EAST-WEST GATEWAY
Council of Governments

Creating Solutions Across Jurisdictional Boundaries

2018 Bicycle Crash Analysis

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Introduction

The *2018 Bicycle Crash Analysis* was developed by East-West Gateway Council of Governments (EWG) in response to the persistent incidence of crashes involving bicyclists in the St. Louis region. Despite annual fluctuations, bicycle crashes and fatalities continue to increase at a rate that outpaces motor vehicle crash and fatality rates, which have been on a mostly downward trend for the last several decades. This is a trend seen nationally as well as locally. Nationwide, people bicycling and walking account for more than 16 percent of crash fatalities, but only 11 percent of all trips.[1] This disproportionate representation in fatal crashes in particular underscores bicycle safety as an issue that needs to be brought to the forefront in the region's transportation planning discussions and efforts.

St. Louis is a Bicycle/Pedestrian Safety Focus City, as designated by the Federal Highway Administration's (FHWA) Safety Office. A Bicycle/Pedestrian Safety Focus City is designated as such if it falls within the top 20 cities with the highest number of bicycle and pedestrian fatalities over a three-year average from 2011-2013. Since bicycle and pedestrian crash types are more common in urban areas, any state that contains a Focus City is by default a Focus State. Currently, both Missouri and Illinois are designated Bicycle/Pedestrian Safety Focus States.

In addition, transportation law at the national level is also addressing bicycle safety. The Fixing America's Surface Transportation (FAST) Act was signed into law in 2015 and guides how project planning and programming is conducted by state departments of transportation (DOTs) and metropolitan planning organizations (MPOs). The FAST Act continues the National Highway Performance Program (NHPP) established under the Moving Ahead for Progress in the 21st Century Act (MAP-21) which requires a performance-driven, outcome-based planning and programming process. A crucial element of the NHPP process is the establishment of performance measures and targets to achieve desired outcomes across the transportation system. Reducing the number of non-motorized fatalities and non-motorized serious injuries is one of five required safety performance measures. For 2018, EWG has established a target of reducing this number by 2 percent for the metropolitan planning area, equating to a combined total of no more than 205.3 non-motorized serious injuries and fatalities. This performance target is in line with current trends and funding availability, and takes into consideration the already established state (DOT) targets of 2 percent for Illinois, and 4 percent for Missouri.

The purpose of the *2018 Bicycle Crash Analysis* is to examine the issue of bicycle 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 bicycle safety. This document, along with the corresponding *2018 Pedestrian Crash Analysis*, is intended to be an informational tool for our regional partners, local public agencies, and project sponsors to inform their decision-making and transportation planning processes, and ultimately, to improve the safety and mobility of people walking and bicycling.

1 http://www.pedbikeinfo.org/topics/completestreets.cfm

Data and Methodology

The EWG planning area is comprised of an eight-county region spanning Illinois and Missouri. It includes Madison, Monroe, and St. Clair counties in Illinois, and the city of St. Louis, St. Louis, St. Charles, Jefferson, and Franklin counties in Missouri. It is a diverse region, representing urban, suburban, and rural areas, and presents unique challenges to transportation planning.

EWG staff compiled and analyzed data for all reported crashes in the region involving a bicyclist over the five-year period from 2011 to 2015, with breakdown by county, crash severity, and a variety of other contributing factors and demographic indicators.

Crash data is derived from police reports, which have certain limitations. As a bi-state region, differences in reporting between Missouri and Illinois means that the data do not always align perfectly, resulting in slightly different figures for each state. To ensure accuracy, consistency, and fair comparison in this analysis, some data have been omitted, and will be noted as such.

Another limitation of the data is unreported crashes. Various sources, including the National Highway Traffic Safety Administration (NHTSA), estimate that close to half of all motor vehicle crashes are not reported to police.[2] Typically, unreported crashes are those that result in minor or insignificant property damage, not fatalities or serious injuries. Although this is a generic estimate for all types of motor vehicle crashes, it can be inferred that there are likely large numbers of minor, unreported crashes involving bicyclists as well.

Certain demographic data, such as race, are not included on crash reports, which limits socio-economic analysis. Historically, communities of color and low-income communities have struggled with disinvestment in transportation infrastructure, which is reflected in issues of access and safety. Environmental Justice was introduced as federal policy in 1994 as a means of addressing racial, ethnic, and socioeconomic equity, and is used in this analysis for the same purpose. As the term is used in this document, and as it is defined by EWG, environmental justice areas are those areas with a disproportionately high concentration of not only low-income and minority populations, but also zero-vehicle households, seniors, persons with disabilities, and those with limited English proficiency (LEP). Taking a closer look at these often underrepresented populations is helpful in examining issues of equity in the region, in regards to transportation safety and infrastructure.

In addition, results from EWG's 2017 Bicycling and Walking Survey have also been included to shed light on local perceptions of safety regarding bicycling. Relevant insights are highlighted where appropriate to illustrate how perceived safety also impacts bicycling behavior and individual transportation choices.

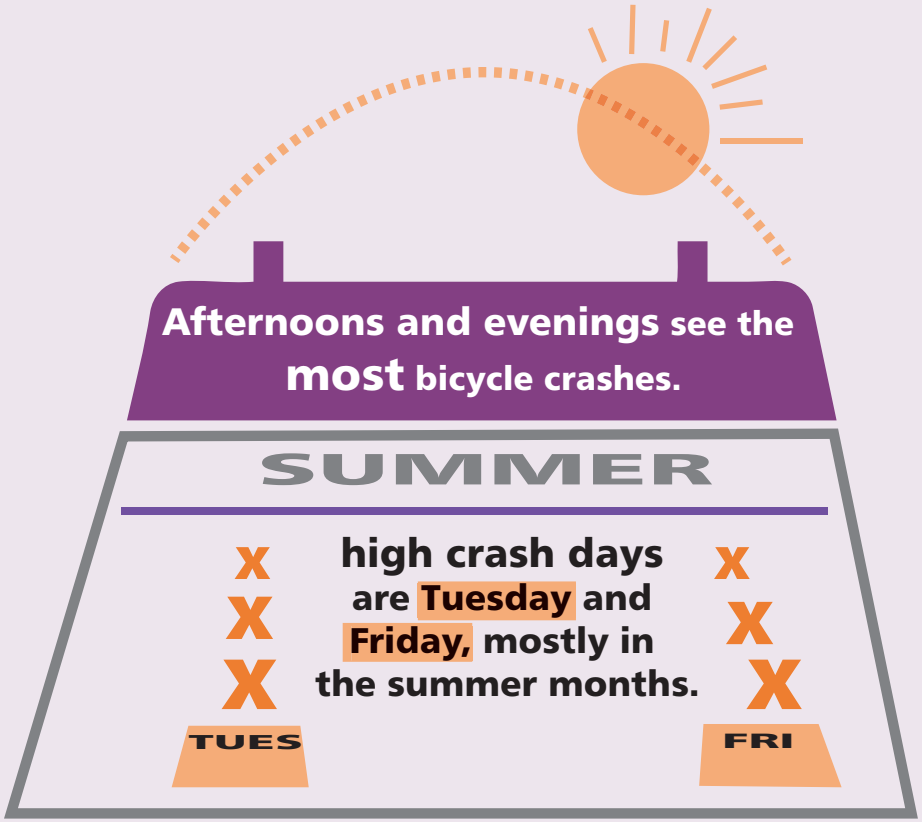
2 M. Davis & Co. (2015, July). *National telephone survey of reported and unreported motor vehicle crashes*. (Findings Report. Report No. DOT HS 812 183). Washington, DC: National Highway Traffic Safety Administration.

