a teen driver program—St. Louis Youth—Drive For Tomorrow—which promotes safe driving habits to teenagers in the Missouri portion of the St. Louis region through presentations and activities. The mission of this program is to show young drivers in the region how easily one bad decision behind the wheel can change their life forever. The program also hopes to energize the students to continue to live a life of safe driving after the day-long program is completed.



³ Missouri's Blueprint, A Partnership Toward Zero Deaths.

⁴ Illinois Strategic Highway Safety Plan 2017.

Chapter 8: Reliability



Roadway Congestion and System Reliability

Roadway congestion occurs in all urban areas, but over the past 20 years congestion in a majority of large metropolitan regions has increased despite growth in roadway miles per capita.¹ Current trends indicate that congestion will continue to increase, as will associated costs such as lost productivity, accidents, and environmental damage. Nationwide, it is estimated that in one year 6.9 billion hours are spent in congested traffic, burning 3.1 billion gallons of fuel—this works out to an estimated \$160 billion per year in costs to U.S. residents and businesses. In 2014, on average, each person commuting to work in urban areas of the United States spent an extra 42 hours travelling due to congestion and used an extra 19 gallons of gasoline, an estimated cost of \$960 per commuter.²

This chapter includes several measures that are used to gauge roadway congestion and the reliability of the transportation system. One measure, the travel time index, focuses on recurring congestion, which accounts for less than half of all congestion. Most of the other measures focus on the reliability of the system, accounting for recurring as well as nonrecurring congestion. Nonrecurring congestion—delays due to incidents such as construction, accidents, and weather—accounts for an estimated 55 percent or more of congestion in large urban areas.³

Comparing data for the 50 most populous U.S. MSAs, this chapter shows that St. Louis is one of the least congested regions in the nation. The region's Congestion Management Process (CMP) outlines ways in which agencies in St. Louis are working together to alleviate some of the congestion experienced in the region, but in a large metropolitan area congestion will never be completely eliminated. The region's Interstate and major arterial network can be seen on **Map 24**.

Travel Time Index (TTI) is a measure of the average congestion that a person can expect to encounter during the periods of heaviest traffic volume. TTI measures the recurring congestion caused by traffic volumes that exceed roadway capacity. This kind of congestion is predictable and influences choices that people and businesses make about where to live, work, and locate a business. It also affects individual decisions about when to drive, as well as business decisions about when to move freight. TTI is the ratio of travel time in the peak period (rush hours) to the travel time in freeflow conditions.

Among the peer regions, St. Louis has one of the lowest levels of congestion on Interstates in both the morning and evening rush hours. Residents and truck drivers in St. Louis can expect a trip to take an average of 15 percent longer during morning rush hours than it would during a non-congested time of the day and 22 percent longer in evening rush hours. A trip that would take 30 minutes when there is no traffic will take about 35 minutes when travelling between 6 and 9 a.m. and about 37 minutes when travelling between 4 and 7 p.m.

Tables 28 and 29 compare the TTI for St. Louis with that of Los Angeles, the most congested region, and with Chicago, the most congested among the peer Midwest regions. During evening rush hours (4 to 7 p.m.), a drive that would take 30 minutes during free flow time will take an additional 6.6 minutes in St. Louis, 13.5 minutes in Chicago, and 40.2 minutes in Los Angeles. St. Louis is the 20th most populous region in the country, but it has one of the lowest rates of congestion.

Planning Time Index (PTI), displayed in **Tables 30 and 31**, is similar to TTI but it takes into account both typical and inconsistent traffic delays. Therefore, in addition to recurring congestion levels, PTI measures non-recurring congestion caused by unforeseen incidents including accidents, construction, and other variations from typical system performance. PTI considers non-everyday congestion to determine the amount of time a person should allow in order to be on time at least 95 percent of the time and it indicates the consistency and dependability of a region's highway system as well as how quickly incidents are addressed. For St. Louis, the PTI is not much different than the TTI, meaning that people and companies do not encounter many unexpected traffic delays relative to people in other large metropolitan regions.

For both morning and evening rush hours, St. Louis has one of the lowest levels of congestion with the least amount of atypical congestion delays on Interstates based on the PTI. A resident in St. Louis whose drive to work is 30 minutes when traffic is free-flowing, should plan on 43 minutes in the morning and 48 minutes in the evening to ensure an on-time arrival 95 percent of the time.

Most of the peer Midwest regions have lower levels of congestion than the average of all of the peers, with Minneapolis and Chicago as exceptions. Both regions have slightly higher PTI scores than the average of the peers. To be on time, a resident in Minneapolis should plan on a 30 minute trip taking 56 minutes in the morning and 72 minutes in the evening.

1 <https://www.brookings.edu/blog/the-avenue/2015/08/27/rethinking-urban-traffic-congestion-to-put-people-first/>

2 2015 Urban Mobility Scorecard
<https://static.tti.tamu.edu/tti.tamu.edu/documents/mobility-scorecard-2015.pdf>

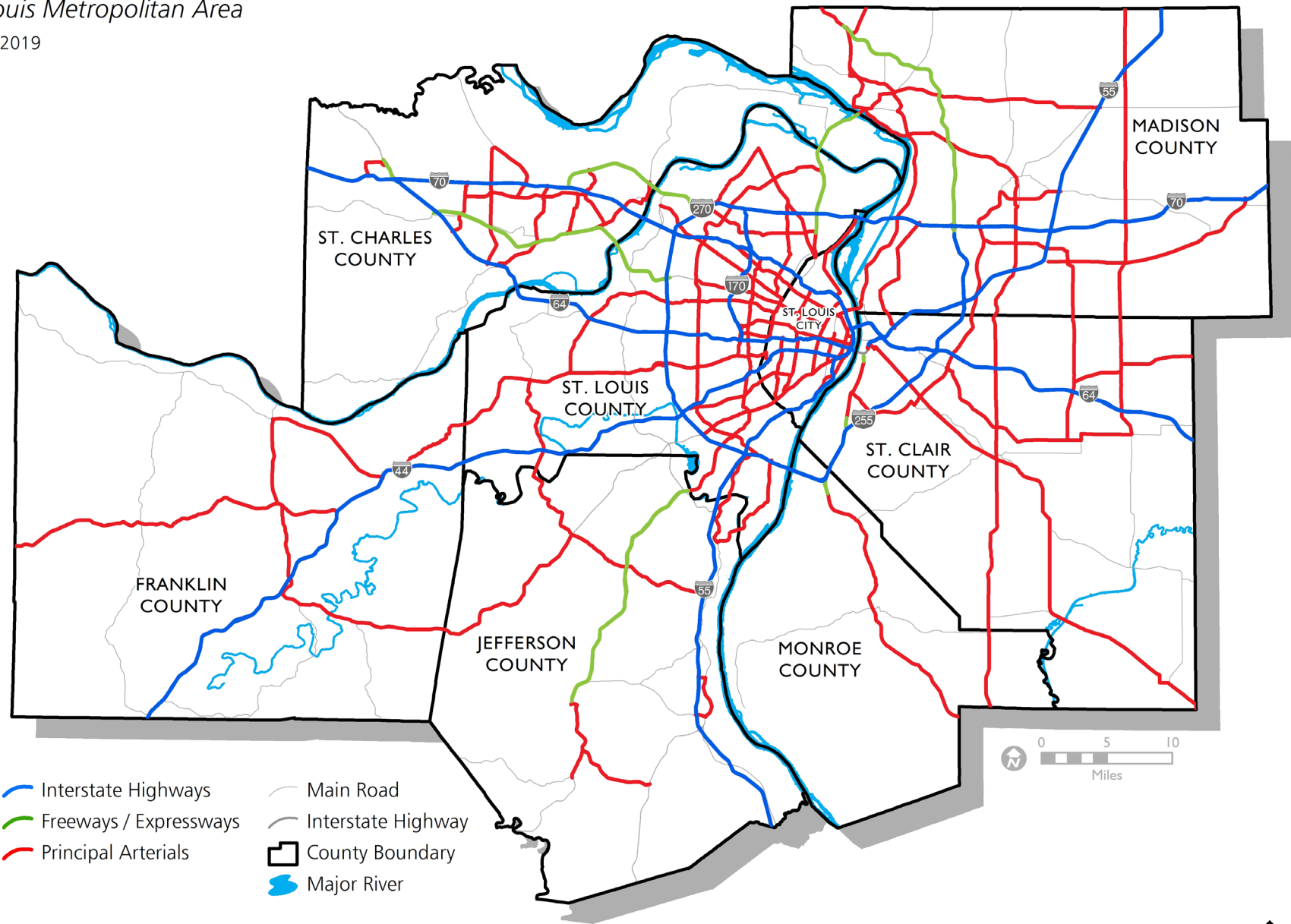
3 Road Traffic Congestion: A Concise Guide
Falcocchio, John C. (et al.)

Map 24:

Highways and Principal Arterials, 2019

St. Louis Metropolitan Area

March 2019



Source: East-West Gateway Council of Governments


EAST-WEST GATEWAY
Council of Governments

Table 28
Travel Time Index

Morning Rush Hour (6 To 9 Am), 2016		
1	Los Angeles	1.88
2	San Francisco	1.64
3	San Jose	1.57
4	Boston	1.50
5	Seattle	1.48
6	Washington, D.C.	1.46
7	New York	1.44
7	Philadelphia	1.44
7	San Diego	1.44
10	Miami	1.42
10	Portland	1.42
12	Orlando	1.41
13	Austin	1.39
14	Baltimore	1.38
14	Houston	1.38
16	Denver	1.36
16	Virginia Beach	1.36
18	Chicago	1.31
Peer Average		1.30
19	Atlanta	1.30
20	Dallas	1.29
21	Pittsburgh	1.28
21	Tampa	1.28
23	Detroit	1.27
23	Milwaukee	1.27
23	Minneapolis	1.27
23	Riverside	1.27
27	Raleigh	1.25
27	Sacramento	1.25
29	Jacksonville	1.24
29	Nashville	1.24
31	Buffalo	1.23
31	Charlotte	1.23
31	Hartford	1.23
31	Providence	1.23
35	New Orleans	1.22
35	Phoenix	1.22
37	Las Vegas	1.21
37	San Antonio	1.21
39	Cleveland	1.19
40	Cincinnati	1.17
40	Kansas City	1.17
40	Oklahoma City	1.17
40	Salt Lake City	1.17
44	Louisville	1.16
44	Memphis	1.16
46	Birmingham	1.15
46	Columbus	1.15
46	Richmond	1.15
46	St. Louis	1.15
50	Indianapolis	1.13

Source: Federal Highway Administration,
National Performance Management
Research Data Set

Data is for truck and passenger vehicles.
For weekdays only.

Table 29
Travel Time Index

Evening Rush Hour (4 to 7 pm), 2016		
1	Los Angeles	2.34
2	San Jose	2.23
3	San Francisco	2.04
4	Orlando	1.85
5	Portland	1.80
6	Seattle	1.74
7	Austin	1.71
8	San Diego	1.69
8	Washington, D.C.	1.69
10	Boston	1.66
11	Philadelphia	1.64
12	Miami	1.61
13	Houston	1.60
14	New York	1.59
15	Virginia Beach	1.57
16	Baltimore	1.48
17	Denver	1.47
18	Atlanta	1.46
Peer Average		1.45
19	Chicago	1.45
20	Dallas	1.42
20	Minneapolis	1.42
22	Tampa	1.41
23	Charlotte	1.36
23	Detroit	1.36
23	Pittsburgh	1.36
26	Hartford	1.35
26	Milwaukee	1.35
28	New Orleans	1.34
29	Nashville	1.33
29	Raleigh	1.33
29	Sacramento	1.33
32	Providence	1.32
33	Buffalo	1.31
33	Riverside	1.31
33	San Antonio	1.31
36	Jacksonville	1.30
37	Las Vegas	1.28
38	Cincinnati	1.25
38	Columbus	1.25
38	Louisville	1.25
38	Phoenix	1.25
42	Oklahoma City	1.24
42	Salt Lake City	1.24
44	Cleveland	1.22
44	St. Louis	1.22
46	Kansas City	1.21
46	Memphis	1.21
48	Birmingham	1.19
49	Indianapolis	1.17
49	Richmond	1.17

Source: Federal Highway Administration,
National Performance Management
Research Data Set

Data is for truck and passenger vehicles.
For weekdays only.

Table 30
Planning Time Index

Morning Rush Hour (6 to 9 am), 2016		
1	Los Angeles	3.25
2	San Francisco	2.79
3	San Jose	2.73
4	Boston	2.51
5	Seattle	2.33
6	Washington, D.C.	2.28
7	Portland	2.22
8	Miami	2.18
8	New York	2.18
10	San Diego	2.16
11	Orlando	2.15
11	Philadelphia	2.15
13	Baltimore	2.08
14	Houston	2.04
14	Virginia Beach	2.04
16	Austin	1.98
17	Denver	1.96
18	Minneapolis	1.87
19	Chicago	1.86
20	Dallas	1.83
Peer Average		1.83
21	Milwaukee	1.82
22	Atlanta	1.76
22	Detroit	1.76
24	Raleigh	1.71
24	Riverside	1.71
24	Tampa	1.71
27	Pittsburgh	1.70
28	Buffalo	1.67
28	Nashville	1.67
30	Charlotte	1.65
30	Hartford	1.65
32	Jacksonville	1.64
33	Providence	1.63
34	Sacramento	1.62
35	San Antonio	1.59
36	New Orleans	1.57
37	Cleveland	1.55
38	Cincinnati	1.48
38	Phoenix	1.48
40	Las Vegas	1.47
41	Columbus	1.44
41	Kansas City	1.44
43	Louisville	1.43
44	St. Louis	1.42
45	Salt Lake City	1.41
46	Oklahoma City	1.39
47	Memphis	1.38
48	Birmingham	1.37
49	Richmond	1.33
50	Indianapolis	1.32

Source: Federal Highway Administration,
National Performance Management
Research Data Set

Data is for truck and passenger vehicles.
For weekdays only.

Table 31
Planning Time Index

Evening Rush Hour (4 to 7 pm), 2016		
1	Los Angeles	4.17
1	San Jose	4.17
3	San Francisco	3.57
4	Orlando	3.53
5	Portland	3.33
6	Seattle	3.12
7	Boston	2.98
8	Washington, D.C.	2.87
9	San Diego	2.85
10	Philadelphia	2.77
11	Virginia Beach	2.74
12	Austin	2.67
13	Houston	2.65
14	Miami	2.63
15	New York	2.54
16	Baltimore	2.41
17	Minneapolis	2.39
18	Chicago	2.27
19	Denver	2.26
Peer Average		2.25
20	Dallas	2.22
21	Atlanta	2.21
22	Tampa	2.18
23	Detroit	2.13
24	Milwaukee	2.08
25	Pittsburgh	2.04
26	Charlotte	2.03
27	Hartford	2.02
28	New Orleans	1.99
29	Buffalo	1.96
30	Providence	1.95
30	Raleigh	1.95
32	Nashville	1.92
33	Sacramento	1.86
33	San Antonio	1.86
35	Riverside	1.82
36	Jacksonville	1.81
37	Louisville	1.80
38	Columbus	1.79
39	Cincinnati	1.74
40	Oklahoma City	1.69
41	Las Vegas	1.67
42	Cleveland	1.64
42	Salt Lake City	1.64
44	Kansas City	1.59
44	St. Louis	1.59
46	Phoenix	1.58
47	Memphis	1.54
48	Indianapolis	1.50
49	Birmingham	1.49
50	Richmond	1.43

Source: Federal Highway Administration,
National Performance Management
Research Data Set

Data is for truck and passenger vehicles.
For weekdays only.

Travel Time Reliability is the percentage of person-miles traveled on roads that are considered reliable. Roadways are considered reliable when travel time varies little between free-flow and congested times of the day, the ratio of the 80th percentile travel time of a reporting segment to a normal/50th percentile travel time.⁴

The travel time reliability tables compare data from 50 peer regions, and for both Interstate and non-Interstate roadways, the St. Louis region ranks among the least congested regions. On Interstates in the St. Louis region, 82.4 percent of person-miles traveled were reliable, indicating that congestion is relatively low on many of the region's highways, even in the more dense areas of the region and that people and goods can move efficiently throughout the region.

Table 32 and **Table 33** show that on both Interstates and non-Interstates, a larger proportion of miles traveled are done so on reliable roads in St. Louis than on average for the peer regions.

Figure 46 examines TTI trends for St. Louis region and the peer group as a whole. The trend shows TTI gradually rising in St. Louis through 2009, then holding steady, while increasing in peer regions over that time (with the exception of the economic downturn around 2009). This indicates consistently lower levels of congestion in the St. Louis region relative to peer regions throughout the country over time.

Table 32

Interstate Travel Time Reliability

Percent of person-miles traveled on Interstates that are reliable, 2016

1	Kansas City	88.6
2	Cleveland	88.3
3	Pittsburgh	88.1
4	Memphis	87.2
5	Virginia Beach	83.7
6	Providence	83.0
7	St. Louis	82.4
8	Milwaukee	77.9
9	Columbus	77.0
10	Cincinnati	76.8
11	Las Vegas	75.7
12	San Antonio	72.7
12	Tampa	72.7
14	New York	72.2
15	Salt Lake City	71.9
16	Charlotte	71.1
17	Riverside	69.8
18	Philadelphia	69.3
19	Detroit	68.8
20	Jacksonville	68.7
21	Miami	68.3
Peer Average		67.0
22	Atlanta	66.9
23	Sacramento	65.3
24	Baltimore	64.5
25	Minneapolis	64.2
26	Chicago	63.5
27	Orlando	63.1
28	Dallas	62.9
29	San Diego	61.1
30	Austin	59.0
31	Boston	58.7
32	Denver	56.0
33	Washington, D.C.	54.1
34	San Francisco	49.2
35	Houston	48.7
36	Portland	48.4
37	Seattle	47.5
38	Phoenix	47.2
39	San Jose	45.7
40	Los Angeles	41.1

Source: Federal Highway Administration, National Performance Management Research Data Set. Data is for urbanized areas.

Table 33

Non-Interstate Travel Time Reliability

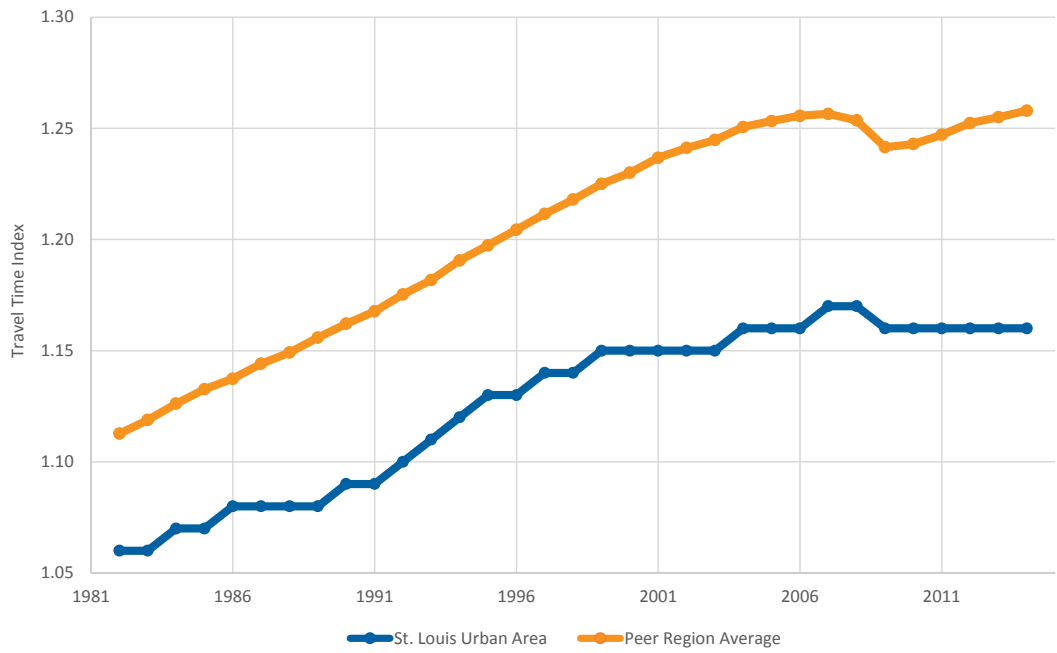
Percent of person-miles traveled on non-Interstates that are reliable, 2016

1	Kansas City	71.5
2	Minneapolis	69.6
3	Orlando	64.3
4	Providence	60.0
5	Memphis	59.6
6	St. Louis	59.1
7	Jacksonville	58.8
7	Riverside	58.8
9	Tampa	58.6
10	Virginia Beach	58.4
11	Milwaukee	57.7
12	Columbus	56.1
13	Baltimore	55.7
14	Philadelphia	55.5
15	Phoenix	55.2
16	New York	54.8
17	Las Vegas	53.3
18	San Diego	53.0
19	Atlanta	52.9
20	Chicago	51.7
21	Washington, D.C.	51.6
Peer Average		51.0
22	Cincinnati	50.9
23	Pittsburgh	49.7
24	Boston	49.6
25	Denver	48.5
26	Charlotte	47.2
27	San Antonio	46.7
28	Cleveland	46.6
29	Houston	46.2
30	Sacramento	45.2
31	San Jose	44.4
32	Austin	44.0
33	Portland	41.9
34	Detroit	41.3
35	Miami	39.1
36	Dallas	38.6
37	Seattle	38.3
38	Salt Lake City	37.7
39	San Francisco	37.4
40	Los Angeles	30.2

Source: Federal Highway Administration, National Performance Management Research Data Set. Data is for urbanized areas.

⁴ Travel Time Reliability: Making It There On Time, All The Time
https://ops.fhwa.dot.gov/publications/tt_reliability/TTR_Report.htm

Figure 46: Travel Time Index Trend, 1982-2014



Source: Texas Transportation Institute, Urban Mobility Report

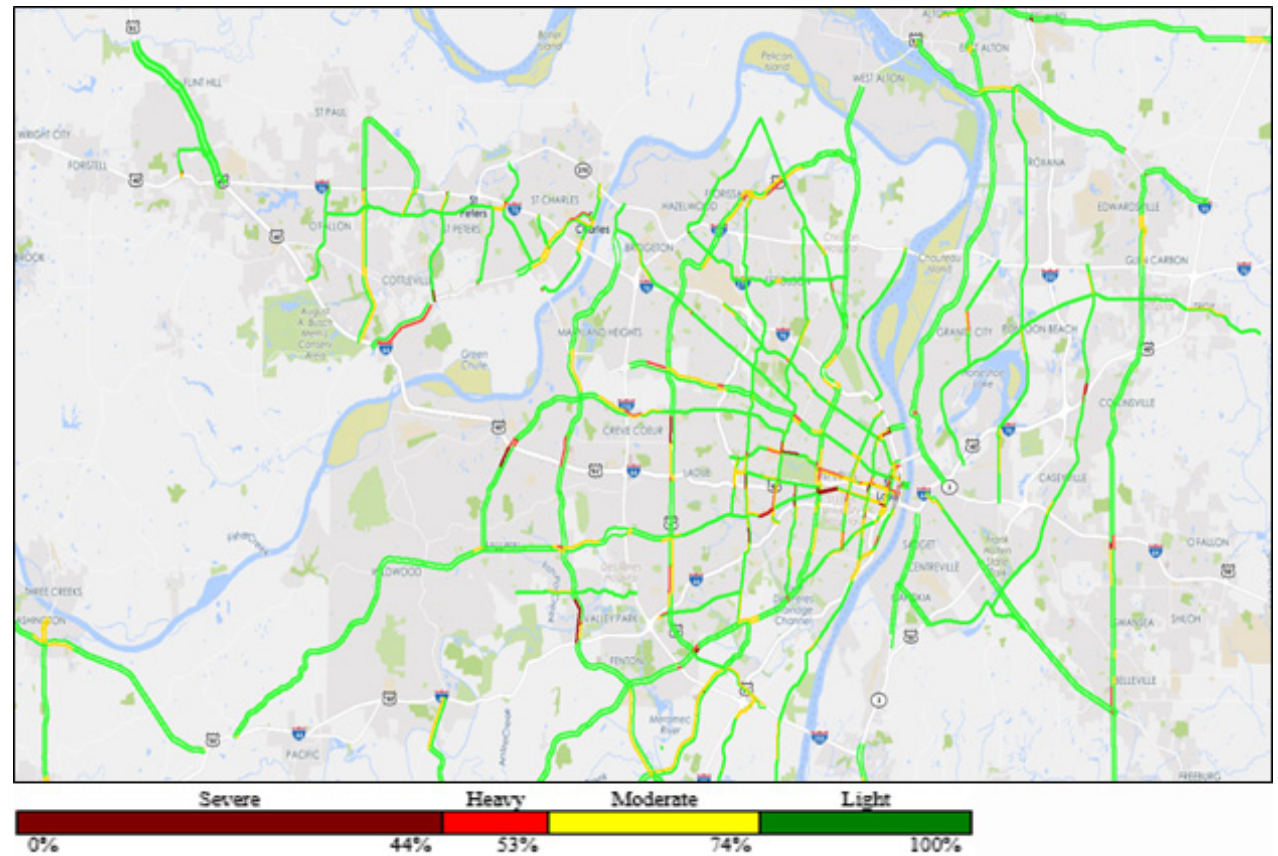


Congested Corridors

As part of the Region's Congestion Management Process (CMP) a Regional Congestion Report is developed each year. The purpose of this report is to identify and rank congested locations on the region's transportation system. The data in the report is intended to be used to develop strategies for managing and reducing congestion in the region.

The process of identifying the congested network for the Annual Regional Congestion Report involves a detailed visual inspection of Speed Index congestion on all National Highway System (NHS) roadways in the region as depicted on the NHS map. This index is the ratio of average speeds to speeds in uncongested conditions. Four thresholds are applied to the Speed Index to reveal the various categories of congestion for both arterials and freeways. For the purposes of this report, the morning peak-period is from 6 a.m. to 9 a.m. and the evening peak-period is from 3 p.m. to 6 p.m. **Maps 25 and 26** show distribution of typical congestion in the evening peak-hour on the monitored network.

Map 25: Spatial Distribution of Congested Arterial Locations (5-6 p.m.)



Regional congestion, tracked through the regional congestion management process (CMP), is most acute during evening peak periods for both arterials and freeways. Facilities that comprise the CMP network are identified on an annual basis—travel patterns, growth, and construction may influence which roadways meet the regionally-identified definition of “congested” in any given year. Both Interstates and arterials have largely maintained their levels of congestion over peak periods, despite significant changes in congested miles as identified through the CMP process. **Figure 47** depicts changes in regional congestion between 2015 and 2017.

Map 26: Spatial Distribution of Congested Freeway Locations (5-6 p.m.)

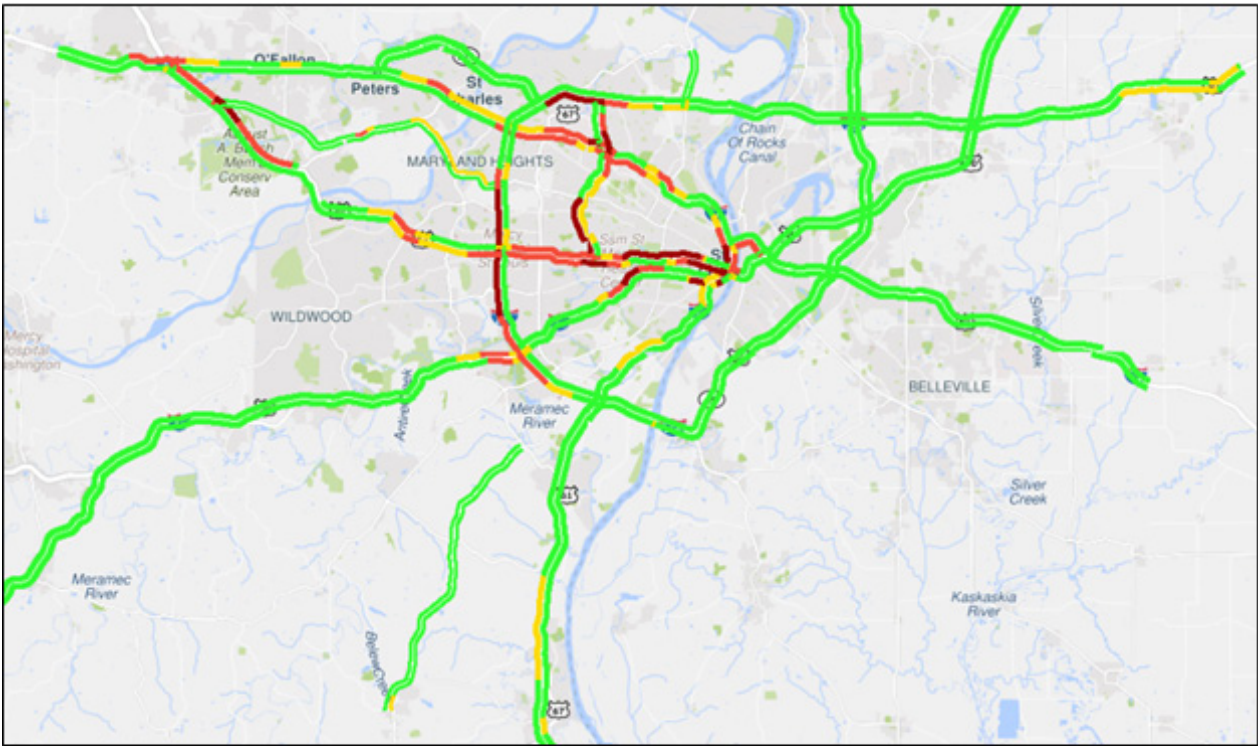
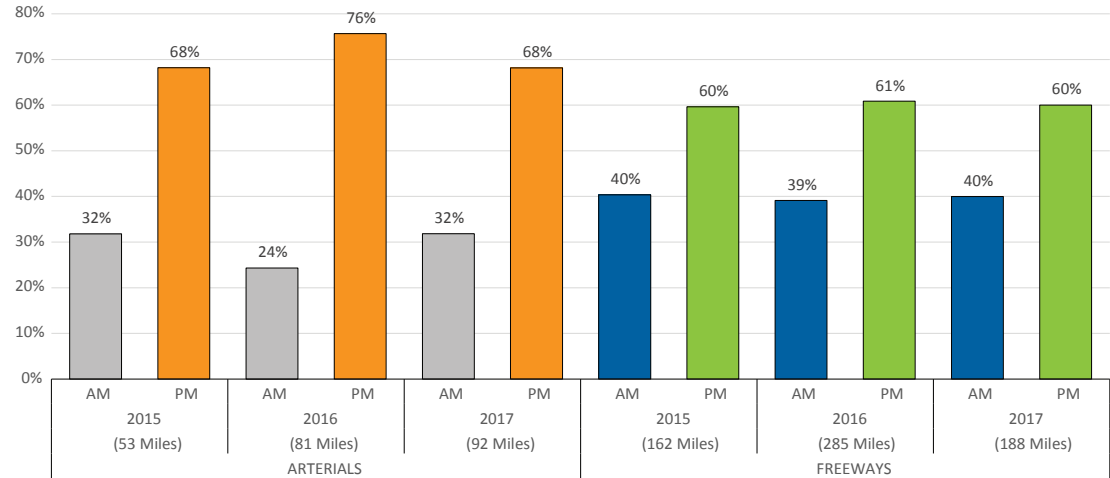


Figure 47: Changes in Regional Congestion, 2015 to 2017



Tables 34 and 35 show the congestion hot spots in the region identified in the 2017 Annual Congestion Report. The congested locations are ranked based on severity of congestion. The full report also ranks them based on variability of congested travel time and impact to motorists.

The complete congestion reports can be found at:
<https://www.ewgateway.org/transportation-planning/transportation-systems-management-operations/congestion-management-process/>.

Table 34: Top 10 Severely Congested Arterials, 2017

No.	Route	Limits	Direction	State	Peak	Queue Length	PTI	TTI	Severity
1	MO-100	Vandeventer to Kingshighway	WB	MO	PM	0.96	4.50	3.01	3.76
2	Skinker	Forest Park Pky to Delmar	SB	MO	PM	0.43	5.00	2.28	3.64
3	Salisbury St	N Florissant Ave to I-70	EB	MO	PM	0.49	3.66	2.30	2.98
4	MO-100	Big Bend to McCausland	EB	MO	PM	0.83	3.25	2.61	2.93
5	Hampton Ave	I-64/US-40 to I-44	SB	MO	PM	1.02	3.62	1.95	2.79
6	Hanley	Shaw Park Dr to I-64/US-40/Eager Rd	SB	MO	PM	1.30	3.56	1.64	2.60
7	Laclede St Rd	Union Pacific to Murdoch	SB	MO	PM	1.10	3.26	1.69	2.48
8	MO-141	Big Bend to I-44	SB	MO	PM	1.88	3.23	1.68	2.46
9	Kingshighway	Laclede Ave to Manchester	SB	MO	PM	1.07	2.86	1.80	2.33
10	Jefferson	Washington Blvd to Park Ave	SB	MO	PM	1.23	2.89	1.70	2.30

Table 35: Top 10 Severely Congested Freeways, 2017

No.	Route	Limits	Direction	State	Peak	Queue Length	PTI	TTI	Severity
1	I-64	Kingshighway/Exit 36 to I-55/I-70/US-40	EB	MO	PM	4.46	5.10	2.44	3.77
2	I-44/I-55	Grand Ave/Exit 247 to I-44/I-55/Gravois/Exit 207	EB-SB	MO	PM	3.84	4.19	2.11	3.15
3	I-170	I-64 to MO-D	SB	MO	PM	4.18	3.64	1.82	2.73
4	I-44	Hampton/Exit 286 to Shrewsbury/Exit 283	WB	MO	PM	2.92	3.39	1.65	2.52
5	I-270	I-55/I-255/Exit 1 to MO-100/Manchester Rd./Exit 9	NB	MO	AM	10.00	3.06	1.58	2.32
6	I-64, I-55/I-64	Baugh Ave. to Poplar St Bridge	WB	IL	AM	4.12	3.11	1.43	2.27
7	I-270	McDonnell Blvd/Exit 23 to Elizabeth-Washington St/Exit 28	EB	MO	PM	5.40	2.86	1.60	2.23
8	I-64	Kingshighway/Exit 36 to I-170/Brentwood Blvd/Exit 31	WB	MO	AM	5.52	2.76	1.46	2.11
9	I-270	I-70 to I-55/I-255/Exit 1	SB	MO	PM	21.00	2.71	1.51	2.11
10	I-64	MO-K to I-70	WB	MO	PM	10.00	2.59	1.33	1.96

St. Louis Regional ITS Architecture Update

EWG updated the Intelligent Transportation System (ITS) Architecture for the St. Louis Metropolitan Region in 2015. The Architecture provides a framework for the planning and development of technology projects that improve the safety and efficiency of travel in the region. This framework complements EWG's Long-Range Transportation Plan and CMP, and identifies a series of ITS projects that will further public mobility and safety through expanded collection and exchange of transportation network information, along with improved coordination between transportation agencies.

The Architecture development process was focused on both deriving an operational strategy that fits within the context of the regional transportation vision and identifying the framework by which it is implemented. The ITS architecture provides such a framework, in which multiple systems, subsystems, and stakeholders can work together to implement a regional transportation and mobility vision.

The ITS architecture framework (**Figure 48**) is based on the National ITS Architecture and is comprised of two technical layers, a Transportation Layer and a Communication Layer, which must operate in the context of a third layer, called an Institutional Layer.

- The **Communications Layer** provides for the accurate and timely exchange of information between systems to support the transport solutions.
- The **Transportation Layer** is where the transportation solutions are defined in terms of the subsystems and interfaces and the underlying functionality and data definitions that are required for each transportation service. This layer is the heart of the ITS Architecture.

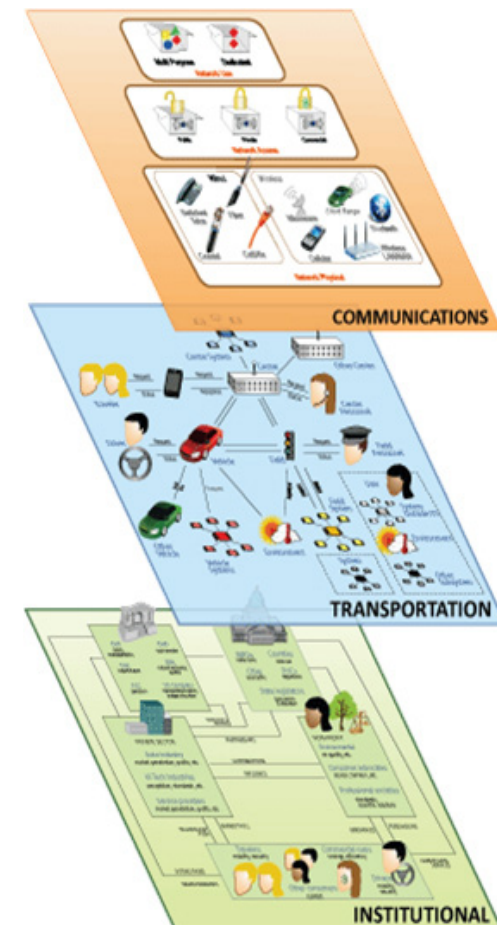
- The **Institutional Layer** includes the institutions, policies, funding mechanisms, and processes that are required for effective implementation, operation, and maintenance of an intelligent transport system. The Institutional Layer is shown as the base because solid institutional support and effective decisions are prerequisite to an effective ITS program. This is where the ITS objectives and requirements are established.