Key Findings

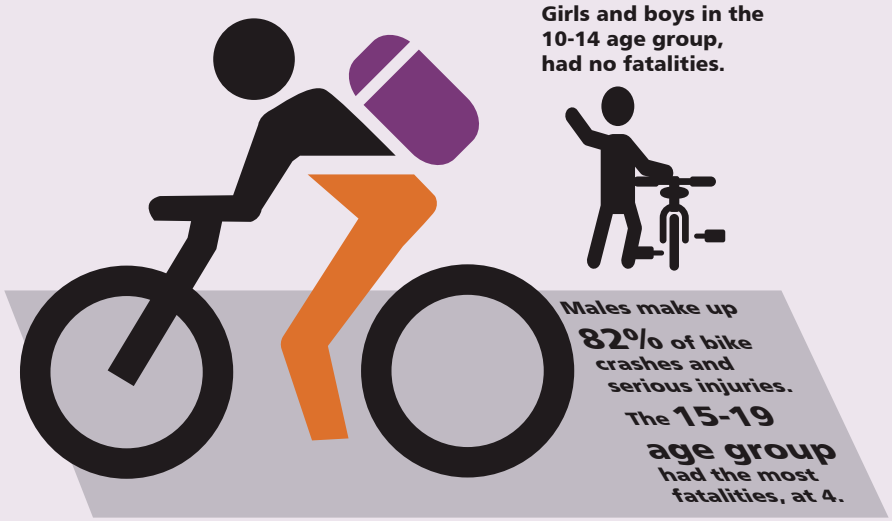
There was an average of 312 bicycle crashes per year for the five-year period from 2011-2015. Of the 1,561 total bicycle crashes, roughly 10 percent resulted in a serious injury, and 1 percent resulted in a fatality.

Bicycle crashes in the region are less dispersed than automobile crashes, and are primarily concentrated in the city of St. Louis and within the I-270 ring in St. Louis County, although there are significant numbers in the Florissant/ Hazelwood area, along I-70 in St. Charles County, and smaller pockets in Illinois as well.

Most bicycle crashes happen on a ...



In our region, 100% of bike fatalities were males.

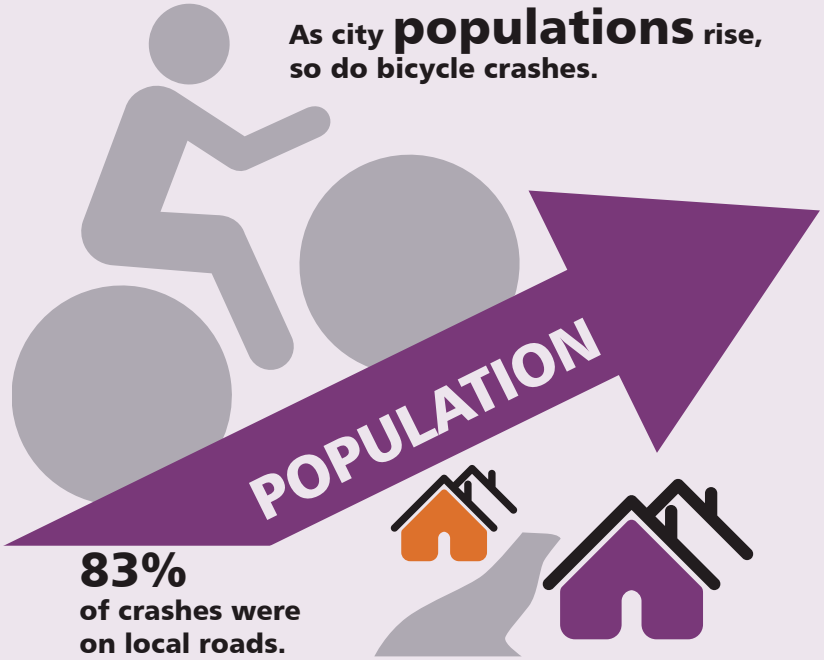


9 fatalities were in daytime

6 fatalities were in darkness

The St. Louis region has an annual average of **261** daylight bicycle crashes

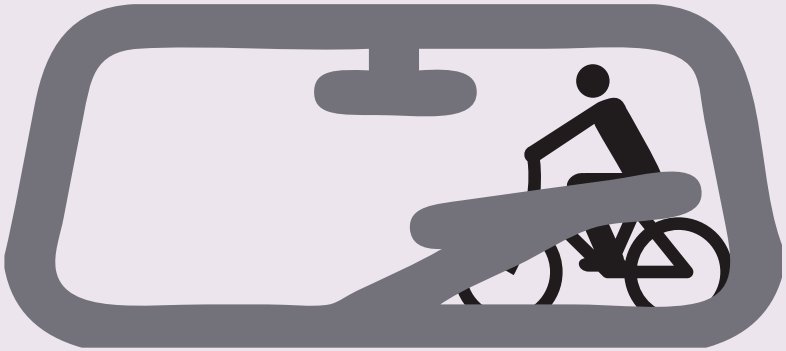
As city **populations** rise, so do bicycle crashes.