The regional ITS stakeholders defined for this ITS Architecture Update effort represented the full range of public entities in the St. Louis area. At the same time, much of the ITS deployment to date has been focused on work done or led by the following agencies:

- Missouri Department of Transportation (MoDOT), St. Louis District
- St. Louis City, Department of Streets, Traffic Division
- St. Louis County, Department of Highways and Traffic
- St. Charles County, Transportation Department
- Illinois Department of Transportation (IDOT), District 8
- Metro Transit (Bi-State Development)

Various county and municipal representatives as well as police, fire, and rescue staff, along with St. Louis-Lambert International Airport, were invited by EWG to participate in this process, and contributed greatly to the discussions resulting in both the Regional ITS Architecture and Strategic Deployment Plan. U.S. Department of Transportation representatives from the Federal Highway Administration (FHWA) also served as partners in this effort.

Figure 48: Three-Layer View of an ITS Architecture



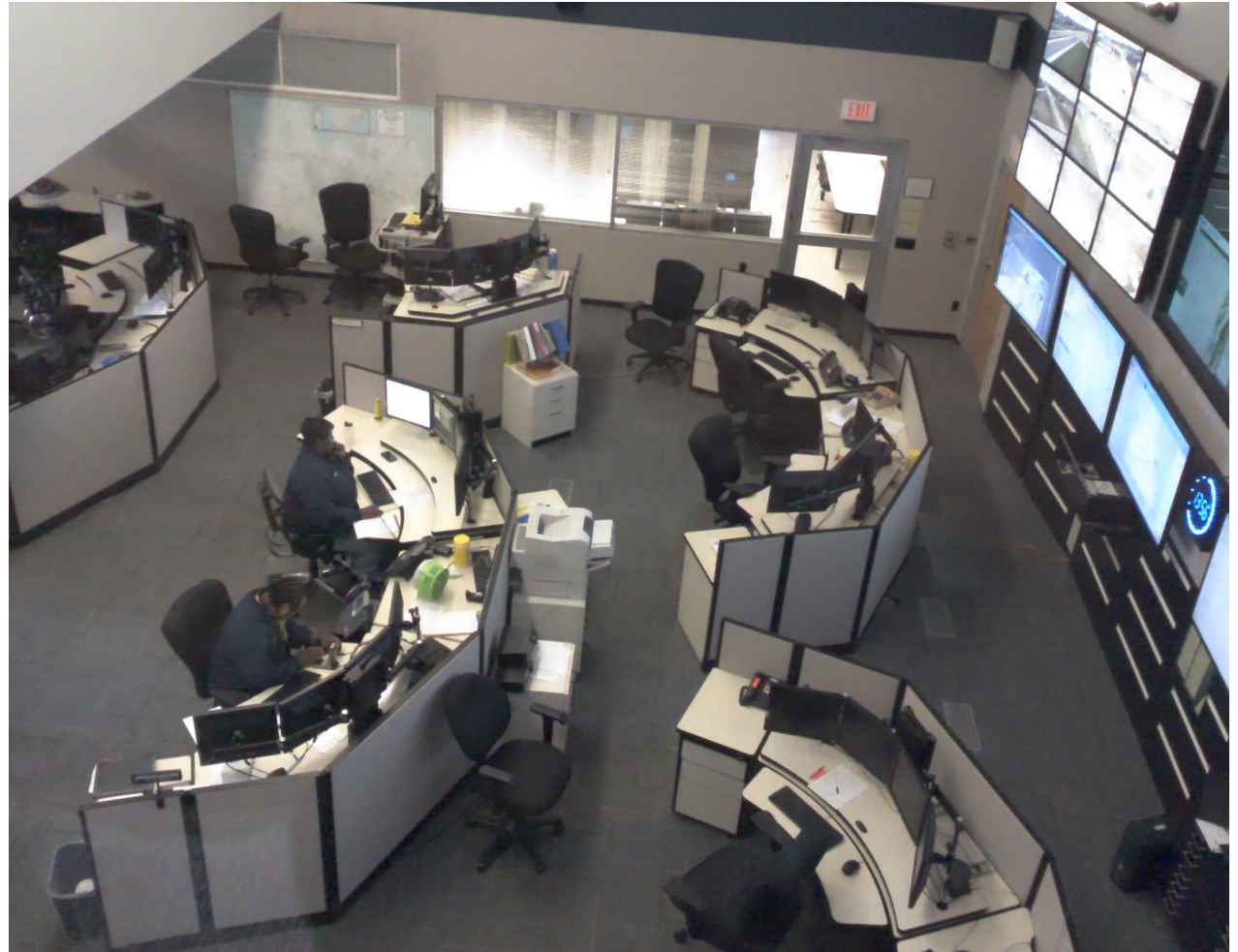
The Regional ITS Architecture was built on a strong infrastructure established by MoDOT and IDOT, with key initiatives led by St. Louis and St. Charles counties, the city of St. Louis and Metro Transit. Key components of existing infrastructure included various components such as operations centers, traffic flow detection, closed-circuit television (CCTV) cameras, dynamic message signs (DMS), road weather information systems (RWIS), central computerized traffic signal control systems, and fiber optic communications, along with real-time information available via dedicated agency web sites.

The end products of the update are a Regional ITS Architecture and a Strategic Deployment Plan that defines the way forward in deploying ITS in the St. Louis region. The full build-out of the Regional ITS Architecture will occur through many individual ITS projects that will be implemented over the next five to 10 years. The first step in the deployment process was to identify projects as a subset of the larger ITS vision, taking into consideration current services, coordination issues and opportunities, as well as the future ITS services. The proposed projects are broken down into incremental activities required to deploy the operational concept for the St. Louis region. They are based on three levels of ITS initiatives:

TIER 1 (Regional Integration) projects will support regional coordination, cooperation and multimodal traveler information, as well as efforts to standardize and share traffic incident, event and emergency information

TIER 2 (Integrated Corridor Management) projects will represent integrated corridor operational strategies that may also be multi-modal in nature. They may impact one or more Interstate corridors as well as multiple travel modes within a particular corridor or sub-area.

TIER 3 (Basic System Operations and Infrastructure) projects will improve or expand upon internal traffic or transit operations activities for a particular stakeholder, and will support roadway infrastructure needs where



required for eventual deployment of Connected Vehicle infrastructure. Additional details on the ITS Architecture Update can be found at <http://www.ewgateway.org/trans/ITS/ITS.htm>.

Since its implementation the ITS architecture has been used to guide the further development and implementation of the regional ITS system. This includes the ongoing expansion of a robust ITS communication network across the region, which is key to the eventual implementation of advanced transportation management

technologies that currently exist and continue to be improved. These include “big data” capabilities, connected vehicle technology and autonomous vehicle technology. The continued development of our regional ITS system will leave the region well prepared to implement these technologies in the future.



Chapter 9: Freight



Freight

Trends & Analysis

The Nation's 125.8 million households, nearly 7.7 million businesses, and 90,000 units of government are all part of an economy that demands the efficient movement of freight. Freight transportation has grown steadily over time with population growth and the expansion of economic activity within the United States and with the increasing interdependence of economies across the globe. The U.S. population grew by 14.5 percent between 2000 and 2016, climbing to 323 million in 2016. The U.S. economy, measured by gross domestic product (GDP), increased by 32.7 percent in real terms (inflation adjusted) over the same period. Foreign trade grew faster than the overall economy, reflecting unprecedented global interconnectivity.

In 2015 the U.S. transportation system moved a daily average of about 49.3 million tons of freight valued at more than \$52.5 billion. The Freight Analysis Framework estimates show that the tonnage of goods moved in 2015 fully rebounded from the declines experienced during the December 2007–June 2009 economic recession and tonnage is projected to increase at about 1.4 percent per year between 2015 and 2045. The St. Louis region ranks 14th in the nation on freight value going to, from, or through the region; this is the highest value among the peer regions not located in a state with a port for oceangoing vessels. Another of the region's advantages in freight and logistics is the reliability of its surface transportation network—St. Louis ranks 7th on interstate travel time reliability, which is defined as the percentage of person-miles travelled on Interstates that are deemed reliable, based on the ratio of travel time between the most and least congested times of the day.

Truck Travel Time Reliability

Truck Travel Time Reliability (TTTR) is a measure that indicates the reliability of travel time for trucks on the Interstate system. The idea is to compare days with extremely high delay to days with average delay.

To determine the reliability of a segment, a Truck Travel Time Reliability measure is calculated as the ratio of the longer travel times (95th percentile) to a "normal" travel time (50th percentile). The TTTRs of Interstate segments are then used to create the TTTR Index for the entire Interstate system using a weighted aggregate calculation for the worst performing times of each segment

The index can also be used to evaluate the performance of the system relative to other regions. The St. Louis region ranks 39th among peer regions, indicating that the highway system is reliable for moving freight compared to most other regions, with the notable exception being other Midwest peer regions that also experience relatively low levels of congestion (**Table 36**).

This is an attractive aspect of the St. Louis region since congestion inflicts a cost burden on businesses. Nationwide, trucks comprise approximately 7 percent of traffic but account for 17 percent of the estimated cost of congestion experienced in the United States. This amounts to \$28 billion in costs to companies that could be reduced by traveling in and through less congested areas.¹

Table 36:

Truck Travel Time Reliability Index

2017

1	Seattle	3.15
2	Washington, D.C.	2.88
3	Portland	2.77
4	Oklahoma City	2.62
4	Orlando	2.62
6	San Francisco	2.60
7	Los Angeles	2.53
8	San Jose	2.48
9	Houston	2.36
10	Minneapolis	2.34
10	San Diego	2.34
12	New York	2.29
13	Virginia Beach	2.26
14	Baltimore	2.25
14	Nashville	2.25
16	Miami	2.22
17	Boston	2.19
17	Denver	2.19
17	Phoenix	2.19
17	Sacramento	2.19
21	Austin	2.14
22	Atlanta	2.13
23	Detroit	2.11
Peer Average		2.10
24	Chicago	2.01
25	Cincinnati	1.99
26	Columbus	1.98
26	Dallas	1.98
28	Philadelphia	1.96
29	Riverside	1.95
30	Jacksonville	1.91
31	Providence	1.90
32	Charlotte	1.88
32	Salt Lake City	1.88
34	Tampa	1.87
35	Las Vegas	1.84
35	San Antonio	1.84
37	Milwaukee	1.78
38	Pittsburgh	1.68
39	St. Louis	1.67
40	Cleveland	1.65
41	Indianapolis	1.57
42	Kansas City	1.54
43	Memphis	1.39

Source: Federal Highway Administration,
National Performance Management
Research Data Set

Data is for urbanized areas.

¹ 2015 Urban Mobility Scorecard
<https://static.tti.tamu.edu/tti.tamu.edu/documents/mobility-scorecard-2015.pdf>.

Freight Workforce Trends

Consumers are placing a greater emphasis on faster and cheaper orders with flexible shopping and delivery options. With this emphasis, retailers need more warehouses in locations closer to population centers like the St. Louis region. Centrally located in the United States along the Mississippi River, the St. Louis region has six Class I railroads, four Interstates, two international cargo airports, and developable industrial land and buildings.

Among comparatively sized Midwestern cities, the St. Louis region has the largest number of workers employed in manufacturing, many in the top sectors of aerospace and motor vehicles. The availability of a strong workforce is among the factors fueling Amazon's growth in the region, the opening of General Motors' 1 million square foot third party logistics facility, expansion of Reckitt Benckiser's operations, as well as the addition of another 500,000 square foot FedEx facility.

St. Louis is one of the largest hubs of aerospace manufacturing in the country, supporting over 17,000 generally high-wage positions. Location quotients indicate that aerospace manufacturing is uniquely concentrated in St. Louis, with the third highest concentration of such activity in the country, behind only Wichita and Seattle.

St. Louis Regional Freightway

The St. Louis Regional Freightway (The Freightway) is an all-purpose authority for freight operations and opportunities within the St. Louis region. In response to recommendations made in the 2013 Saint Louis Regional Freight Study, EWG established this regional effort and continues to support its activities.

The Freightway further enhances the St. Louis region's standing as a premier international freight hub by coordinating regional freight development efforts and tightly connecting the private and public sectors while promoting the region's greatest freight and site selection strengths.

The Council

The Freightway Council is a group of leaders comprised of multi-modal representatives, regional public and private leadership, governmental representatives and corporate leaders, charged with optimizing the St. Louis region's freight investments and marketing regional freight opportunities. Eight of the council members represent the seven counties of the bi-state area along with the city of St. Louis, which collectively comprise The Freightway.

The Alliance

The Freightway Alliance is comprised of three committees: the Needs Analysis and Freight Development Plan Committee, the Marketing Committee, and the Policy Committee. Each committee is chaired by a Council member. The committees assist the Freightway executive director with making the St. Louis region a premier freight center in the Midwest through job and economic growth.

2019 Priority Freight Projects

With support from EWG, leaders in manufacturing, logistics, industrial real estate, all modes of transportation, economic development, and both MoDOT and IDOT, The Freightway has helped garner national recognition for the St. Louis region as a premier freight hub. It continues to build public-private partnerships to maximize infrastructure funding opportunities for the region's priority infrastructure projects. Those infrastructure priorities are updated every year by the Freight Development and Needs Analysis Committee. Project selection continues to be based on the following criteria: Economic Impact, Efficiency Impact, Multimodal Impact, Safety and Security in Travel.

In the fall of 2018, EWG endorsed the Freightway's multimodal project list, signifying the region's support of industry leaders working hand-in-hand with both IDOT and MoDOT to identify freight infrastructure priorities. This model allows private sector representatives to help public sector leaders understand how freight travels through the region's infrastructure and how efficient and reliable transportation impacts on-time delivery costs.

The 2019 list includes projects that have advanced to construction, projects that were recently submitted for both federal and state grant funding, and recently added projects. Projects advancing to construction include:

- Merchants Rail Bridge Replacement over the Mississippi River
- J.S. McDonnell Connector
- North Park access improvements
- Earth City access improvements projects
- Components of I-270 improvements from I-70 to IL 111.

The Freight Development Committee will continue to identify infrastructure funding opportunities through public-private partnerships that could be leveraged to advance additional priority projects. The committee will also identify high impact, low cost projects that help shippers and carriers improve service, making it possible to better predict on-time performance with greater accuracy and reducing transportation costs.

River

The St. Louis Regional port system includes both the Port of Metropolitan St. Louis and portions of the Port of Kaskaskia, IL. The Port of Metropolitan St. Louis is the third largest inland port in the United States and the seventh largest port for domestic tonnage. The region also includes the Port of Kaskaskia, IL, the eighth largest inland port in the United States for domestic tonnage.

The ports and barge industries within the St. Louis region are based centrally along the Mississippi River, within close proximity to America's agricultural heartland and major Midwest populations and manufacturing centers. The St. Louis region is served by the six North American Class I rail carriers, the regional switching carrier Terminal Railroad Association of St. Louis (TRRA), and other short line rail carriers. The region's cost-effective rail service and modal flexibility provide national reach, carrier reliability, reduced travel times, and competitive transportation costs.

The region is the northernmost lock and ice-free port on the Mississippi River and offers substantial fleeting operations. Approximately 105 million tons of cargo pass through the St. Louis region annually with 35 million tons crossing area docks. Port district operators and barge industry workers service high annual volumes of barges, while handling tons of fertilizer, steel, manufactured goods, coal, petroleum products, and agricultural commodities.

Rail

The St. Louis region is the third largest rail hub in the United States, linking six Class I, local, and short line railroads. The region serves all of the United States without the need for railroad interchange. St. Louis' barge/rail transload services provide supply-chain options for shipments to and from both Houston and New Orleans. These connections allow delivery of freight from Houston to St. Louis for distribution anywhere else. Additionally, agricultural products from points in the Midwest can be delivered to New Orleans for export.

The region's intermodal capabilities and rail proximity to customers and suppliers continue to play an important role in the region's distribution center and manufacturing growth rate. Rail freight shipments within the St. Louis region can be placed directly on the BNSF and Union Pacific (UP) railroads for westbound transport, or on the Norfolk Southern and CSX for shipments destined east of the Mississippi River.

TRRA is the local switching and terminal railroad that owns and operates the Merchants Bridge and MacArthur Bridge over the Mississippi River, the Madison Yard rail switching facility in Madison, IL, and several key railroad routes in the St. Louis region.

The Alton & Southern is a switching railroad under the ownership of UP that operates the Alton & Southern Gateway Yard, which is located east of Interstate 255 and north of the St. Louis Downtown Airport.

Road

The St. Louis region contains four Interstates that offer good connections to and from all of the bi-state area's warehouse and distribution parks, as well as ports on both sides of the Mississippi River (**Map 27**). The region's major Interstates reach cities and states across the country.

The St. Louis region's freeway system experiences significantly lower congestion than other similarly sized U.S. urban areas. In fact, in 2012, the St. Louis MSA had the lowest Travel Time Index of the Nation's 25 largest U.S. metro areas.

Aviation

The St. Louis region includes two international cargo airports (St. Louis-Lambert International Airport and MidAmerica St. Louis Airport) and several other regional airports with amenities beneficial to freight movement, including financial benefits from Foreign Trade Zones and Enterprise Zones, access to adjacent developable land, multiple modes of transportation, cold storage for perishable goods, and 24/7 operation 365 days a year, free of noise limitations.

America's Agriculture Coast

The world's population is expected to grow to more than 9 billion people by 2050, and the demand for food and other agricultural products is expected to increase dramatically. New technology and innovation in the agricultural sector, combined with an efficient distribution network, will be key to addressing this global need.

The St. Louis region's barge industry handles 500,000 tons per mile. Its closest competitors, the Port of Huntington-Tri-State in West Virginia and Ports of Cincinnati-Northern Kentucky, ranked second and third respectively, moving more than 200,000 tons per river mile, making the St. Louis region 2-1/2 times more efficient with its river usage than its closest competitors.

This means that the St. Louis region's ports and river terminals capture one-third of all freight traffic along the section of the Mississippi River from Minneapolis to the Ohio River near Cairo, Ill. The 70-mile St. Louis regional port system represents 8 percent of this 855-mile section of the river, yet carried one-third of the total 2015 freight.