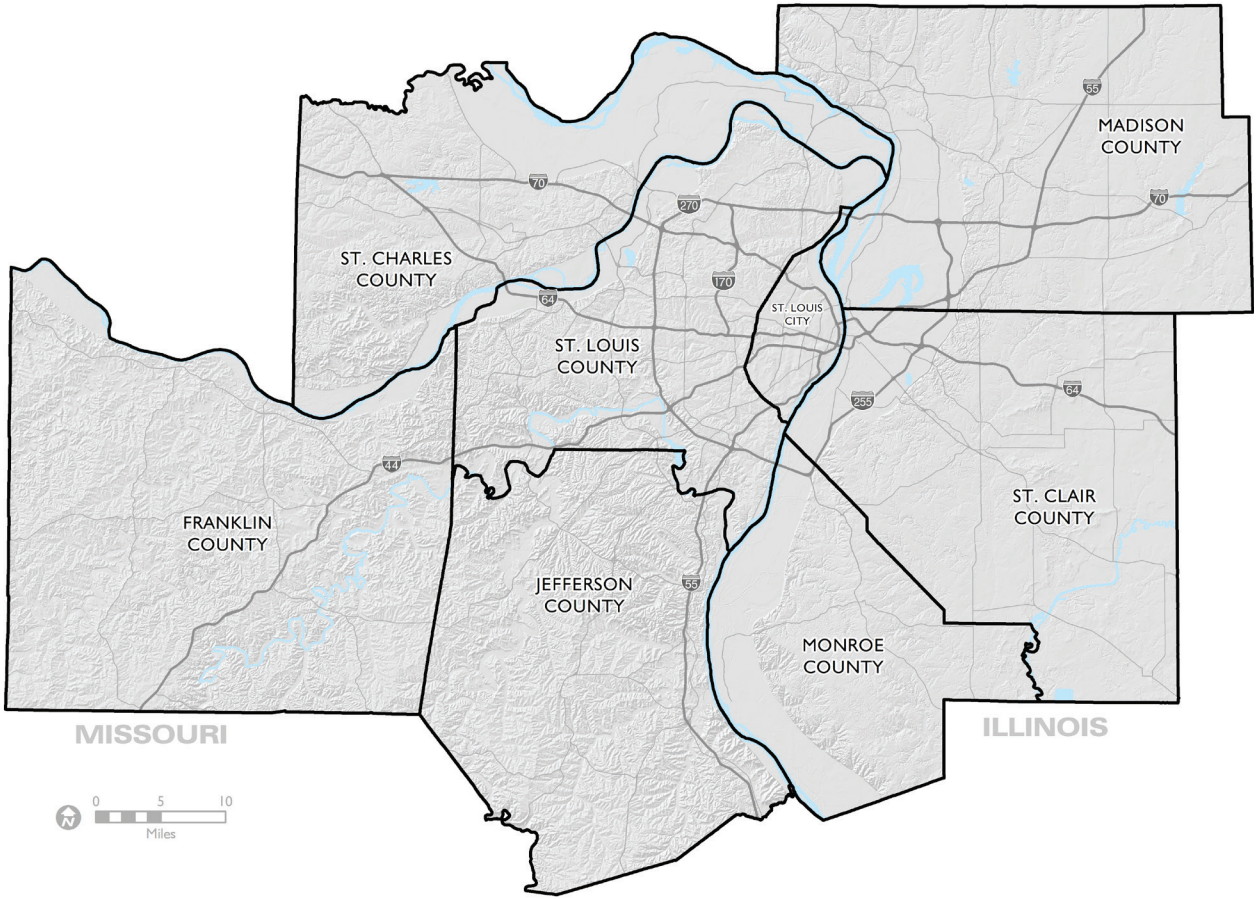
83% of crashes were on local roads.

The **top 2** known causes of bicycle crashes:

1) Failure to Yield.
2) Distracted or Inattentive Driving.



East-West Gateway Region



Bicycle Crash Trends

There was an average of 312 bicycle crashes per year for the five-year period from 2011-2015. Of the 1,561 total bicycle crashes, roughly 10 percent resulted in a serious injury, and 1 percent resulted in a fatality. These numbers fall squarely within state and national trends, which show fatality rates between 0.3 percent and 1.8 percent and serious injury rates between 8 percent and 15 percent. 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 a whole (~15) but well below Illinois, which is an outlier at an average of approximately 25 crashes per 100,000 residents.

Table 1: Bicycle Crashes

Year	2011	2012	2013	2014	2015	Total	Average
Total	328	312	324	295	302	1,561	312

Figure 1: Bicycle Crashes

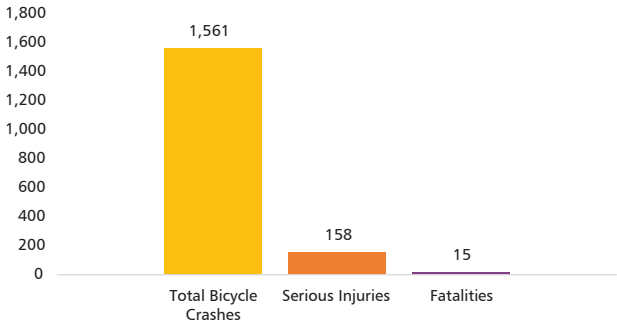


Figure 2: Bicycle Crashes Per 100,000 Residents

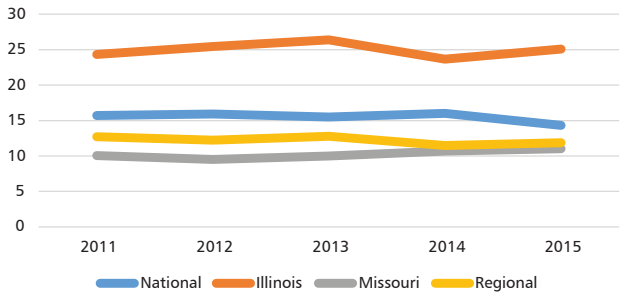


Figure 3: Fatalities as Percent of Total Bicycle Crashes

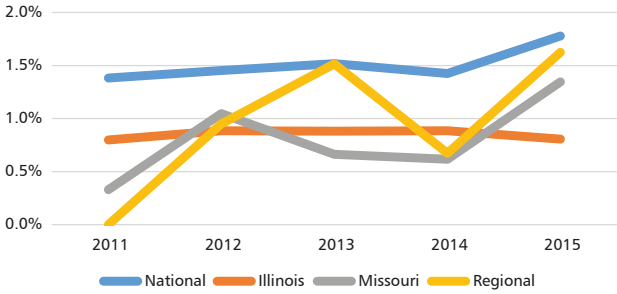
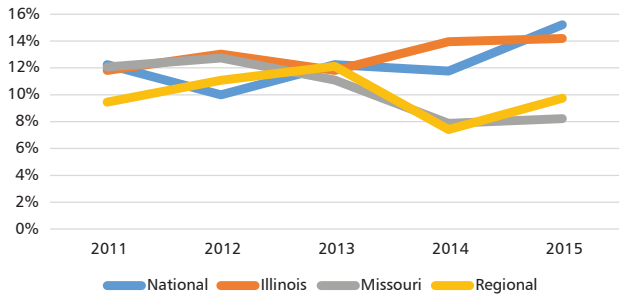
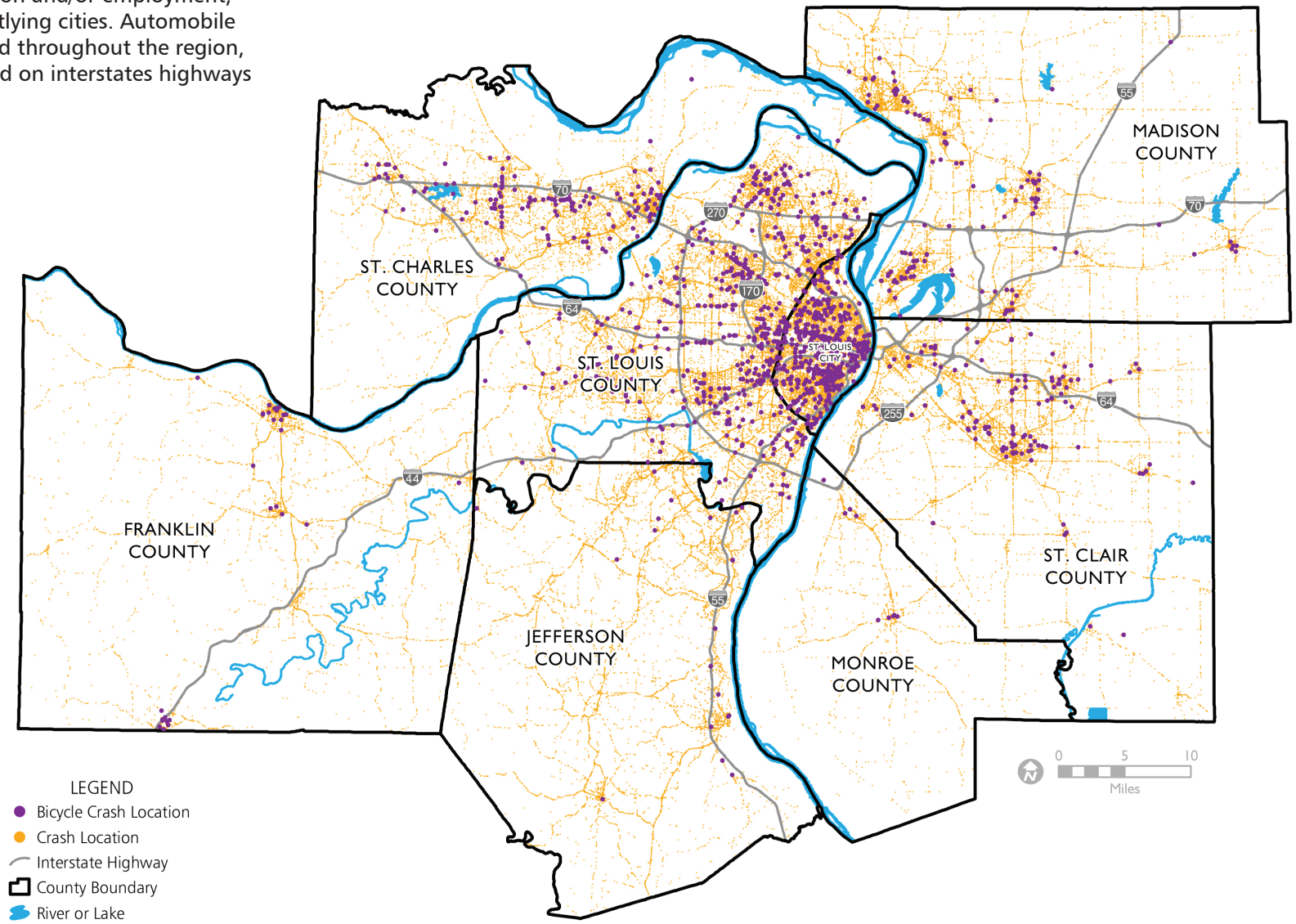


Figure 4: Serious Injuries as Percent of Total Bicycle Crashes



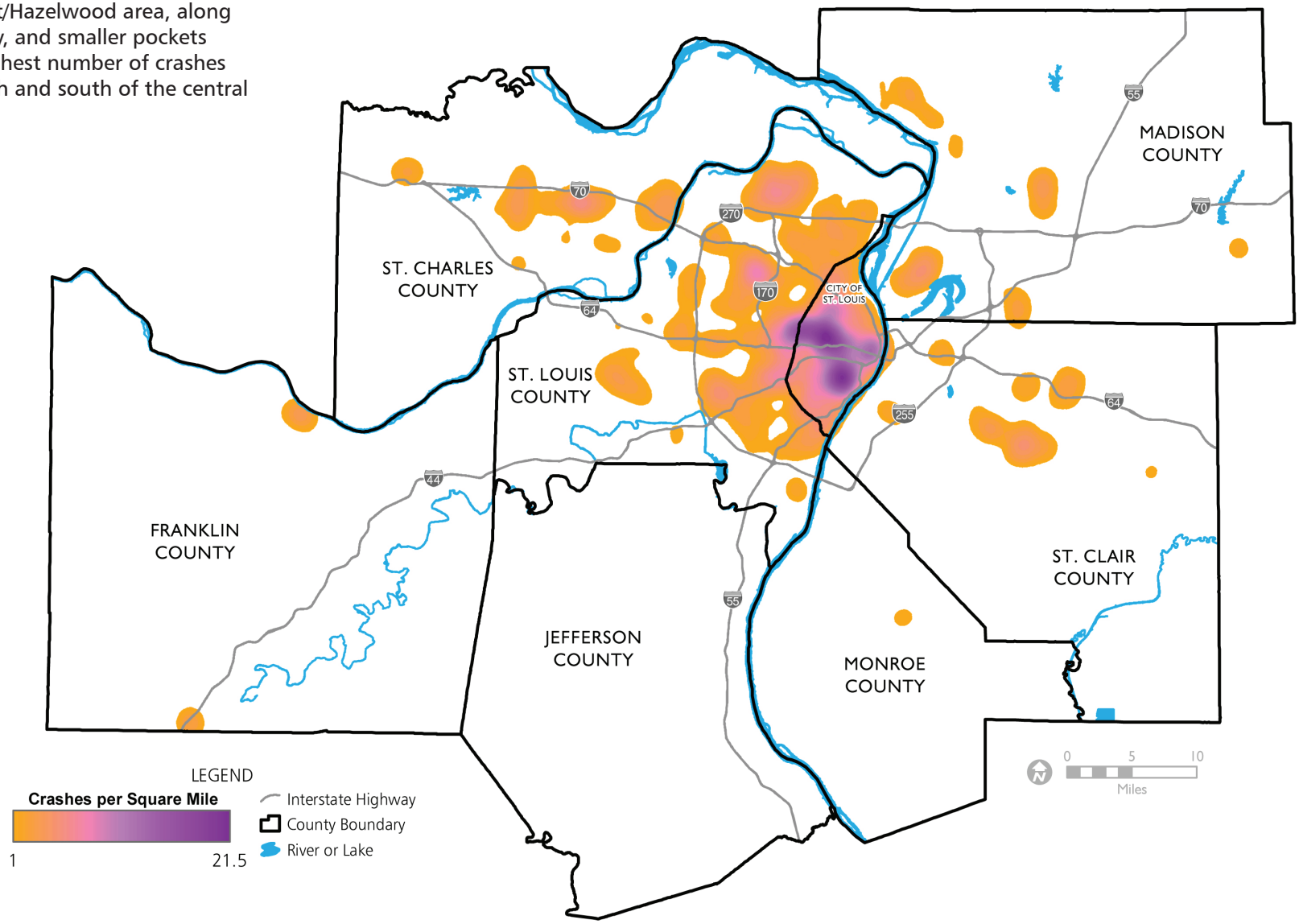
Bicycle Crash Locations

Bicycle crashes in the region are concentrated in the city of St. Louis and mid-St. Louis County, with clusters along major arterial roads, in areas with 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 highways and state routes.



Bicycle Crashes Per Square Mile

Bicycle crashes are primarily concentrated in the city of St. Louis and within the I-270 ring in St. Louis County, although there are significant numbers in the Florissant/Hazelwood area, along I-70 in St. Charles County, and smaller pockets in Illinois as well. The highest number of crashes occurred just to the north and south of the central corridor.