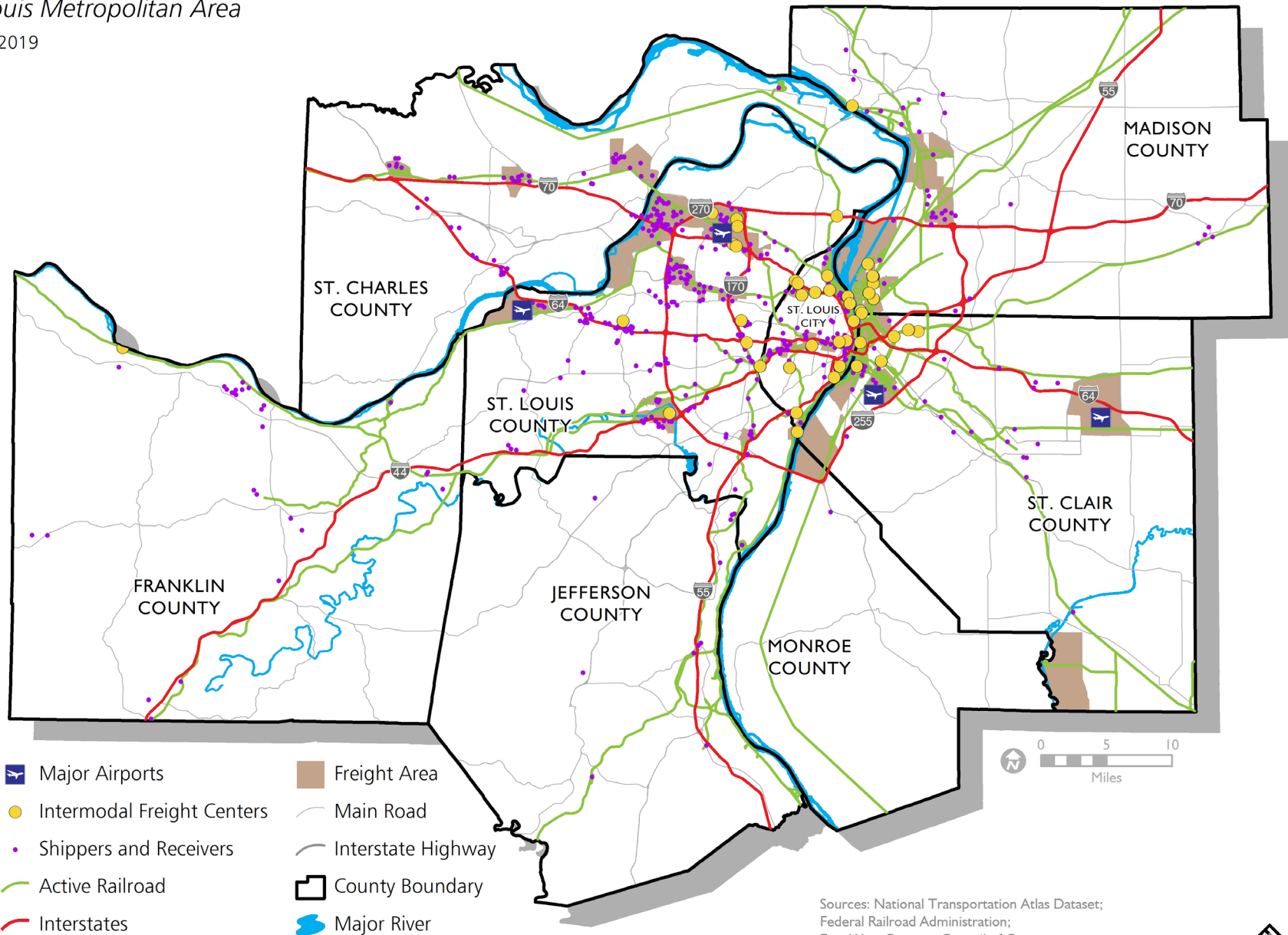
A stretch of the Mississippi River in and near St. Louis has become America's center of gravity for grainhandling for transit and export. It is so dense with grain- and fertilizer-handling facilities that can handle all transportation modes—truck, rail and barge—that it is being called "America's Agriculture Coast" or "Ag Coast."

Map 27:

Primary Goods Movement Network

St. Louis Metropolitan Area

March 2019





Chapter 10: Air Quality & Environment



Environment

Ecological Approach to Infrastructure Development

The Ecological Approach to Infrastructure Development (The Ecological Initiative) is a planning effort to link transportation and environmental decision-making. In 2008, EWG started the Ecological Initiative and partnered with the Missouri Resource Assessment Partnership (MoRAP) at the University of Missouri-Columbia to expand consultation with natural resource agencies and to build geospatial datasets to streamline the transportation planning process and advance conservation goals through the availability of high quality, fine-resolution ecological data. An extensive network of federal, state and regional/local agencies was established and this network was instrumental in the development of a regional-scale ecological data tool that identifies the region's most ecologically significant natural resources.

The Ecological Initiative focuses on the region's ecologically significant natural resources, while using mapping technology to help better inform transportation planning decisions. The resulting datasets provide environmental data for conservation, mitigation and restoration, as well as useful information on the location and extent of ecologically significant areas. Consultation with resource agencies is a core component of the Ecological Initiative and was key to the development of science-based, defensible ecological significance datasets that reflected input from all the resource management and regulatory agencies involved.

Protecting and enhancing environmental assets is important to the overall public health and wellbeing of the St. Louis region. Avoiding or minimizing environmental impacts early in transportation planning can lead to significant cost reductions and a streamlined environmental review process. Early avoidance can advance projects while preserving and restoring wildlife habitat, improving water quality, protecting cultural and historical resources, and reducing stormwater and flooding issues. Increased availability of these datasets will result in more agencies' use of the data as a key early planning tool to both avoid environmental impacts and enhance the ecological assets in the region.

State DOTs now have an increased ability to conduct environmental screening in the pre-NEPA stage of analysis, thereby avoiding impacts very early in the transportation planning process and streamlining environmental review and project delivery

EWG is unique among MPOs in that it has used natural resource data in the evaluation of transportation projects in its long-range transportation plan. The Ecological Initiative datasets were integrated into *Connected2045* by mapping the region's transportation projects overlaid on Ecological data layers. Not only does the Ecological data inform the development of this long-range plan, it will also contribute to a systems level analysis and inform trends over time as to the extent to which the region is impacting significant environmental areas.

Wetland Data

Other components of the Ecological Initiative include wetlands data mapping along the bottomlands of the Mississippi and Missouri rivers, the Meramec River, and Upper Silver Creek in Illinois. The datasets were derived from Light Detection and Ranging (LiDAR) data and highlight areas of wetland importance and restoration potential. These additions to the Ecological Initiative suite of datasets can help to not only avoid critical wetland locations, but also direct mitigation funds to locations of greatest restoration potential.

The region is the home to the confluence of the Mississippi and Missouri rivers, as well as other river systems such as the Meramec and the Kaskaskia rivers. Wetland impacts, especially in the floodplains of these big rivers, are significant environmental issues facing the region. Wetland areas are often included in critical habitat areas for threatened and endangered (T&E) species. Conservation areas in the region are also often included as critical habitat areas (**Map 29**). The Ecological Initiative works to focus mitigation efforts on wetland locations of greatest restoration potential and identify conservation area expansion and linkage. By doing so, a great deal can be done to enhance conservation efforts in the region.

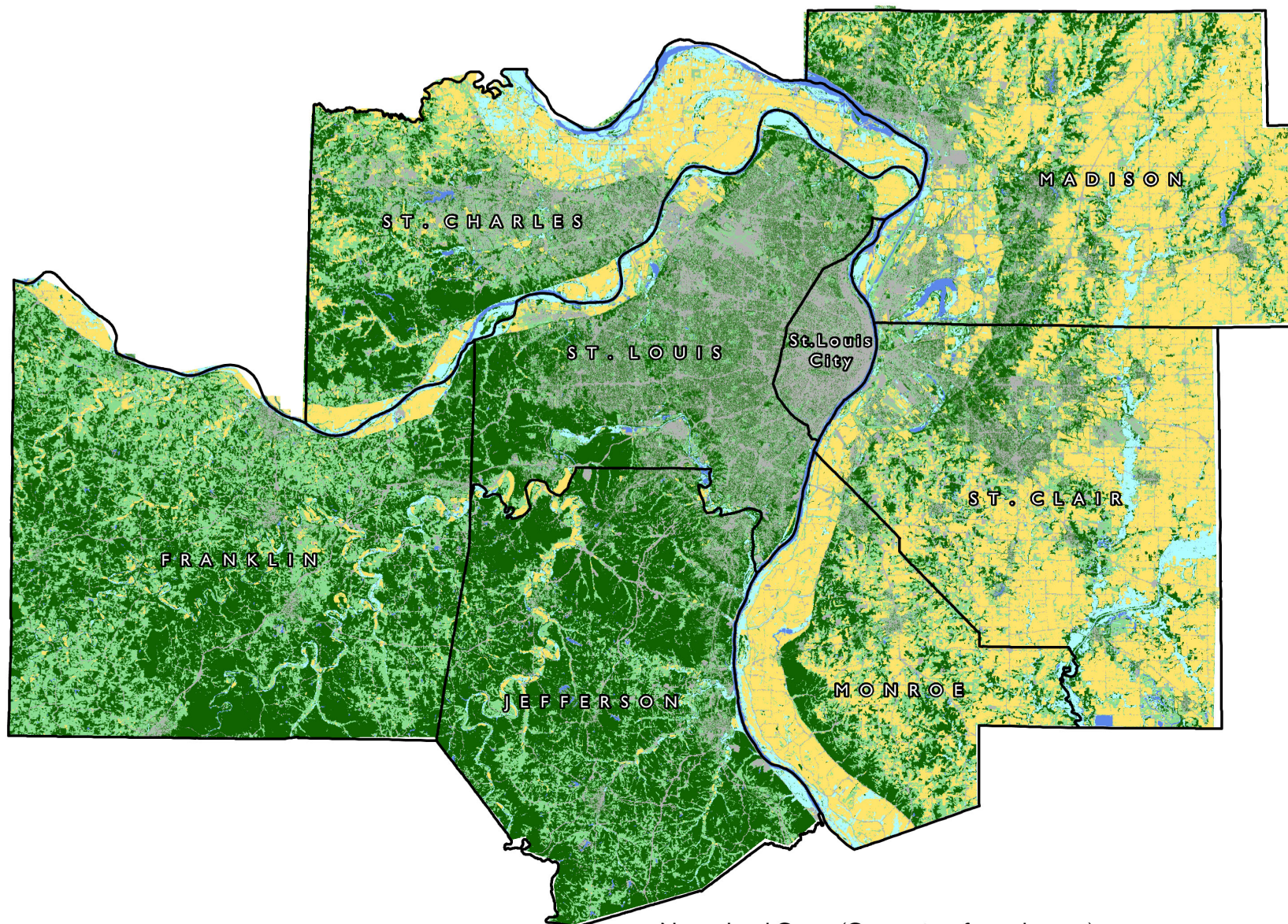
Data Refinements

Environmental and transportation agencies are changing how they do business. Transportation agencies at all levels are committed to earlier consultation and planning-level environmental analysis, to better avoid and minimize impacts as well as determine conservation investments that may be needed now to help recover species and restore watersheds. Furthermore, communities are becoming more interested in connecting to nature to enjoy the economic, environmental and social benefits associated with healthy natural resources. In order to do that, planners, community development professionals and natural resource managers can use data such as maps and descriptions of existing natural resources within the city, county or other geography of interest to understand the context of where it is located in the natural world. Understanding the elements and functions of the natural world provides decision-makers with scientifically justifiable reasons for the management recommendations they make.

Through that ongoing consultation process, the Ecological Initiative recognized that the datasets provide EWG, state DOTs and federal resource agencies with regional scale, high level planning tools, valuable for the initial review and development of agency plans and projects. However, the initial resolution of the dataset did not include land cover variation within urban landscapes such as urban trees, open areas, lawns and parks.

Refinements to the datasets were made within pilot areas to provide an improved land cover using finer resolution input data. The result is an enhanced tool that more accurately reflects conditions on the ground and allows users to see possible impacts at a more "human scale." The refined data is being used in corridor studies for projects in urbanized locations. State and regional agencies see the benefits of developing and using this information for watershed planning, green infrastructure planning and storm water management approaches. The Blue Gray Green Infrastructure initiative stemming from OneSTL will benefit greatly from the application of the refined data (**Map 28**).

Map 28:



Name: Land Cover (Composite of two datasets)
Source: East-West Gateway/Missouri Resource Assessment Partnership
Extent: St. Louis Metropolitan Planning Area
Raster Resolution: 1 meter, 6 meter
Recommended Scales: County, Sub-watershed, City, Sites > 100 acres
Date: 2017, 2010

Conservation Opportunity Areas

March 2019



Land Cover Composite Dataset

Map 28 is a visualization that combines two land cover datasets, to show the most detailed, complete picture of the land cover conditions in the region in very basic categories. The one-meter urban land cover and the six-meter land cover are layered together so the detailed urban land cover fills in the areas that were undifferentiated in the six-meter file. The detailed land cover classes from the six-meter file are grouped and simplified to match the categories of the one-meter file.

The mixed resolution and simplified classification of this visualization makes it most useful for big-picture planning rather than geostatistical analysis. Users can identify green corridors for habitat connectivity planning or seek out neighborhoods that lack vegetated areas for stormwater management.

EWG Land Use Model

A regional land use model is used to create projections of population and employment growth. The model consists of three sub-models: a regional population and employment projection model, a county-level allocation model, and a sub-county allocation model.

Regional population projections are based on a cohort-survival model. Inputs to this model include current age distributions by race and sex for the region as well as national fertility and mortality projections by age, race and sex produced by the U.S. Census Bureau.¹ The cohort-survival model takes current age distributions and applies age and race-specific fertility and mortality projections to arrive at projected future population totals. The process is iterated for each year through 2045. Results are summarized in graphs known as population pyramids that show male and female population by five year age cohorts. **Figure 3** shows the age pyramid for 2016, and the projected age pyramid for 2045. Through this process, population projections for the eight-county EWG region are produced for the years in the planning horizon. Employment projections are derived from projections of the working age population.

As noted above, for several decades St. Louis has been a slow growth region. Of the 50 most populous regions in the nation, St. Louis ranked 45th on population growth from 2010 to 2017, experiencing total population growth of 0.7 percent. Projections for 2045 are consistent with past growth patterns. The projected growth in both population and jobs through 2045 is approximately 70,000.

Regional population and employment projections are allocated into county-level projections through a non-linear extrapolation process similar to the method outlined by Dendrinos and Sonis.² This process allocates approximately 70 percent of future population growth to St. Charles County, a result consistent with patterns observed in recent decades. Robust growth rates are also projected for Monroe County, Illinois and Jefferson County, Missouri.

County-level population and employment projections are then allocated into sub-county regions known as Transportation Analysis Zones (TAZ). Parcel files are used to identify developable land. Areas with little expected growth potential, such as floodplains and areas with steep topographies are also identified. County master plans are used to identify areas considered ripe for development by local authorities. In addition, an area's attractiveness for new development is rated as a function of several factors including proximity to existing population and employment centers and proximity to major transportation corridors.

Significant new development was projected in western St. Charles County, particularly along the Route N corridor, as well as near the communities of Foristell, Wentzville, and Flint Hill. Other areas projected to experience development included the I-55, MO-30 and MO-21 corridors in Jefferson County, the Route 47 corridor in Franklin County, portions of western St. Louis County, areas around the National Geospatial Intelligence Agency and the Cortex district in the city of St. Louis, corridors around Routes 157 and 159 in Madison and St. Clair counties, and the northern third of Monroe County.

Projections from the land use model were overlaid on a map showing areas of high ecological significance to show ecological resources that could potentially be stressed by development over the next 30 years. These stressed resources are shown in **Map 30**. The ecological significance maps were created by the Missouri Resources Assessment Partnership (MoRAP). Over a three year period, MoRAP developed detailed land cover maps at six meter resolution. MoRAP assessed ecological significance in the region and created a spatial data file with detailed land cover information. Each patch of land was assigned an ecological significance score based on its size and its associated type of land cover.

The land use model was used to project the potential for development for each TAZ. In general, areas of high ecological significance were located at some distance from already developed land, therefore insulating much of the most valuable resources from development pressure. However, there were isolated areas of high significance that were projected to experience some pressure. The results suggest that these places may be appropriate areas of focus for organizations pursuing conservation.

Significant ecological resources projected to experience some development pressure over the next 30 years included:

- Franklin County near Sullivan and St. Clair. These areas consist of bottomland forest and Ozark highlands forest, contain areas with steep slopes, and contain wetland sites comprised of common button bush and black willow trees. These areas also contain woodland sites with chinkapin oak and eastern red cedar along with grassland features and flora.
- Areas of unincorporated Jefferson County west of Pevely. These areas include Sandy Creek and tributaries, with a diversity of plant cover.
- Headwaters and tributaries of Silver Creek in Madison County. These areas consist of riparian corridor with a mix of hardwoods and wetland plants.

1 <https://www.census.gov/data/tables/2017/demo/popproj/2017-summary-tables.html>

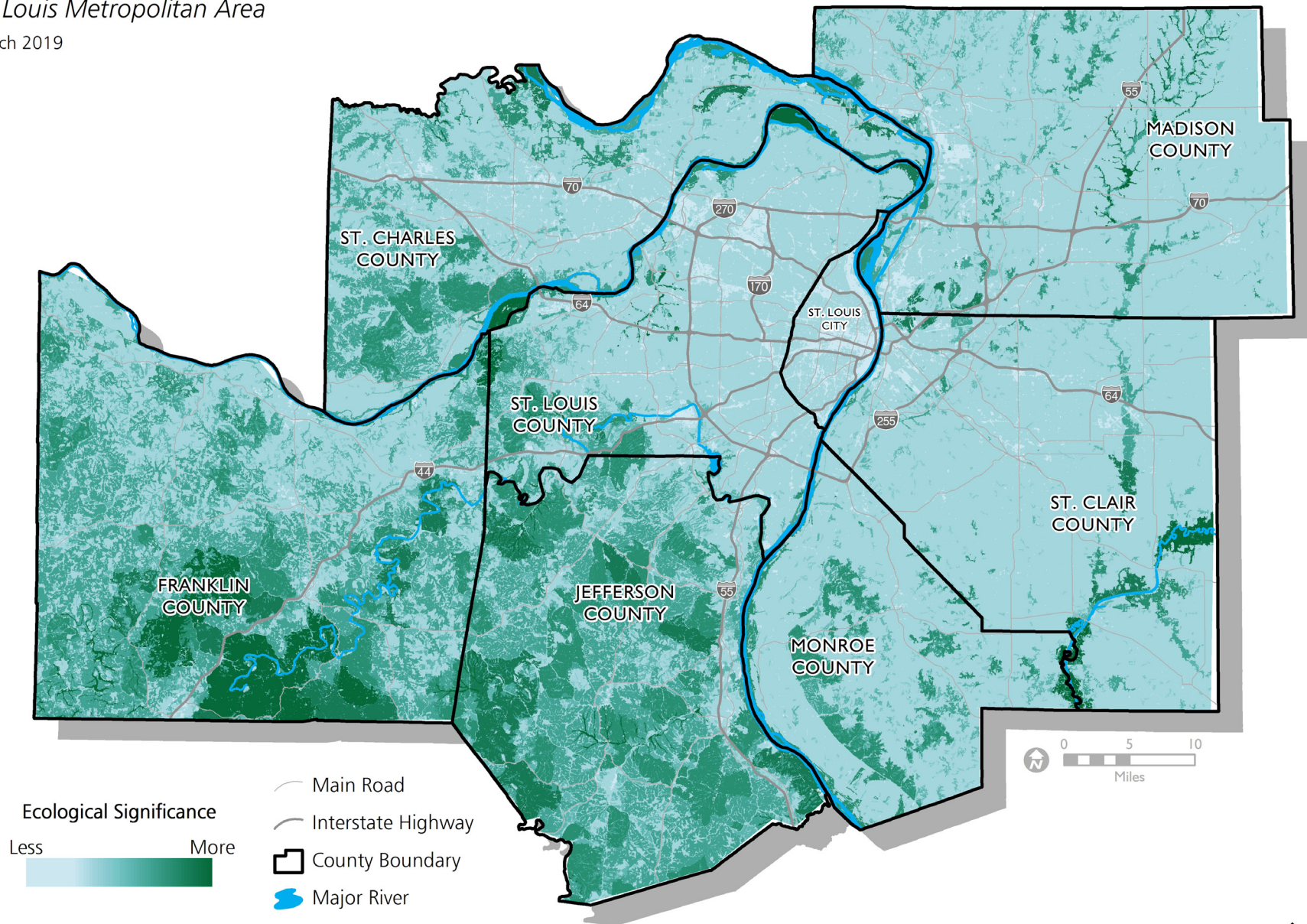
2 Dendrinos, Dimitrios S., and Michael Sonis. Chaos and socio-spatial dynamics. Vol. 86. Springer Science & Business Media, 2012.