Crashes by Time of Day

Afternoon to early evening hours (1:00-6:59 p.m.) saw the most bicycle crashes, with 5:00-5:59 p.m. being the peak hour at 174 crashes. Evening rush hour times also experienced the most serious injuries, with 4:00 to 5:59 p.m. having the highest total number of serious injury crashes. Morning rush hour times did not have the spike in crashes that the evening peak had, with the total number of crashes and crashes involving a serious injury being roughly only a third of the evening hours.

Table 2:

Time	2011	2012	2013	2014	2015	Total	Average
12:00 to 12:59 a.m.	4	1	3	3	6	17	3
1:00 to 1:59 a.m.	1	6	3	2	3	15	3
2:00 to 2:59 a.m.	1	1	1	0	0	3	1
3:00 to 3:59 a.m.	0	1	1	0	0	2	0
4:00 to 4:59 a.m.	0	1	1	2	1	5	1
5:00 to 5:59 a.m.	0	2	2	2	1	7	1
6:00 to 6:59 a.m.	7	5	6	6	5	29	6
7:00 to 7:59 a.m.	12	18	10	12	14	66	13
8:00 to 8:59 a.m.	16	14	10	13	11	64	13
9:00 to 9:59 a.m.	11	10	9	10	5	45	9
10:00 to 10:59 a.m.	14	10	9	7	13	53	11
11:00 to 11:59 a.m.	17	19	18	16	16	86	17
12:00 to 12:59 p.m.	23	15	20	12	17	87	17
1:00 to 1:59 p.m.	21	16	28	17	22	104	21
2:00 to 2:59 p.m.	12	18	30	28	16	104	21
3:00 to 3:59 p.m.	34	33	34	34	24	159	32
4:00 to 4:59 p.m.	39	31	28	28	39	165	33
5:00 to 5:59 p.m.	28	39	36	33	38	174	35
6:00 to 6:59 p.m.	34	22	28	21	25	130	26
7:00 to 7:59 p.m.	16	18	18	23	17	92	18
8:00 to 8:59 p.m.	17	14	15	12	14	72	14
9:00 to 9:59 p.m.	9	12	13	8	11	53	11
10:00 to 10:59 p.m.	8	6	3	4	7	28	6
11:00 to 11:59 p.m.	5	4	4	4	3	20	4

Figure 5: Bicycle Crashes by Time of Day

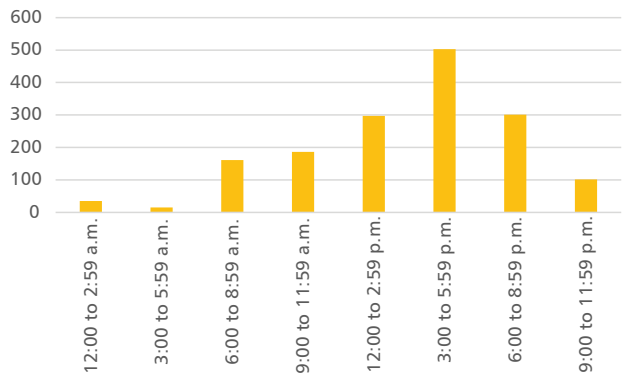
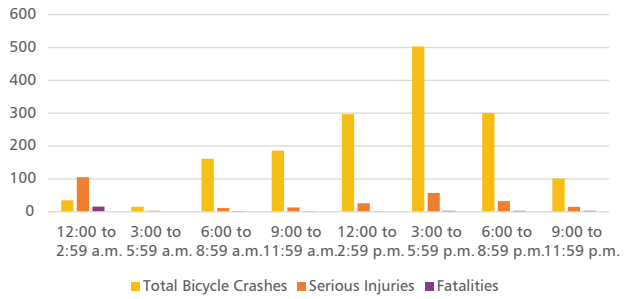


Table 3:

Time	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
12:00 to 12:59 a.m.	17	15	1	1
1:00 to 1:59 a.m.	15	14	1	0
2:00 to 2:59 a.m.	3	2	0	1
3:00 to 3:59 a.m.	2	1	1	0
4:00 to 4:59 a.m.	5	5	0	0
5:00 to 5:59 a.m.	8	6	2	0
6:00 to 6:59 a.m.	30	27	3	0
7:00 to 7:59 a.m.	66	59	6	1
8:00 to 8:59 a.m.	65	62	2	1
9:00 to 9:59 a.m.	45	40	5	0
10:00 to 10:59 a.m.	54	52	1	1
11:00 to 11:59 a.m.	87	80	7	0
12:00 to 12:59 p.m.	87	79	7	1
1:00 to 1:59 p.m.	105	96	9	0
2:00 to 2:59 p.m.	105	95	10	0
3:00 to 3:59 p.m.	161	144	15	2
4:00 to 4:59 p.m.	168	148	19	1
5:00 to 5:59 p.m.	174	151	23	0
6:00 to 6:59 p.m.	134	122	11	1
7:00 to 7:59 p.m.	94	82	11	1
8:00 to 8:59 p.m.	73	62	10	1
9:00 to 9:59 p.m.	53	48	4	1
10:00 to 10:59 p.m.	28	18	9	1
11:00 to 11:59 p.m.	20	17	2	1

Figure 6: Bicycle Crashes by Time of Day and Severity



Crashes by Day of the Week

Tuesdays and Fridays came out on top in terms of the number of bicycle crashes, with a total of 271 and 278 crashes respectively. Friday also had the highest occurrence of serious injuries and fatalities.

Table 4:

Day	2011	2012	2013	2014	2015	Total	Average
Sunday	40	29	37	38	35	179	36
Monday	34	38	42	51	38	203	41
Tuesday	56	63	64	40	48	271	54
Wednesday	49	55	44	36	47	231	46
Thursday	54	45	44	41	48	232	46
Friday	49	55	62	59	53	278	56
Saturday	54	32	41	37	41	205	41

Figure 7: Bicycle Crashes by Day of the Week

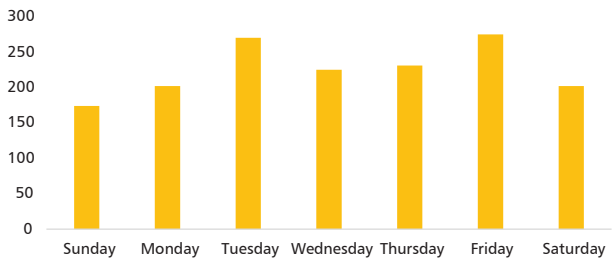
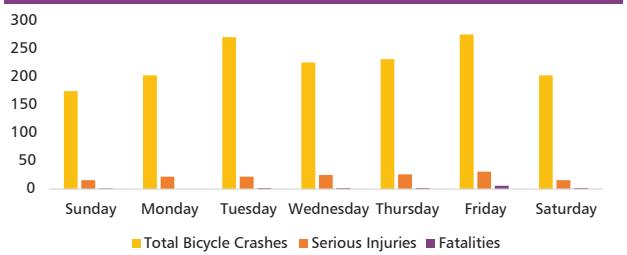


Figure 8: Bicycle Crashes by Day of the Week and Severity



When do you typically ride a bike?

Two-thirds of survey respondents reported bicycling on both weekends and weekdays. A smaller portion of bicyclists, nearly 22 percent, report riding only on the weekends. Respondents who never bike, or bike only on weekdays, came in at just under 6 percent each. This survey data seems to be at odds with the crash data showing higher crash rates during the week. Research has shown that as the number of bicyclists on the road increases, the number of bicycle crashes decreases.[3] It is possible that if more people in the region are bicycling on weekends, drivers are more aware of their presence, and crashes are less likely to occur.

3 University of New South Wales. (2008, September 7). A Virtuous Cycle: Safety In Numbers For Bicycle Riders. ScienceDaily. Retrieved January 11, 2018 from www.sciencedaily.com/releases/2008/09/080903112034.htm

Crashes by Month

The largest number of bicycle crashes between 2011 and 2015 occurred in May and August, with both months having over 200 crashes during the five-year period. Overall, winter months saw a dip in the total number of crashes, and summer months saw an increase. May had the highest number of serious injuries, at 23, and June had the highest number of fatalities, at three.

Figure 9: Bicycle Crashes by Day of the Month

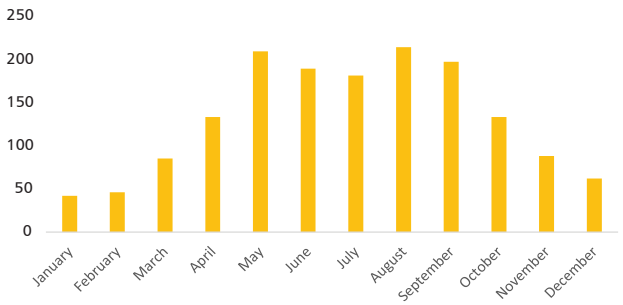


Figure 10: Bicycle Crashes by Day of the Month and Severity

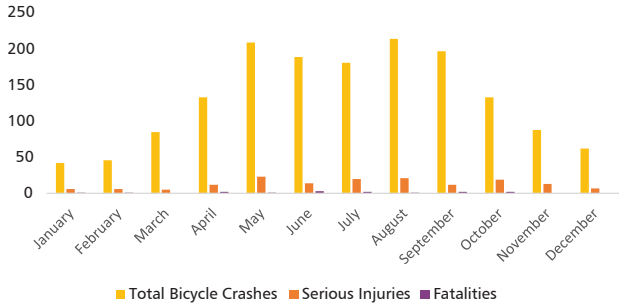


Table 5:

Month	2011	2012	2013	2014	2015	Total	Average
January	3	15	7	7	10	42	8
February	11	14	7	11	4	47	9
March	25	24	14	12	16	91	18
April	26	26	29	28	28	137	27
May	39	46	39	42	46	212	42
June	38	37	43	35	36	189	38
July	41	28	36	47	30	182	36
August	44	41	59	32	40	216	43
September	38	34	46	42	38	198	40
October	35	19	26	25	28	133	27
November	21	17	20	15	16	89	18
December	15	16	8	6	18	63	13

Table 6:

Month	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
January	42	35	6	1
February	47	40	6	1
March	91	85	6	0
April	137	123	12	2
May	212	188	23	1
June	189	172	14	3
July	182	160	20	2
August	216	194	21	1
September	198	184	12	2
October	133	112	19	2
November	89	76	13	0
December	63	56	7	0

Crashes by Weather Conditions

The majority of bicycle crashes occurred during clear, dry weather conditions. About 5 percent of crashes occurred in rainy weather, but very few crashes occurred during snow, sleet, or icy conditions. It's important to note that multiple weather conditions can apply to a single crash, increasing the total number of crashes in this category. For example, it can be cloudy with freezing temperatures. It is also expected that the St. Louis region experiences more days of clear, cloudy, or rainy weather each year than instances of snow, sleet, or hail.

What prevents you from bicycling more or at all?

According to survey results, bad weather ranked fifth in terms of what prevents people from bicycling, with 48 percent of respondents citing weather as a minor reason and 25 percent citing it as a major reason. Bad weather came in behind lack of on- and off-street facilities, bad driver behavior, and speed and number of cars, respectively.

Table 7:

Weather Conditions	2011	2012	2013	2014	2015	Total	Average
Clear	274	279	267	259	252	1,331	266
Cloudy	39	27	43	27	44	180	36
Rain	16	12	24	11	15	78	16
Snow	2	1	0	1	1	5	1
Sleet / Hail	0	0	1	0	0	1	0
Freezing (Temp)	0	0	2	1	1	4	1
Fog or Mist	0	0	1	0	0	1	0
All Other Categories	2	2	1	3	0	8	2

Figure 11: Bicycle Crashes by Weather Conditions

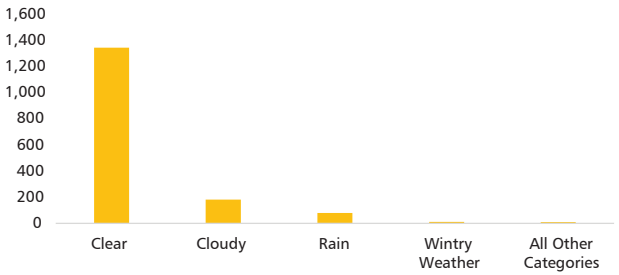
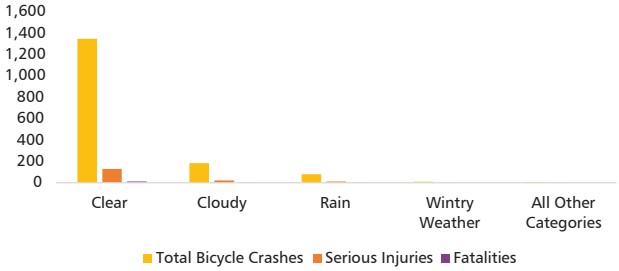


Table 8:

Weather Conditions	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
Clear	1,331	1,190	128	13
Cloudy	180	156	22	2
Rain	78	65	12	1
Snow	5	3	2	0
Sleet / Hail	1	1	0	0
Freezing (Temp)	4	4	0	0
Fog or Mist	1	1	0	0
All Other Categories	8	7	1	0

Figure 12: Bicycle Crashes by Weather Conditions and Severity



Crashes by Pavement Conditions

Similar to trends in weather conditions, the vast majority of bicycle crashes (92 percent) and fatalities (87 percent) occurred on dry pavement conditions. Fewer crashes occurred during wet or wintry pavement conditions, likely due to fewer people bicycling at these times.