Map 30:

Regional Ecological Significance

St. Louis Metropolitan Area

March 2019



Sources: Missouri Resource Assessment Partnership;
East-West Gateway Council of Governments

OneSTL

OneSTL is a multifaceted effort to encourage and support greater sustainability within the eight-county St. Louis region. A plan was completed in 2013 by a collaboration of 11 consortium partners and through the participation and engagement of 50 other organizations. Thousands of people contributed input to the full plan which can be found at www.onestl.org/plan.

The OneSTL Plan includes a vision, goals, and objectives as well as strategies, tools, and resources for a range of issues, including air and water quality, housing, transportation, energy efficiency, and flooding. OneSTL covers transportation in several areas and is identified as a “Regional Opportunity” to foster economic development and protect the environment. The majority of Transportation goals in OneSTL are found in the Connected Theme but other goals can be found in Prosperous, Distinctive, and Efficient. In summary, the plan recommends:

- Construction of more transit-oriented development
- Incorporation of multi-modal facilities into roadway design and maintenance
- Reducing combined housing and transportation costs, design of more complete streets
- Expansion of the regional bicycle network, increasing transit ridership
- Educational programs on bicycle and pedestrian safety
- Improving and maintaining the safety of the overall system
- Improving regional freight efficiency
- Coordination between transportation agencies and other public service providers on public right-of-way projects.

After the plan was completed, the consortium partners and other participants formed the OneSTL Network. Members of the Network meet routinely to discuss progress on their own projects and exchange ideas. In 2017, Network members held a sustainability summit, selected six areas on which to focus future efforts, and formed working groups to coordinate those efforts.

The Water and Green Infrastructure working group adopted a target to encourage 100 percent of land in the St. Louis region to have active organizations and quality watershed plans in progress by 2025 and completed by 2030. In encouraging watershed planning, this group will incorporate the concept of Blue- Gray, Green Infrastructure as a regional opportunity from the OneSTL plan. The group will also promote best practices in resiliency and use of EWG’s EcoLogical datasets.

The Waste and Recycling group will work to reduce tonnage of waste going to landfills within the St. Louis regional watershed by 30 percent by 2030. Food waste, construction debris, and recyclables were identified as three of the primary areas where waste can be reduced.

The Transit Oriented Development working group is seeking to increase the number of jobs, residences, and other resources or amenities within a 1/4 mile or five minute safe and accessible walk at 20 stations by 30 percent by 2023. Working on transit oriented development will promote economic development, transit ridership, and greater accessibility.

The Energy and Emissions working group adopted a nationally-consistent target of reducing greenhouse gas emissions by 28 percent by 2025 and 80 percent by 2050. A preliminary greenhouse gas inventory identified the transportation system as a major contributor to local greenhouse gas emissions. This group will look for innovative methods to reduce transportation’s contributions to emissions.

The Biodiversity working group is in the process of creating a Regional Biodiversity Atlas. The Atlas will act as a guide in planning and policy-making to promote habitat connectivity, ecological functionality, and quality of life. The Atlas will include the EcoLogical datasets.

The Food Access working group is seeking to reduce by half the number of healthy food priority areas where residents are low-income, lack vehicle access, are a certain distance from a healthy food outlet, and availability of healthy food is low. Transit and alternative forms of transportation are key elements in ensuring equitable access to healthy food.

Chapter 11: Investment Plan



Summary of Evaluation Framework

In order to guide decision-making and comply with the current federal transportation law, the FAST Act, EWG developed the Performance Management Framework (**Table 37**) around EWG's Ten Guiding Principles. When read from left to right, the framework shows how federal and state transportation goals align with EWG's Ten Guiding Principles.

It also establishes two levels of performance metrics that are directly tied to each of the Ten Principles and will allow EWG to track progress toward its goals.











- The “system level” performance metrics will be updated in a system performance report by EWG as required by law. By tracking these measures over time, EWG will be able to ensure that investments in the transportation system are moving the region toward achieving its goals.
- The “project level” performance metrics were used to score and prioritize the transportation projects included in *Connected2045*'s Investment Plan.

All major projects analyzed for inclusion in *Connected2045* were run through an evaluation framework of the criteria highlighted in the “Project Scoring Measures” column of the table. MoDOT, IDOT and Metro were requested to complete an application for each project submitted (See online sample at <http://www.ewgateway.org/trans/longrgplan/longrgplan.htm>). The application asked project sponsors to document how submitted projects aligned with the intent of EWG's Ten Guiding Principles.

These qualitative responses were used in conjunction with the data-driven project scoring measures to more accurately assign points to projects for each of the Ten Principles. EWG then applied weights to individual project scores which resulted in a regional project list sorted into three investment periods (2020-2029, 2030-2039, and 2040-2045), as well as three illustrative tiers for projects that were outside of fiscal constraint. *Connected2045*'s Investment Plan represents the culmination of the technical evaluation process, stakeholder feedback and financial limitations.

Table 37: Performance Management Framework



FAST Act Goals	MoDOT Goals	IDOT Goals	EWG's 10 Guiding Principles		System Performance Measures	Project Measures
Infrastructure Condition —To maintain the highway infrastructure asset system in a state of good repair.	Take care of the transportation system	Stewardship		Preserve and Maintain the Existing System Ensure the transportation system remains in a state of good repair.	% of Interstate pavements in Good condition % of Interstate pavements in Poor condition % of non-Interstate NHS pavements in Good condition % of non-Interstate NHS pavements in Poor condition % of NHS bridges classified as in Good condition % of NHS bridges classified as in Poor condition	Project Addresses Preservation Deficiency
	Give Missourians better transportation choices	Livability/Mobility		Support Public Transportation Invest in public transportation to spur economic development, protect the environment and improve quality of life.	Annual transit boardings systemwide Percent of households within 1/4 mile of a transit stop	Project Strengthens Transit Access
	Give Missourians better transportation choices	Livability		Support Neighborhoods & Communities Connect communities to opportunities and resources across the region.	Percent of residents living within a reasonable travel time to work	Project Serves EJ Communities
	Give Missourians better transportation choices	Livability		Foster a Vibrant Downtown & Central Core Improve access to and mobility within the central core by all modes to increase the attractiveness of St. Louis and strengthen the regional economy.	Employment in the central core Population in the central core	Project Serves Downtown and/or the Central Core
	Give Missourians better transportation choices	Livability/Mobility		Provide More Transportation Choices Create viable alternatives to automobile travel by providing bicycle and pedestrian facilities.	Percent of non-single occupancy vehicle travel VMT per capita	Project Supports Bicycling and Walking
Safety —To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.	Keep all travelers safe, no matter the mode of transportation	Mobility		Promote Safety and Security Provide a safe and secure transportation system for all users.	Five-year rolling averages for: Number of Fatalities; Rate of Fatalities for 100 million VMT; Number of Serious Injuries; Rate of Serious Injuries per 100 million VMT; Number of non-motorized fatalities and non-motorized serious injuries	Project Improves Transportation Safety
Congestion Reduction and System Reliability —To achieve a significant reduction in congestion on the National Highway System and to improve the efficiency of the surface transportation system.	Improve reliability and reduce congestion on Missouri's transportation system	Economy		Support a Diverse Economy with a Reliable System Reduce congestion and improve travel time reliability to support the diverse economic sectors of the region.	Percent of person-miles traveled on the Interstate that are reliable; Percent of person-miles traveled on the non-Interstate that are reliable; Annual Hours of Peak Hour Excessive Delay per capita	Project Improves System Reliability
	Invest in projects that spur economic growth and create jobs	Economy		Support Quality Job Development Support the growth of wealth producing jobs that allow residents to save and return money to the economy.	Percent of jobs with a median wage higher than self-sufficiency for a 1 adult, 1 child household	Project Increases Access to Quality Jobs
Freight Movement and Economic Vitality —To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.	Invest in projects that spur economic growth and create jobs	Economy		Strengthen Intermodal Connections Support freight movement and connections that are critical to the efficient flow of both people and goods.	Truck Travel Time Reliability Index	Project Supports Regional Freight Assets
Environmental Sustainability —To enhance the performance of the transportation system while protecting and enhancing the natural environment.		Livability/Resiliency		Protect Air Quality and Environmental Assets Encourage investments that recognize the linkages between the social, economic, and natural fabric of the region.	On-Road Mobile Source Emissions—Total Emissions reduction Number of funded projects that impact areas of ecological significance	Project Improves Air Quality/Protects the Natural Environment

Projects Considered for Plan Inclusion

Over 60 projects, based on state DOT and Metro plans and costing more than \$9 billion, were considered in developing the investment plan. Most projects proposed emerged as preferred alternatives from corridor and other planning studies. Also considered were 11 corridors for which no projects are identified but further study is warranted to develop projects that address existing or emerging transportation needs. Future long-range plans may consider projects identified during those corridor studies.

Based on a technical evaluation of the projects, and after applying the fiscal constraint, 25 priority projects, costing nearly \$3.5 billion, were selected for the investment plan and allocated to one of three implementation periods: 2020-2029, 2030-2039, or 2040-2045 (**Tables 38-40, Map 31**). Those project costs do not include the nearly \$22 billion required over the next 25 years simply to maintain existing transportation assets and operations.

Projects that did not fit within the region's financial resources were placed in the illustrative list, which was divided into Tier I, II, and III categories (**Tables 41-43, Map 32**). Tier I designates those projects that should advance first into the priority list if additional funding becomes available.

Also considered were 11 corridors (**Map 33, Table 44**) for which no projects are identified but further study may be warranted to develop projects that address existing or emerging transportation needs. Future long-range plans may consider projects identified during those corridor studies.

Financial Capacity Analysis

A key component of the LRTP is the investment plan, which identifies the projects that are selected as priorities for funding during the plan period. Federal law requires that the LRTP's investment plan be fiscally constrained. This means that reasonably anticipated revenues must be sufficient to finance all projects listed in the investment plan. Given the imbalance between available revenues and needs, the number of projects funded under the fiscal constraint is unreasonably small. The cost of simply maintaining roads, bridges, and transit assets leaves little revenue available for broader system improvements.

The extent to which needs exceed revenues is well illustrated by the additional funding required to adequately finance state roads and bridges and the regional transit system. MoDOT estimates that an additional \$745 million annually is required to meet its priority highway system needs. An Illinois Economic Policy Institute study concluded that IDOT needs an additional \$1.7 billion annually to adequately maintain its road and bridge system. Through EWG's own calculations, Metro needs an additional \$25 million annually simply to maintain its capital assets and sustain existing operation levels. In addition, the Congressional Research Service estimates that an additional \$15 to \$25 billion annually is needed to fully fund the current levels of federal highway and transit spending through 2026.

Motor fuel taxes are a principal source of transportation funding at both the state and federal levels, especially for roads and bridges. The insufficiency of fuel tax revenues, however, is a major cause of the current financial predicament. Neither the federal government nor the states of Illinois and Missouri have passed fuel tax increases in over 25 years, although Missouri did pass a six-cent fuel tax increase in 1992 that was

phased in through 1996. Because of changes in vehicle fuel economy, the changing vehicle fleet, the lack of indexing and the absence of tax increases since the early 1990s, fuel tax receipts have not kept pace with construction cost inflation. Based on the most recent Construction Cost Index, one dollar in fuel tax in 1990 is worth only 41 cents today. While there are discussions about increasing transportation funding in the state general assemblies and the U.S. Congress, action is far from certain. Council staff, therefore, has taken a conservative approach in forecasting future revenues, assuming no major new revenue infusions.

To establish the LRTP's fiscal constraint, or the region's capacity to fund transportation improvements, Council staff prepared forecasts of IDOT, Metro, and MoDOT revenues through the life of the plan. Both Metro and MoDOT provided baseline financial forecasts that Council staff adapted for LRTP use. The forecast for IDOT was based on data from the Illinois Comptroller's office and IDOT's long-range plan and multi-year improvement program. All forecasted costs and revenues are expressed in year of expenditure dollars.

Council staff estimates that the revenues available for the IDOT, Metro, and MoDOT programs will approach \$25 billion over the next 26 years. Over 90 percent of that funding will be needed for road and bridge rehabilitation or reconstruction, transit vehicle and facility replacement or rehabilitation, safety projects, and state highway and regional transit system operations. That leaves less than \$2.5 billion available for specific improvement projects.

Illinois Department of Transportation (IDOT)

IDOT will have an estimated \$3.5 billion in revenue available through 2045 (**Figure 49**). Approximately \$2.6 billion of the total will be dedicated to rehabilitating, reconstructing, and upgrading existing facilities, leaving less than \$900 million for major projects. That \$900 million is less than one-fourth of the \$4 billion in projects IDOT submitted for plan consideration (**Figure 50**).

Figure 49: IDOT Financial Capacity, 2020-2045 (year of expenditure dollars, millions)

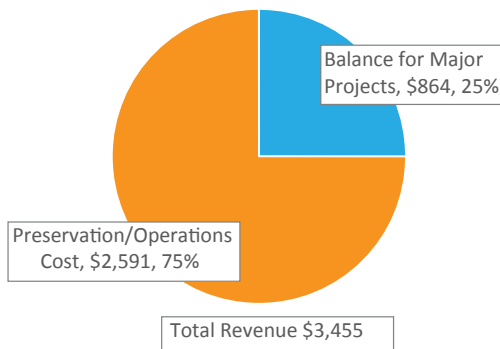
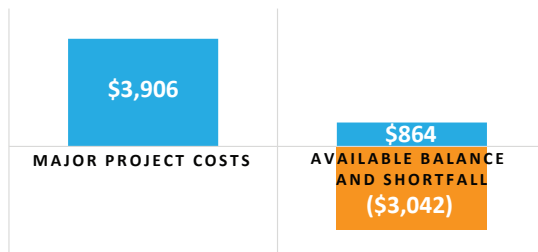


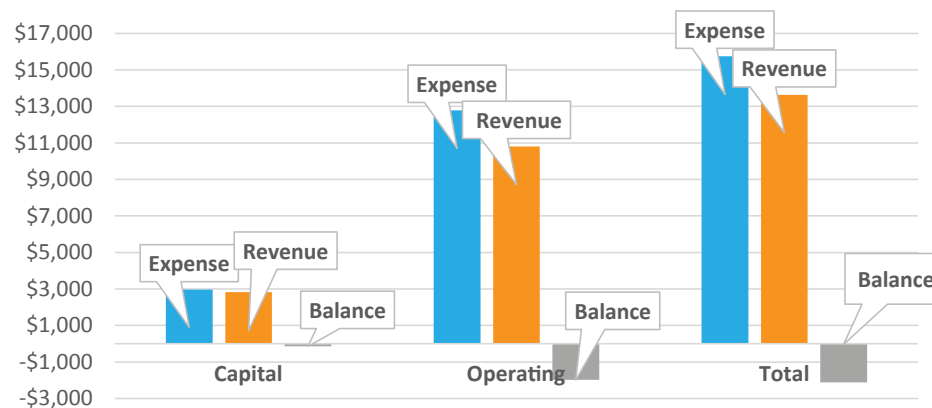
Figure 50: IDOT Financial Capacity, 2020-2045 (year of expenditure dollars, millions)



Metro Transit System

Metro is facing immediate budgetary pressures, especially on its operations side. The financial projections indicate that these will worsen over time and will ultimately lead to reduced services unless additional revenues flow into the system (**Figure 51**). Assuming no additional revenue, Metro will have approximately \$13.6 billion in capital and operating funds through 2045. If the system continued to function as it now is, it would require \$15.7 billion in revenue. There is, therefore, a shortfall of over \$2 billion without any system expansion. As previously stated, Metro ultimately will need a \$25 million annual infusion of funds to maintain the system as it now operates. An additional \$50 million annually would enable Metro to both operate the system and contemplate expansion out of its own budgetary resources.

Figure 51: Metro Financial Capacity 2020-2045 (year of expenditure dollars, millions)



Although Metro's financial outlook is bleak, the LRTP does include one MetroLink expansion project among the investment priorities: the Northside-Southside MetroLink extension in the city of St. Louis. In 2017, city voters passed a half-cent economic development sales tax, 60 percent of which was dedicated to funding the Northside-Southside extension. While the tax, by itself, is insufficient to fund the entire route from Natural Bridge/Grand to Jefferson/Chippewa, when coupled with potential federal funds and other city resources it is reasonable to assume that the city can generate the funding needed for Metro to construct and operate the light rail extension. It is important to note that none of the revenue currently dedicated to Metro would be used for the extension.

Missouri Department of Transportation (MoDOT)

MoDOT will have an estimated \$7.8 billion in revenue available through 2045 (Figure 52). Nearly \$6.2 billion of that amount will be dedicated to bridge and pavement rehabilitation and reconstruction, ADA improvements, safety projects, and operations, which leaves under \$1.6 billion available for major projects. That \$1.6 billion contrasts to the \$4.3 billion in projects MoDOT submitted for plan consideration (Figure 53).