Figure 13: Bicycle Crashes by Pavement Conditions

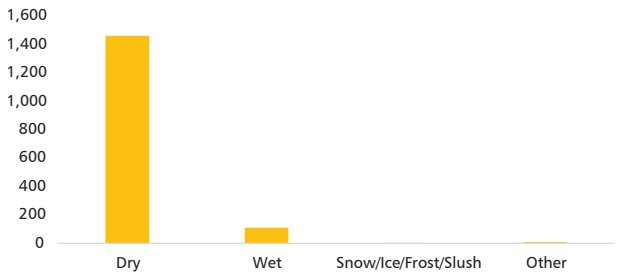


Table 9:

Pavement Conditions	2011	2012	2013	2014	2015	Total	Average
Dry	297	301	302	276	283	1,459	292
Wet	28	14	27	18	23	110	22
Snow/Ice/Frost/Slush	1	1	0	0	1	3	1
Other	4	0	1	3	1	9	2

Figure 14: Bicycle Crashes by Pavement Conditions and Severity

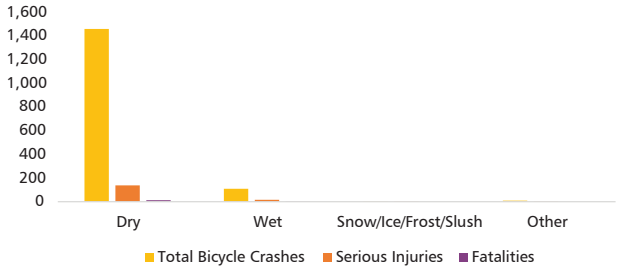


Table 10:

Pavement Conditions	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
Dry	1,459	1,307	139	13
Wet	110	92	16	2
Snow/Ice/Frost/Slush	3	2	1	0
Other	9	7	2	0

Crashes by Lighting Conditions

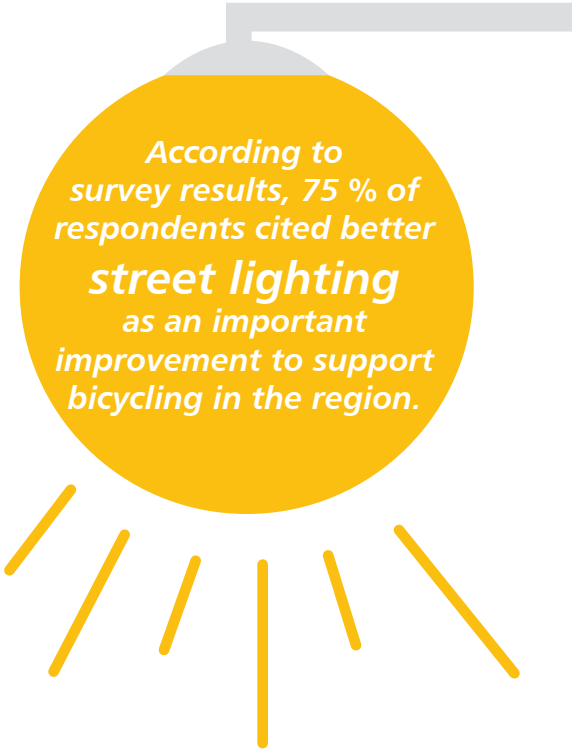
Of the 15 fatal bicycle crashes, nine occurred during daylight and six occurred in darkness on an unlighted road. Overall, most crashes occurred during daylight, with an annual average of 261. And although more crashes occurred after dark on lighted roads than unlighted roads, there were no fatalities during this time period on lighted roads after dark.

Table 11:

Lighting Conditions	2011	2012	2013	2014	2015	Total	Average
Daylight	271	253	280	255	244	1,303	261
Darkness / Lighted Road	56	45	42	38	50	231	46
Darkness	8	16	12	8	16	60	12
All Other	1	3	0	1	0	5	1

Table 12:

Lighting Conditions	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
Daylight	1,303	1,175	119	9
Darkness / Lighted Road	231	205	26	0
Darkness	60	40	14	6
All Other	5	5	0	0



Location of Crash

The majority of crashes (83 percent) occurred on local roads,[4] as did the number of serious injuries and fatalities.

Overall, the number of bicyclist crashes increased as city population increased, demonstrating a correlation between crash frequency and population density. A similar pattern applied to fatal crashes, although with significantly fewer fatalities than total crashes, the number of fatalities plateaus, with all three of the largest city sizes (ranging from 10,000 to 100,000+) having three fatal bicycle crashes.

In general, survey respondents were less comfortable on roads with more lanes and higher speeds, but their comfort level increased when bike facilities were added.

4 Local roads are defined in crash report data as being owned/maintained by a city or county.

Crashes by Type of Roadway

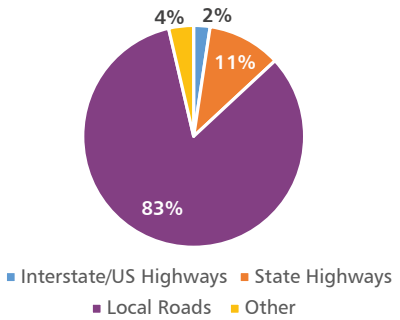
Table 13:

Type of Roadway	2011	2012	2013	2014	2015	Total	Average
Interstate/U.S. Highways	9	10	8	4	7	38	8
State Highways	39	31	40	29	32	171	34
Local Roads	281	266	273	258	254	1,332	266
Other	7	10	13	11	17	58	12

Table 14:

Type of Roadway	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
Interstate/U.S. Highways	38	35	2	1
State Highways	171	146	21	4
Local Roads	1,332	1,192	130	10
Other	58	52	6	0

Figure 15: Bicycle Crashes by Type of Roadway



Crashes by City Size

Table 15:

City Size	2011	2012	2013	2014	2015	Total	Average
Unincorporated	36	32	32	33	37	170	34
Less than 5,000	16	13	12	13	19	73	15
5,000 to 9,999	29	27	32	32	23	143	29
10,000 to 24,999	65	44	66	40	51	266	53
25,000 to 99,999	76	86	86	70	72	390	78
100,000 or more	114	115	106	114	108	557	111

Figure 16: Bicycle Crashes by City Size

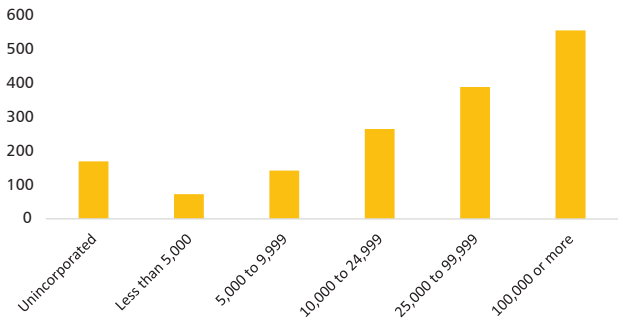
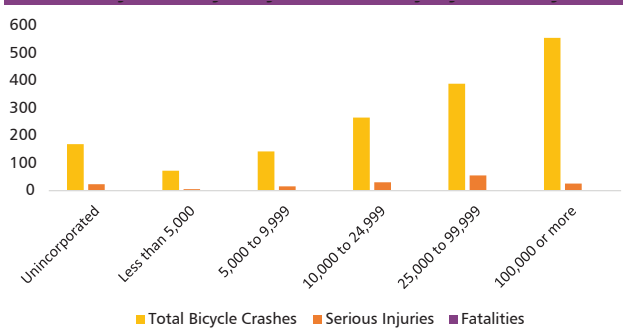