Figure 52: MoDOT Financial Capacity, 2020-2045 (year of expenditure dollars, millions)

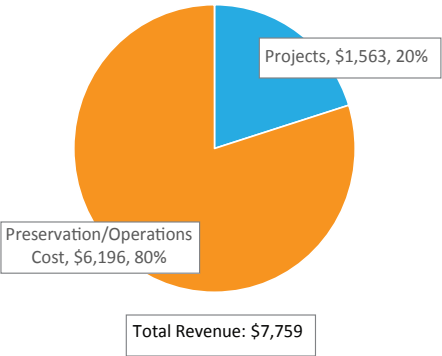
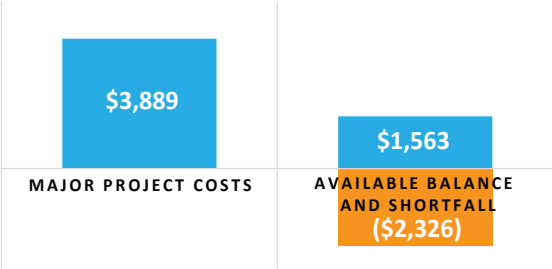


Figure 53: MoDOT Financial Capacity, 2020-2045 (year of expenditure dollars, millions)



Transportation Investment Plan

The following tables exhibit the priority investment plan for the region. Projects that can be funded within the region’s financial capacity are listed as Investment Priorities; projects that cannot be funded with reasonably anticipated revenues are listed as Illustrative Projects. The first series of tables list the priority projects, categorized into three time frames: 2020-2029, 2030-2039, and 2040-2045. The following tables show the illustrative projects, broken down into Tier I through Tier III. Illustrative projects will be drawn into the investment plan if additional revenue becomes available—first Tier I projects and then Tier II and Tier III. A final table lists proposed corridor studies that are needed to identify projects for future plan consideration.

Table 38: Investment Priorities
Projects funded within the region's fiscal constraint
(year of expenditure dollars, millions)

Period: 2020-2029				
Project/Corridor	Description	County	Location	Cost (YOE)
Asset Management/Operations	Maintenance/rehabilitation/operational improvements/safety/ADA	Multicounty	Regionwide	\$2,819
Transit Operations	Maintain existing transit system	Multicounty	St. Louis/City of St. Louis/ St. Clair	\$3,796
I-270*	New Mississippi River bridge	Madison/St. Louis	Over Mississippi River	\$250
I-64*	Bridge rehabilitation	City of St. Louis	Vandeventer Bridge	\$48
I-255*	Rehabilitate bridge	St. Louis	Jefferson Barracks Bridge	\$31
I-55*	Rehabilitate bridge	Jefferson/St. Louis	Over the Meramec River	\$20
MO 370*	Repair bridge	St. Louis/St. Charles	Over the Missouri River	\$36
MO 364*	Repair bridge	St. Louis/St. Charles	Over the Missouri River	\$68
MLK Bridge*	Replace bridge	City of St. Louis/St. Clair	Over the Mississippi River	\$250
I-64	Add capacity	St. Clair	Green Mount Rd. to IL 158	\$27
I-270	Improve Interstate, interchanges, and outer roads.	St. Louis	Old Halls Ferry to Hanley/ Graham	\$305
I-270	Improve Interstate and interchange	St. Louis	I-170 to Lindbergh	\$99
I-70 (partial)	Add/improve outer roads, add ramps, add overpass, and improve interchanges	St. Charles	Convention Center to Cave Springs (partial)	\$35
I-70	Add capacity and rehabilitate pavement	St. Charles	MO Z to Wentzville Pkwy.	\$35
MetroLink extension	Construct new rail line (NS/SS extension)	City of St. Louis	Grand to Chippewa, via Cass or Florissant	\$774
David Hoekel Pkwy phases 2 and 3**	Construct new roadway	St. Charles	Interstate Dr. to Meyer Rd., Point Prairie Rd. to Peine Rd.	\$57
David Hoekel Pkwy phase 4 (partial)**	Construct new roadway	St. Charles	Meyer Rd. to Point Prairie Rd.	\$6

* Major bridge funded through MoDOT 'asset management major bridge' category

** locally funded

Table 39: Investment Priorities
Projects funded within the region's fiscal constraint
(year of expenditure dollars, millions)

Period: 2030-2039				
Project/Corridor	Description	County	Location	Cost (YOE)
Asset Management/Operations	Maintenance/rehabilitation/operational improvements/safety/ADA	Multicounty	Regionwide	\$3,433
Transit Operations	Maintain existing transit system	Multicounty	St. Louis/City of St. Louis/St. Clair	\$5,102
I-270	Improve Interstate and interchanges	St. Louis	McDonnell Blvd. to MO 370	\$168
I-270	Rehabilitate pavement and bridges, add capacity, modify interchanges and outer roads	St. Louis	MO H to Bellefontaine	\$123
I-270	Improve interchange	St. Louis	MO 367 Interchange	\$173
I-55	Rehabilitate pavement and bridges, add capacity, improve interchanges	Jefferson	MO Z to US 67	\$213
I-270 (partial)	Add capacity	Madison	IL 157 to Mississippi River	\$210
David Hoekel Pkwy. phase 4 (partial)**	Construct new roadway	St. Charles	Meyer Rd. to Point Prairie Rd.	\$6
David Hoekel Pkwy. phase 5**	Construct new roadway	St. Charles	Jackson Rd. to Interstate Dr.	\$13

** locally funded

Table 40: Investment Priorities
Projects funded within the region's fiscal constraint
(year of expenditure dollars, millions)

Period: 2040-2045				
Project/Corridor	Description	County	Location	Cost (YOE)
Asset Management/Operations	Maintenance/rehabilitation/operational improvements/safety/ADA	Multicounty	Regionwide	\$2,535
Transit Operations	Maintain existing transit system	Multicounty	St. Louis/City of St. Louis/St. Clair	\$3,892
I-270 (partial)	Add capacity	Madison	IL 157 to Mississippi River	\$60
I-64	Interchange improvements and add auxiliary lanes	St. Charles	MO 364 to I-70/US-61 Interchange	\$70
Rte 3 Connector	Construct new 2-lane roadway	St. Clair	Exchange Ave. intersection to IL 203	\$185
I-270	Improve interchange	St. Louis	Dorsett Rd. to MO 370	\$113
I-270	Revise interchange ramps	St. Louis	MO D Interchange	\$29
I-44	Interchange improvements	City of St. Louis	Hampton, Kingshighway, Vandeventer, and Jefferson	\$101
I-64	Revise interchange	City of St. Louis	Grand/Market Interchange	\$31
I-64	Expand eastbound I-64 from two to three lanes between 6th street and Poplar Street Bridge.	City of St. Louis	Final split	\$60

Table 41: Illustrative Projects
(year of expenditure dollars, millions)

Illustrative Tier I				
Project/Corridor	Description	County	Location	Cost (YOE)
US 61	Eliminate at-grade crossings, construct new interchange, and connect outer roads	St. Charles	I-64 to Lincoln Co.	\$165
I-70	Interchange improvements and straighten curve	City of St. Louis	Kienlen Ave. to Union Blvd.	\$74
I-70	Interchange improvements	City of St. Louis	Branch St. Interchange	\$8
I-70	Interchange improvements, straighten curve	St. Louis	Spring Ave. to North Hanley Rd.	\$39
I-70	Interchange improvements	City of St. Louis	Salisbury St. Interchange	\$23
MO H	Corridor and safety improvements	City of St. Louis	Adelaide to Riverview	\$49
Route 94	Add capacity	St. Charles	Sherman Dr. to Pralle Rd.	\$25
I-170	Improve interchanges	St. Louis	Scudder Ave. to Airport	\$54
I-70	Add auxiliary lane	St. Louis	Lucas and Hunt Rd. to Kienlen Ave.	\$8
I-70	Interchange improvements	City of St. Louis	Grand Ave. Interchange	\$23
I-70	Improve interchanges, straighten curve, improve airport access, replace bridges	St. Louis	Cypress Rd. to Airflight Dr.	\$89
Bus Rapid Transit	West Florissant	St. Louis/City of St. Louis	Downtown to Natural Bridge	\$59
Bus Rapid Transit	I-64	St. Louis/City of St. Louis	Downtown to Chesterfield	\$56
IL 3	Relocate, construct 4-lane roadway	Madison/St. Clair	Cahokia to Venice	\$972
Lebanon Bypass	Construct new road	St. Clair	IL 4 to US 50	\$84

Table 42: Illustrative Projects
(year of expenditure dollars, millions)

Illustrative Tier II				
Project/Corridor	Description	County	Location	Cost (YOE)
I-70	Interchange improvements	St. Louis	I-170 Interchange	\$78
I-270	Bridge replacement	St. Louis	Conway Bridge	\$29
I-270	Improve corridor, add capacity	St. Louis	I-44 to MO 30	\$194
I-270	Add lanes	St. Louis	MO 100 to I-64	\$60
I-64	Add outer road, add ramps, add capacity, and interchange improvements	St. Charles	MO K to I-70	\$70
I-70	Improve interchange, straighten curve, replace three bridges	City of St. Louis	West Florissant to Adelaide Ave.	\$64
I-70	Interchange improvements	St. Louis	US 67/Lindbergh Blvd. Interchange	\$41
I-70	Interchange improvements	St. Charles	Zumbehl Rd. Interchange	\$29
I-170	Improve Interchange	St. Louis	MO D Interchange	\$49
I-70	Improve outer road and Interchange improvements	St. Charles	TR Hughes to MO 79	\$68
I-70	Interchange improvements	St. Louis	MO 180/St. Charles Rock Rd. Interchange	\$29
I-70	Interchange improvements	St. Louis	MO 141 Interchange	\$41
I-70	Interchange improvements and straighten curve	City of St. Louis	Shreve Ave. Interchange	\$31
I-70	Add auxiliary lane	St. Charles	MO 370 to Cave Springs Rd./ Truman Blvd.	\$8
I-70	Interchange improvements	St. Louis	Bermuda Rd. Interchange	\$29
I-70	Interchange improvements and straighten curve	City of St. Louis	Jennings Station Rd. to Union Blvd.	\$74
I-55/70	Add lanes	Madison	I-255 to I-270	\$486
I-70	Construct new 4-lane Interstate on new alignment, with new interchanges	St. Clair	Relocation to new Mississippi River Bridge	\$1,458

Table 43: Illustrative Projects
(year of expenditure dollars, millions)

Illustrative Tier III				
Project/Corridor	Description	County	Location	Cost (YOE)
I-70 (partial)	Add/improve outer roads, add ramps, add overpass, and improve interchanges	St. Charles	Convention Center to Cave Springs (partial)	\$80
MO 340	Construct new interchange and/or overpasses	St. Louis	Baxter	\$82
MO 21	Improve corridor	Jefferson	MO B to MO N and H	\$97
I-64	Improve interchange	St. Louis	Long Rd. interchange	\$82
MO 100	Realign; construct interchange	Franklin	MO OO to I-44 east of Gray Summit	\$193
MO 47	Improve corridor	Franklin	Washington to I-44	\$175
US 50	Upgrade roadway	Franklin	Progress Pkwy. to I-44	\$39
I-70	Add outer road, add auxiliary lane, add ramps, and interchange improvements	St. Charles	Bryan Rd. to Woodlawn Ave.	\$76
I-70	Interchange improvements	St. Charles	Cave Springs Rd./Truman Blvd. Interchange	\$29
I-70	Interchange improvements	St. Charles	MO A Interchange	\$29
I-70	Interchange improvements	St. Charles	I-64 Interchange	\$70

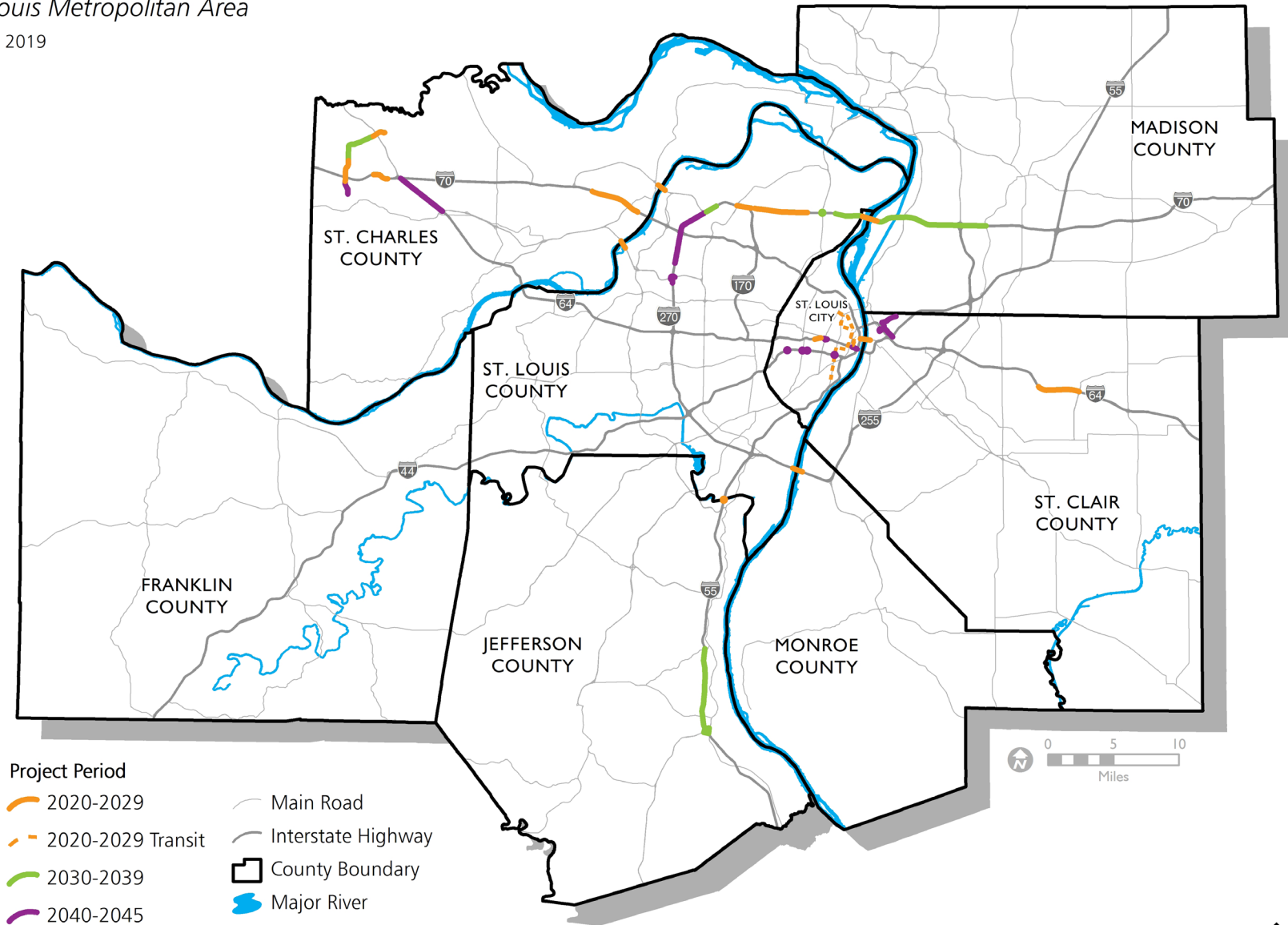
Table 44: Corridor Studies

Recommended Corridor Studies			
Project/Corridor	Description	County	Location
I-44	Corridor Study	Franklin	MO 100 to Crawford Co.
Route 141	Corridor Study	Jefferson	MO 21 to MO 30
US 67	Corridor Study	Jefferson	US 61 to MO V
MO 79	Corridor Study	St. Charles	Salt River to Lincoln Co.
MO 94	Corridor Study	St. Charles	MO 364 to MO D
MO 340	Corridor Study	St. Louis	MO 100 to I-64
I-170	Corridor Study	St. Louis	MO D to I-64
I-44	Interchange Study	City of St. Louis	I-55
Various	Corridor Study	St. Louis/City of St. Louis	MO 115, MO D, MO N, MO 180, MO 100, MO 366, MO 30, MO 367
Route N	Corridor Study	St. Charles	I-64/MO 364 to Jackson Rd.
I-55 / I-64 / I-44	Corridor Study	City of St. Louis	Poplar Street Bridge and approaches

Funded Project Locations

St. Louis Metropolitan Area

March 2019



Source: East-West Gateway Council of Governments

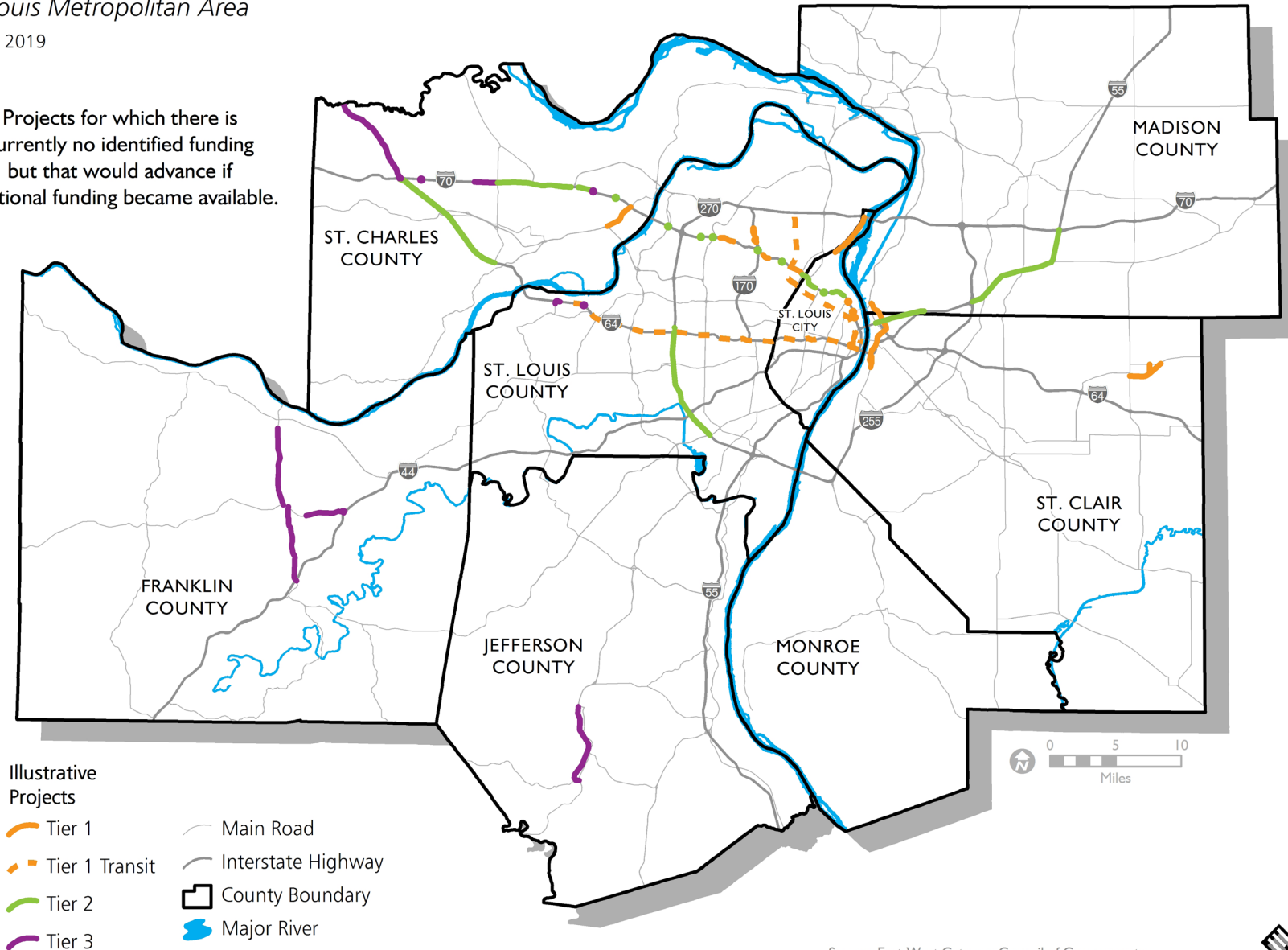


Illustrative Project Locations

St. Louis Metropolitan Area

March 2019

Projects for which there is currently no identified funding but that would advance if additional funding became available.

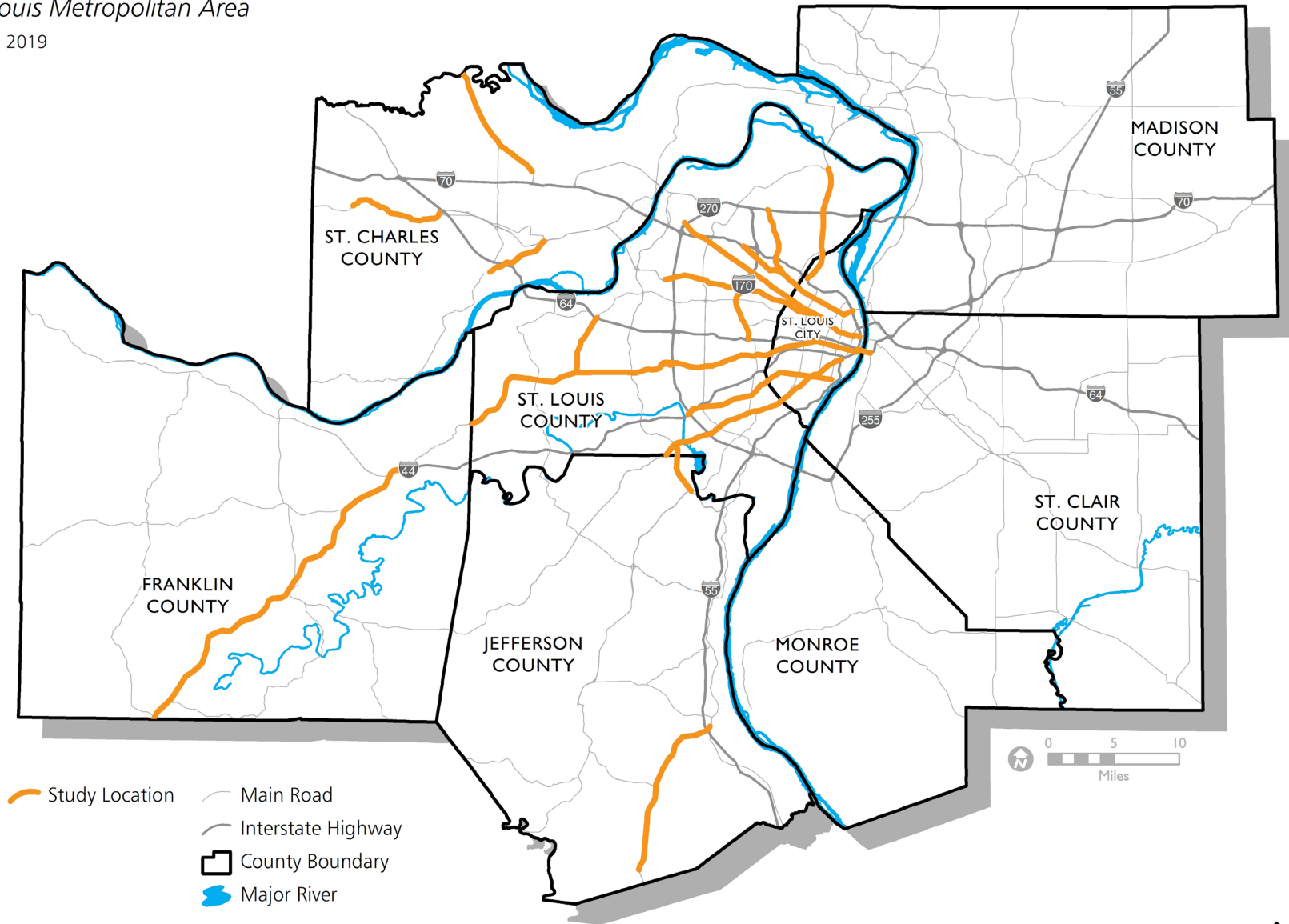


Source: East-West Gateway Council of Governments

Corridor Study Locations

St. Louis Metropolitan Area

March 2019



Source: East-West Gateway Council of Governments

Chapter 12: Public Engagement



The Importance of Public Involvement

Robust and thoughtful feedback and public engagement have been central to the process of developing *Connected2045*. The public involvement process informing *Connected2045* was multi-faceted, targeting diverse groups with varying outreach strategies and approaches.

The EWG Public Involvement Plan

In 2014, EWG adopted a new public involvement plan. Since the *Connected2045* planning process began as the new public involvement plan was being finalized, long-range transportation planning staff and community engagement staff worked closely to ensure that *Connected2045* served as a model for the agency's fresh approach to public involvement.

The public involvement plan is guided by six goals:

- EWG will clearly articulate the process for public information and involvement from the outset of a project.
- EWG will create mechanisms that document public feedback and make it available for public consideration and report how we used/incorporated public input in the decision-making process.
- EWG will create and strengthen EWG's strategies for reaching people and communicating appropriately.
- EWG will assure that every effort is made to ensure nondiscrimination in all of its programs and activities, whether they are federally funded or not.
- EWG will provide access to and create quality information, education and data.
- EWG will continuously evaluate the effectiveness of its public involvement program.

All of the engagement activities outlined here relate to these goals and illustrate effective and varied ways to connect with citizens across the region and to engage them in meaningful discussions of values, options and solutions. Citizens face so many competing priorities for their time and attention that governmental activities often rank as a low priority unless there is a direct, immediate, personal impact or interest. The challenge,

therefore, is to get people involved on an on-going basis and the Public Involvement Plan stresses that the engagement of citizens must occur at the beginning, the middle and the end of the process. It recognizes that different strategies are needed to reach different types of populations and guarantee broad inclusion in the planning process.

The Public Involvement Plan stresses that because the citizen groups interested in each study differ, EWG must develop specialized outreach plans for each planning and programming effort in order to be successful, using an appropriate combination of techniques. For *Connected2045*, a customized strategy was developed at the outset of the planning process and included many outreach activities including attendance at a number of local events, a survey, open houses, several presentations, website updates, and social media promotion, all of which are detailed in the following pages.

A Foundation to Build Upon

Connected2045 builds on the public engagement outcomes from the previous regional long-range transportation planning process and the 2009 Renewing the Region visioning initiative. These efforts produced the Ten Guiding Principles that provide the framework for EWG's transportation planning decisions today. *Connected2045* is organized around these key principles.

In addition to RTP 2040 and Renewing the Region, *Connected2045* also benefits from the public input that came out of OneSTL, the St. Louis region's sustainability plan. Completed in 2014, this three year process funded by the U.S. Environmental Protection Agency, the U.S. Department of Housing and Urban Development and the U.S. Department of Transportation helped to publicly explore issues surrounding the region's long-term sustainability and informed the *Connected2045* planning process, particularly the interconnection of land use, the environment, and transportation.

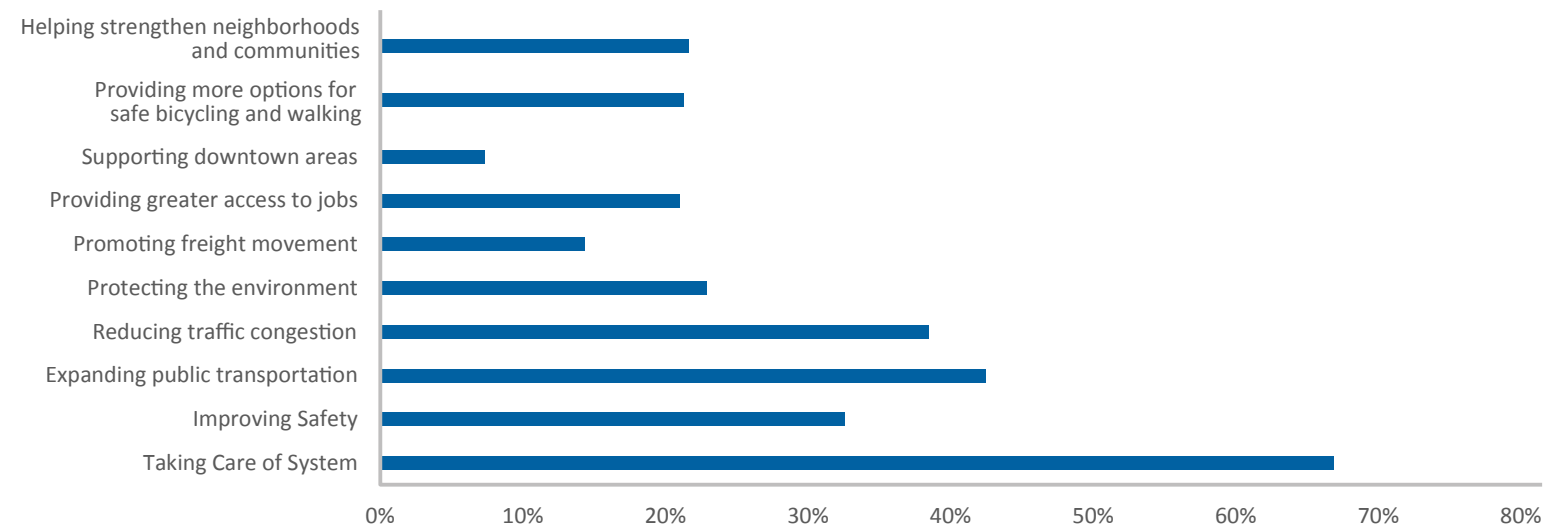
Thousands of comments and ideas came out of two telephone surveys, two on-line surveys, three rounds of the Community Planning Area public meetings (29 public meetings), five workshops for local government officials, and 11 open houses. Several of the general conclusions connected strongly with the Ten Guiding Principles and with priorities of connecting transportation to jobs, expanding light rail, bicycle and pedestrian opportunities. OneSTL produced numerous reports on bike and pedestrian planning and transit oriented development that serve as an integral component of *Connected2045*.

Connected2045 Values Survey

In April 2018, early in the plan development process, EWG posted an electronic survey to gauge public perception regarding the prioritization of the Ten Guiding Principles. The survey was comprised of 11 questions and garnered approximately 751 responses prior to its completion in March 2019. These responses helped staff determine whether the principles still adequately addressed the values of residents and workers across the region. Participants were asked to choose the top three critical transportation issues facing the St. Louis region, rank which of the Ten Guiding Principles would most likely be impacted by emerging technologies, and rate access to and the condition and availability of multimodal transportation options.

According to the survey, the top three critical transportation issues impacting the St. Louis region are taking care of the system, expanding public transportation, and reducing traffic congestion. Taking care of the system received an overwhelming response with approximately 67 percent of respondents selecting it as a critical focus for the region. Expanding public transportation received approximately 43 percent of support from respondents, while 38 percent of respondents selected traffic congestion as a critical issue impacting the region. Additionally, improving safety on the roadway was selected by 33 percent of respondents (**Figure 54**).

Figure 54: What Are the Top Three Critical Transportation Issues Facing the St. Louis Region?



Emerging technologies such as autonomous vehicles, drones, and 3D printing have the potential to fundamentally change the transportation system. Survey participants were asked to select three principles that would be most likely to be impacted by new transportation technologies. The top three choices selected were reducing traffic congestion (54 percent), improving safety (49 percent), and expanding public transportation (41 percent) (**Figure 55**).

Survey respondents were asked to rate the condition, availability, and access to various modes of transportation and its corresponding infrastructure (**Figures 56-66**). Of the top three critical issues impacting the St. Louis region, 18 percent of respondents believe that the road conditions are in a poor state, 26 percent of respondents believe that public transit access to jobs and opportunities is poor, and 15 percent of respondents believe that the amount of traffic congestion on the road is a problem.

Figure 55: New Technologies Can Best Be Used To:

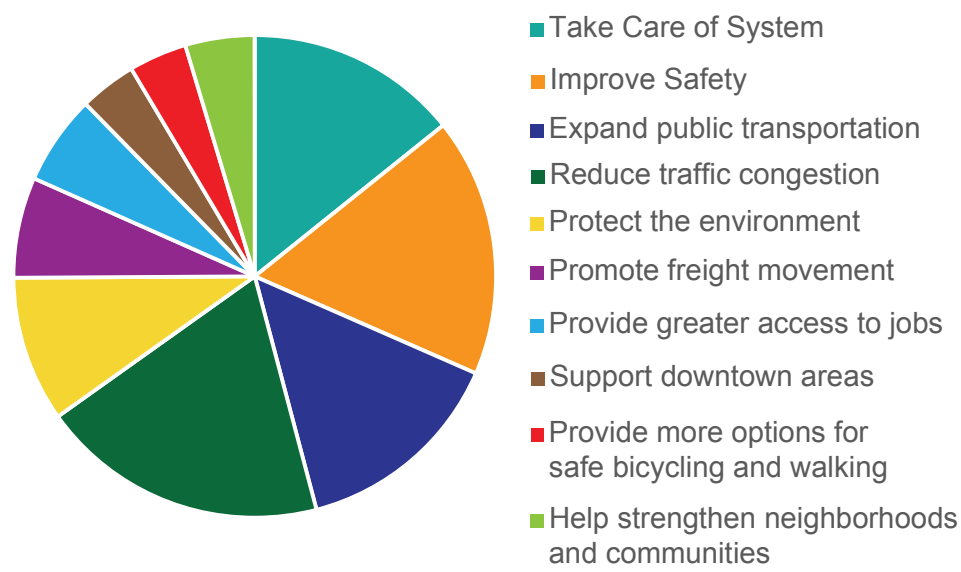


Figure 56: How Would You Rate Safety on the Roads?

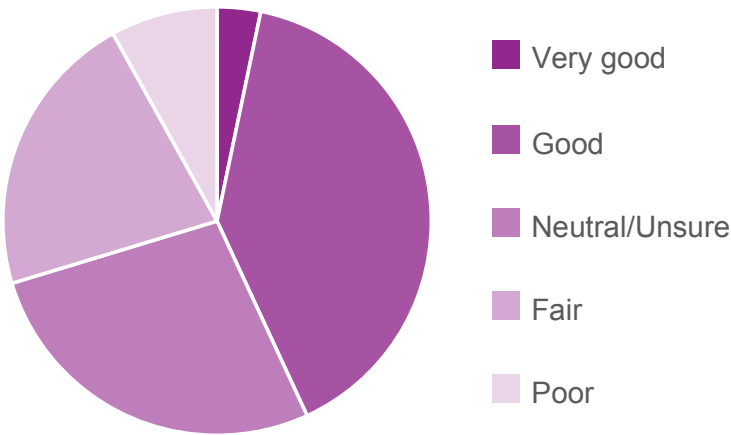


Figure 57: How Would You Rate Traffic Congestion on the Roadway?

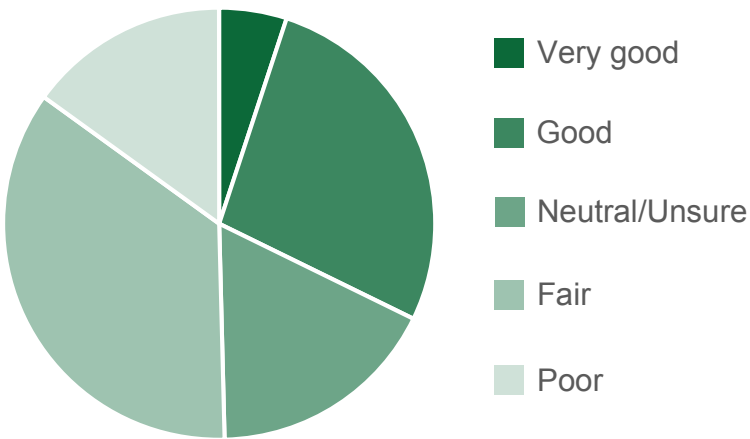


Figure 58: How Would You Rate the Conditions of Roads?

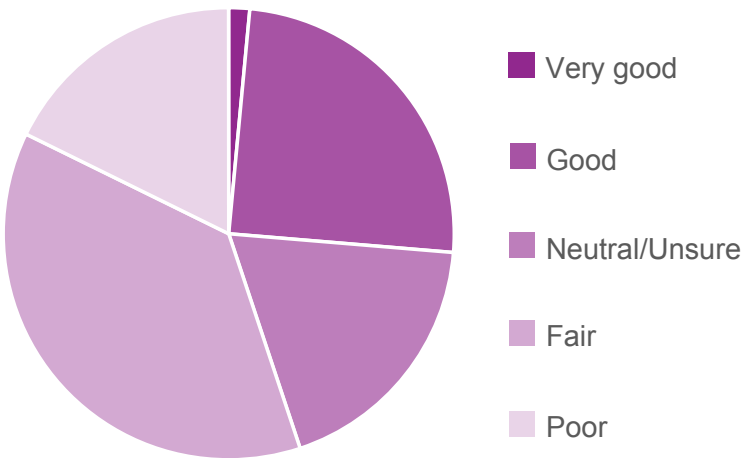


Figure 59: How Would You Rate Sidewalk Condition in the St. Louis Region?

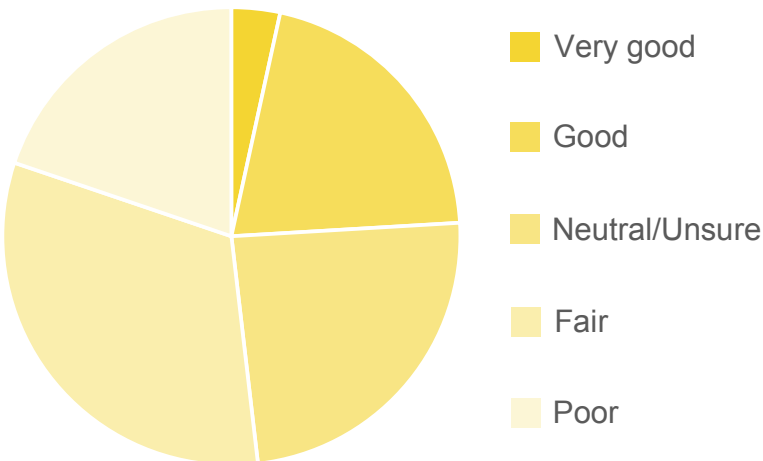


Figure 60: How Would You Rate Sidewalk Availability in the St. Louis Region?

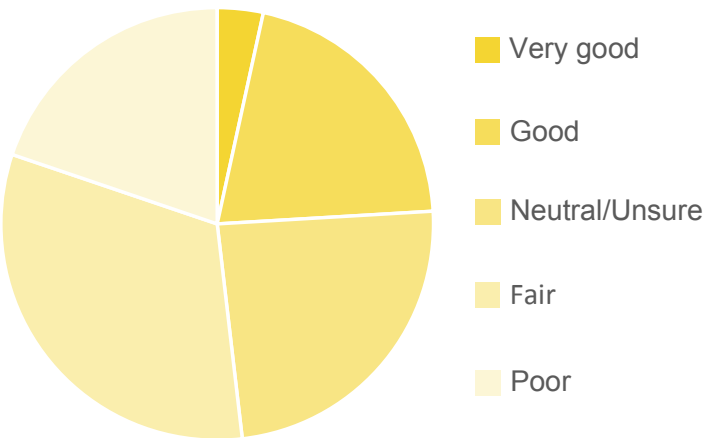


Figure 61: How Would You Rate the Availability of Bicycle Lanes/Paths in the St. Louis Region?

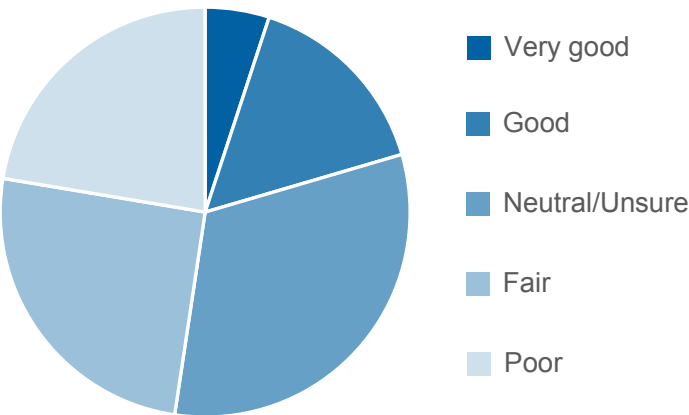


Figure 62: How Would You Rate the Condition of Bicycle Lanes/Paths in the St. Louis Region?

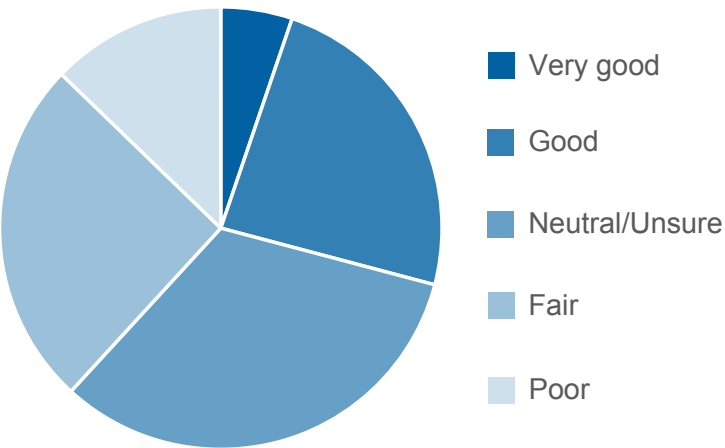


Figure 63: How Would You Rate the Signal System/Timing in the St. Louis Region?

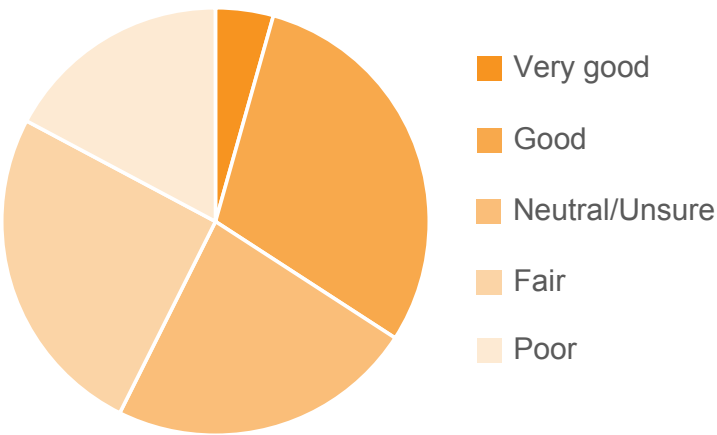


Figure 64: How Would You Rate Auto/Vehicle Access to Jobs and Other Opportunities?

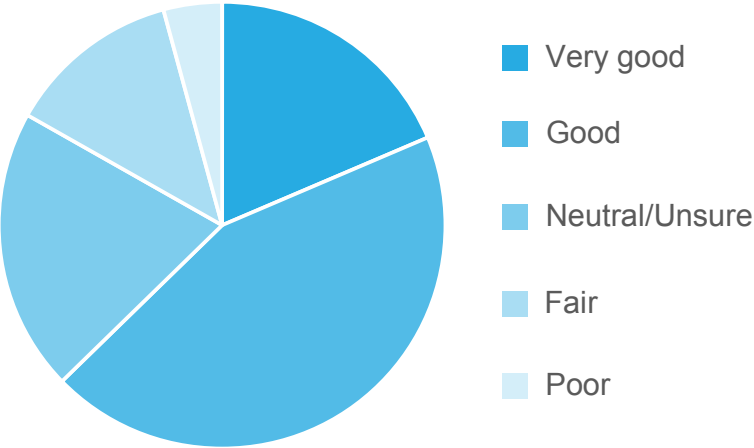


Figure 65: How Would You Rate Non-Motorized Transportation Access to Jobs and Other Opportunities?

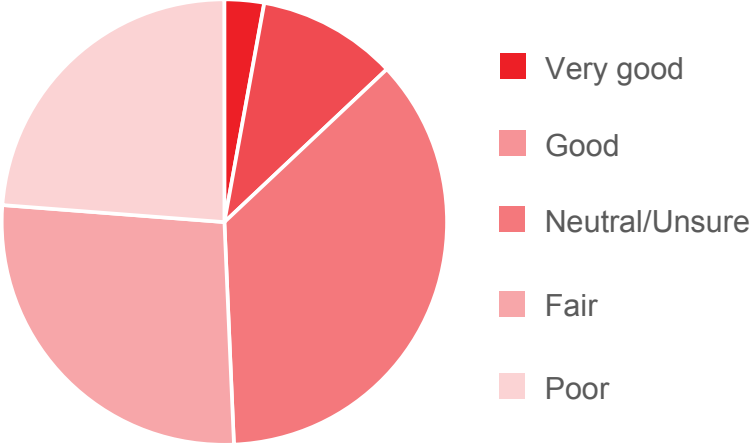


Figure 66: How Would You Rate Public Transit Access to Jobs and Other Opportunities?

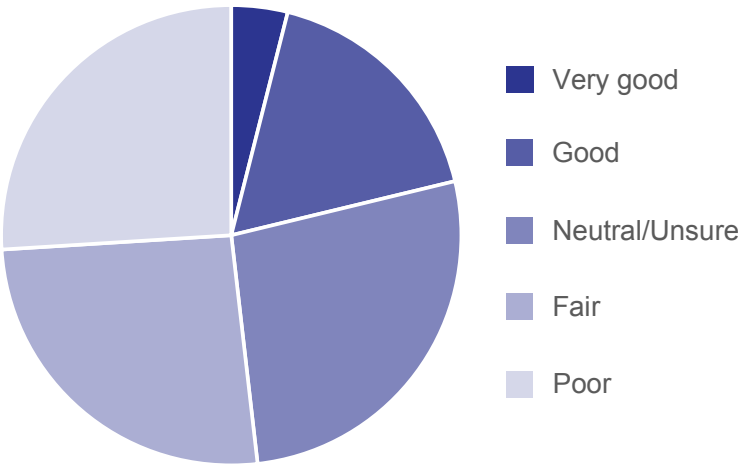
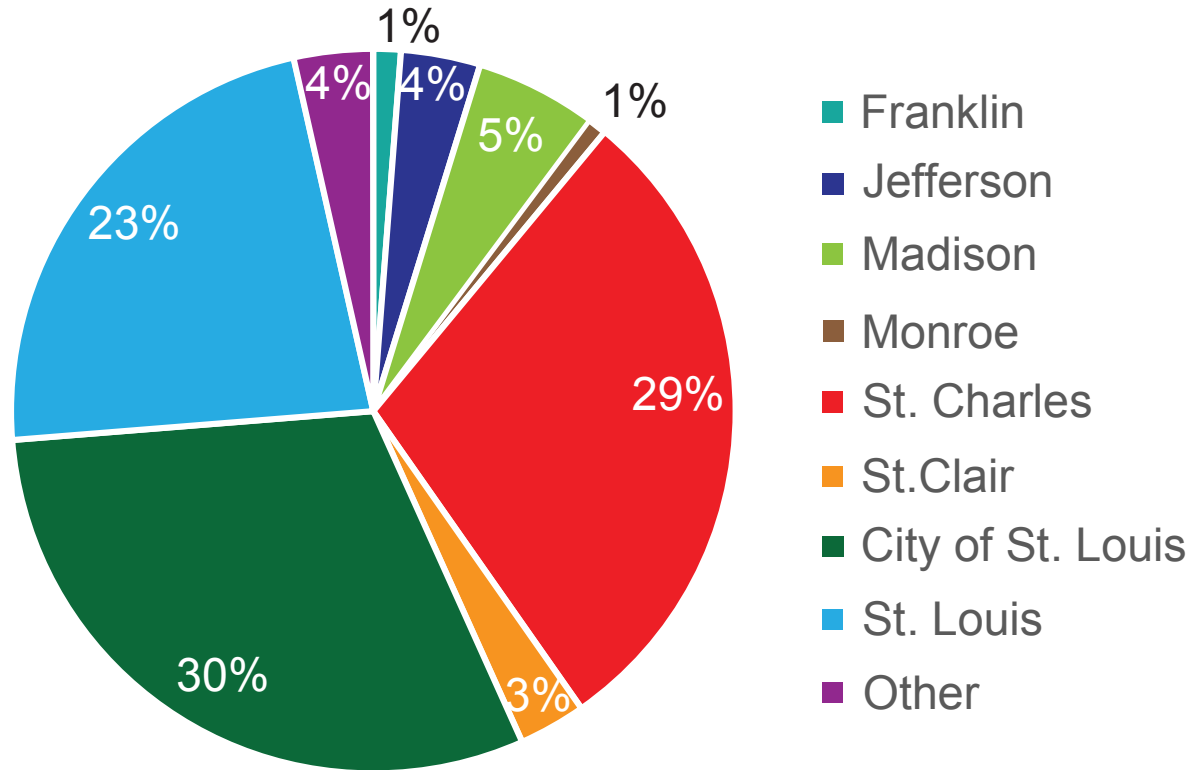


Figure 67: In Which County Do You Live?



Survey participants were asked about their county of residence. A total of 735 responses were received from each of the region's eight counties and from participants who live outside of the region. A majority of respondents live in St. Louis County, St. Louis City, and St. Charles County (**Figure 67**).

Annual Meeting

Each year in November EWG holds its annual meeting. The luncheon program is designed to recognize the accomplishments of local governments and public officials in the region. With an annual attendance of over 500, the meeting also provides the opportunity to hold a morning workshop on a topic of importance to our local government members. The 2017 annual meeting morning workshop on emerging technologies was attended by over 100 local government officials who heard presentations about EWG's recent study on emerging transportation technologies and their impacts on long-range planning; MoDOT's Road to Tomorrow initiative; and the Federal Highway Administration's work on connected and autonomous vehicles. Attendees were asked to share their opinions regarding the future of transportation and implications of new and emerging technologies via interactive polling.

Electronic Outreach

EWG recognizes that while not all citizens have access to and receive their news from the Internet, a web presence is vital to the success of any public engagement effort.

As part of EWG's efforts to comprehensively engage the public in the *Connected2045* planning process, the agency utilizes the full spectrum of social media. In 2014, the agency created a Facebook presence to highlight the organization and its work. Additionally, EWG maintains a Twitter account, @EWGGateway, which is another valuable tool in engaging the public in the age of online social media.

Both Facebook and Twitter have proven valuable in both getting out the word regarding EWG activities and meetings, as well as avenues for receiving feedback.

Social Media Promotion:

- CBN tweeted survey link on April 24, 2018
- Lake St. Louis Police Department tweeted about survey on April 26, 2018
- EWG tweeted survey link on April 27, 2018 and May 14, 2018

- Great Rivers Greenway retweeted survey link on April 27, 2018
- Newsgram retweeted survey on April 27, 2018 and May 14, 2018
- City of Lake St. Louis tweeted survey link on May 3, 2018
- FOCUS tweeted survey link on May 4, 2018
- EWG posted survey link on Facebook on May 8, 2018
- CBB Transportation + Engineers shared survey link on Facebook May 9, 2018
- CMT tweeted survey link on May 9, 10, 14, and 17, 2018
- Metro and Bi-State accounts tweeted survey link on May 14, 2018
- OATS Transit tweeted survey link on May 17, 2018
- North County Inc tweeted survey link on May 30, 2018
- St. Louis Regional Freightway retweeted survey link on June 4, 2018

Email/Other Online Outreach

- Email to agency staff on April 18, 2018
- Homepage slider from April 18, 2018 to August 18, 2018
- Email from to EWG to LPAs on 4/24
- Promoted in Local Government Briefings in April 19 and 26, 2018 and May 3 and 9, 2018 editions
- CMT shared in newsletters on May 16 and 23, 2018
- UGBC Midwest Chapter shared in June 7, 2018 newsletter.
- APA St. Louis Metro Section shared in May 4, 18, and 25, 2018 and June 1 and 8, 2018 newsletters
- North County Inc shared survey via email and social media in May 2018
- Community Builders Network shared in May 23, 2018 newsletter

Presentations EWG staff has also made numerous presentations, reports and collected feedback at meetings held at EWG and throughout the region. Staff has engaged groups from across the region and will continue to do so during the final planning phases and the mandated public comment period. Examples of just some of the groups to which EWG staff has presented *Connected2045* updates:

- Franklin County Municipal League on April 18, 2018
- SLATE on April 24, 2018
- Municipal League of Metro St. Louis on April 26, 2018
- St. Louis Area City Managers Association (SLACMA) on May 10, 2018
- Southwestern Illinois Conference of Mayors on May 14, 2018
- OneSTL Sustainability Lab session on June 26, 2018
- Jefferson County Rotary Club, August 22, 2018
- University of Missouri St. Louis Center for Transportation Studies on October 4, 2018
- Regional Planning Partners Meeting, October 4, 2018

Agency staff planned and implemented engagement activities designed to elicit comment and create discussion on many of the most important opportunities and challenges facing our region. Stakeholders, through a wide range of activities and media, were able to help EWG explore issues related to current and future transportation planning and how transportation interacts with other priorities including economic development, freight, housing, access to opportunity for the elderly, disabled, and lower income citizens, education, community competitiveness and quality of life. Public input has been integral to this plan and has been integrated throughout each step in the process. This planning process has embodied the goals of the EWG Public Involvement Plan.

Primary Public Involvement Events Timeline:

- Public survey – April 18, 2018 – March 29, 2019
- Gateway Greening and Great Rivers Greenway - Shared survey postcards

- SLACO Conference on April 14, 2018 - Shared survey postcards
- MoCCFOA meeting on April 19, 2018 - Shared survey postcards
- Earth Day Conference on April 21, 2018 and April 22, 2018 - Shared survey postcards
- OneSTL Sustainability Lab on April 24, 2018 - Shared survey postcards
- Forest Park Great Streets meeting on April 26, 2018 - Shared survey postcards
- Municipal League meeting on April 27, 2018 - Shared survey postcards
- Community Engagement Action Group Meeting on May 8, 2018 - Shared survey postcards
 - Organizations included Rise Community Development, Beyond Housing, MU Extension Office, Grace Hill, Wellstone CDC
- Local Government Summer Institute on June 1, 2018 - Shared survey postcards
- St. Louis Open Streets Day on June 2, 2018 - Shared survey postcards
- Bloom Cafe on June 8, 2018 – Accepted paper and electronic surveys and shared postcards
- Attended Wittaker Music Fest in St. Louis Place Park on June 21, 2018 – Accepted paper surveys and shared postcards
- Harris-Stowe State University on August 22, 2018 – Accepted paper surveys and shared postcards
- St. Charles Community College on September 5 and 6, 2018 – Accepted paper and electronic surveys and shared postcards
- Southern Illinois University-Edwardsville on September 14, 2018 – Accepted paper and electronic surveys and shared postcards
- Metro East Health Forum – Accepted paper surveys and shared postcards

Public Comment Period

Open Houses

Comments on Connected2045 were received from citizens, civic organizations, project sponsors, public agencies and jurisdictions who attended one or both of the two public open house meetings (one in Illinois and one in Missouri) in May 2019 or submitted their comments during the official public comment period that ran from May 8, 2019 to June 7, 2019.

The open houses were advertised in the St. Louis Post-Dispatch, the St. Louis American, EWG's weekly Local Government Briefings newsletter, Facebook, EWG's website, and at staff presentations throughout the region.

In total, there were 10 attendees at the two in-person meetings and 3 comment forms were received.

The following is a summary of comments relating to Connected2045. Several comment sheets, letters, or emails included comments on multiple projects and concerns. The number of individual comments may exceed the number of participants at each meeting. The numbers of attendees, letters and comments follow for each open house.

Illinois (Madison, Monroe, and St. Clair counties) – (3 Attendees / 0 comment sheets)

- Plan should reference America's Central Port and its priority projects

Missouri (Franklin, Jefferson, St. Charles, St. Louis counties, and city of St. Louis)

(9 Attendees / 3 comment sheets)

- Route 94 improvements are very important for St. Charles County
- I-70 (Convention Center to Cave Springs) is vital to the future of St. Charles County

Internet/mail-in comments (11 emails)

- Support for I-70 project from MO Z to Wentzville Parkway
- I-70 project from MO Z to Wentzville Parkway should be extended west to David Hoekel Parkway interchange
- I-70/64 interchange needs to be improved
- Improve I-70 from MO A to Wright City, especially the Wentzville curve
- The I-55 project from MO Z to US 67 should be advanced to the 2020-2029 time band
- Integrate the importance of the intermodal freight system throughout the plan and within the Preserve and Maintain the Existing System, Support a Diverse Economy, and Strengthen Intermodal Connections strategies.



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