Table 16:

City Size	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
Unincorporated	170	143	24	3
Less than 5,000	73	66	6	1
5,000 to 9,999	143	125	16	2
10,000 to 24,999	266	232	31	3
25,000 to 99,999	390	331	56	3
100,000 or more	557	528	26	3

Figure 17: Bicycle Crashes by City Size and Severity

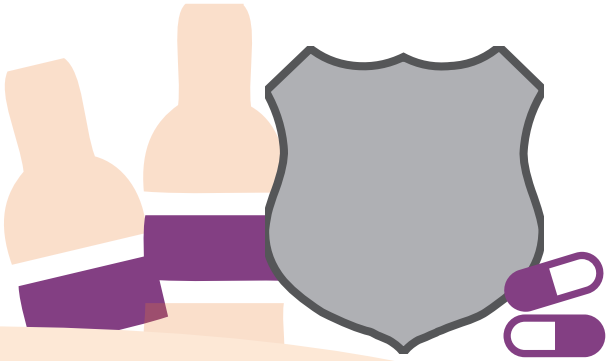


Cause of Crash

The top two known causes of bicycle crashes were failure to yield and distracted and inattentive driving, respectively. It is difficult to pinpoint an accurate or conclusive trend regarding the causes of bicycle crashes because the vast majority did not have a known cause. It is important to note that any crash can have more than one cause or vehicle movement, resulting in the number of driver actions depicted to exceed the total number of crashes.

While it appears that distracted and inattentive driving saw a steep decline after 2011, it is important to note that this is likely due to administrative changes in the way that probable contributing circumstances are being reported by police on the new (2012) crash report form.

Twenty-five crashes (1.6 percent) over the five-year period involved impairment of the driver or bicyclist due to the use of alcohol or drugs.



Just over half of survey respondents (51 percent) cited ***enforcement of traffic laws*** *as a very important improvement to support bicycling in the St. Louis region, and roughly a third (33 percent) cited enforcement as somewhat important.*

Driver Actions

Table 17:

Driver Actions	2011	2012	2013	2014	2015	Total	Average
Distracted/Inattentive	70	24	29	19	19	161	32
Alcohol/Drugs	1	5	1	2	0	9	2
Driver Condition	0	0	1	1	1	3	1
Improper Backing	0	0	1	1	3	5	1
Improper Lane Change/Usage/Passing/Wrong Way	12	10	8	8	11	49	10
Improper Turn/Signal	6	8	5	6	6	31	6
Improper Stoppage	0	0	2	1	0	3	1
Failed to Yield	78	66	69	67	65	345	69
Speed Related/Follow Too Closely	8	4	7	8	5	32	6
Vehicle Condition	2	1	0	0	0	3	1
Violation of Sign/Signal	12	8	9	7	4	40	8
Vision Obstructed	0	24	19	20	19	82	16
Other/Unknown	13	37	49	33	38	170	34
None	154	155	149	150	159	767	153

Driver and Bicyclist Impairment

Table 18:

Under the Influence of Drugs/Alcohol	2011	2012	2013	2014	2015	Total	Average
Drivers	1	3	2	3	0	9	2
Bicyclists	2	2	5	4	3	16	3

Table 19:

Under the Influence of Drugs/Alcohol	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
Drivers	9	6	1	2
Bicyclists	16	12	3	1

Crashes by Age of Bicyclist

Bicyclists aged 10-19 experienced the highest total number of crashes, serious injuries, and fatalities. Although the 10-14 age group had no fatalities, the 15-19 age group had the highest, at four. This could also correlate with the school year, since May through August overall had more bicycle crashes, when children in these age groups would be out of school.

Table 20:

Age	2011	2012	2013	2014	2015	Total	Average
0-4	0	1	0	1	2	4	1
5-9	21	13	29	25	19	107	21
10-14	53	53	54	37	48	245	49
15-19	48	40	51	47	41	227	45
20-24	41	26	36	35	38	176	35
25-29	25	38	25	25	24	137	27
30-34	17	25	21	26	23	112	22
35-39	21	19	11	10	13	74	15
40-44	19	19	12	11	16	77	15
45-49	22	28	30	22	15	117	23
50-54	26	22	27	21	20	116	23
55-59	18	14	14	14	15	75	15
60-64	10	5	5	7	16	43	9
65-69	2	1	6	4	7	20	4
70-74	0	0	2	4	1	7	1
75-79	1	0	1	2	1	5	1
80-84	1	1	1	0	3	6	1
85+	1	0	0	0	1	2	0

Figure 18: Bicyclists in Crashes by Age

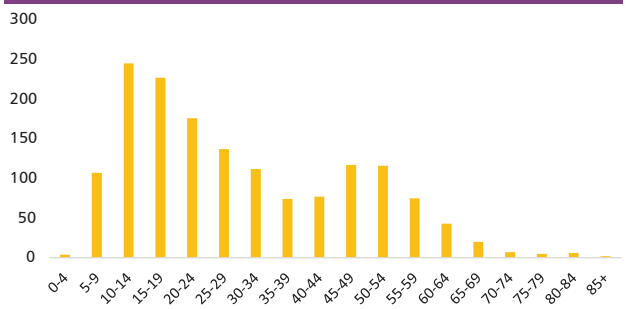
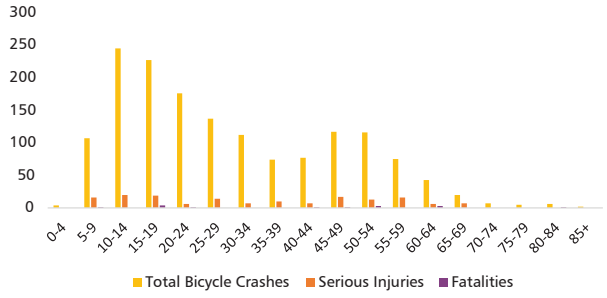


Table 21:

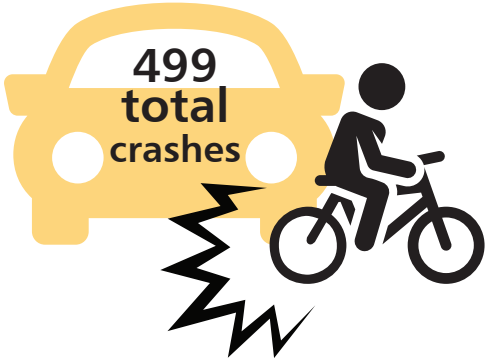
Age	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
0-4	4	4	0	0
5-9	107	90	16	1
10-14	245	225	20	0
15-19	227	204	19	4
20-24	176	169	6	1
25-29	137	123	14	0
30-34	112	105	7	0
35-39	74	64	10	0
40-44	77	69	7	1
45-49	117	99	17	1
50-54	116	100	13	3
55-59	75	59	16	0
60-64	43	34	6	3
65-69	20	13	7	0
70-74	7	7	0	0
75-79	5	5	0	0
80-84	6	5	0	1
85+	2	2	0	0

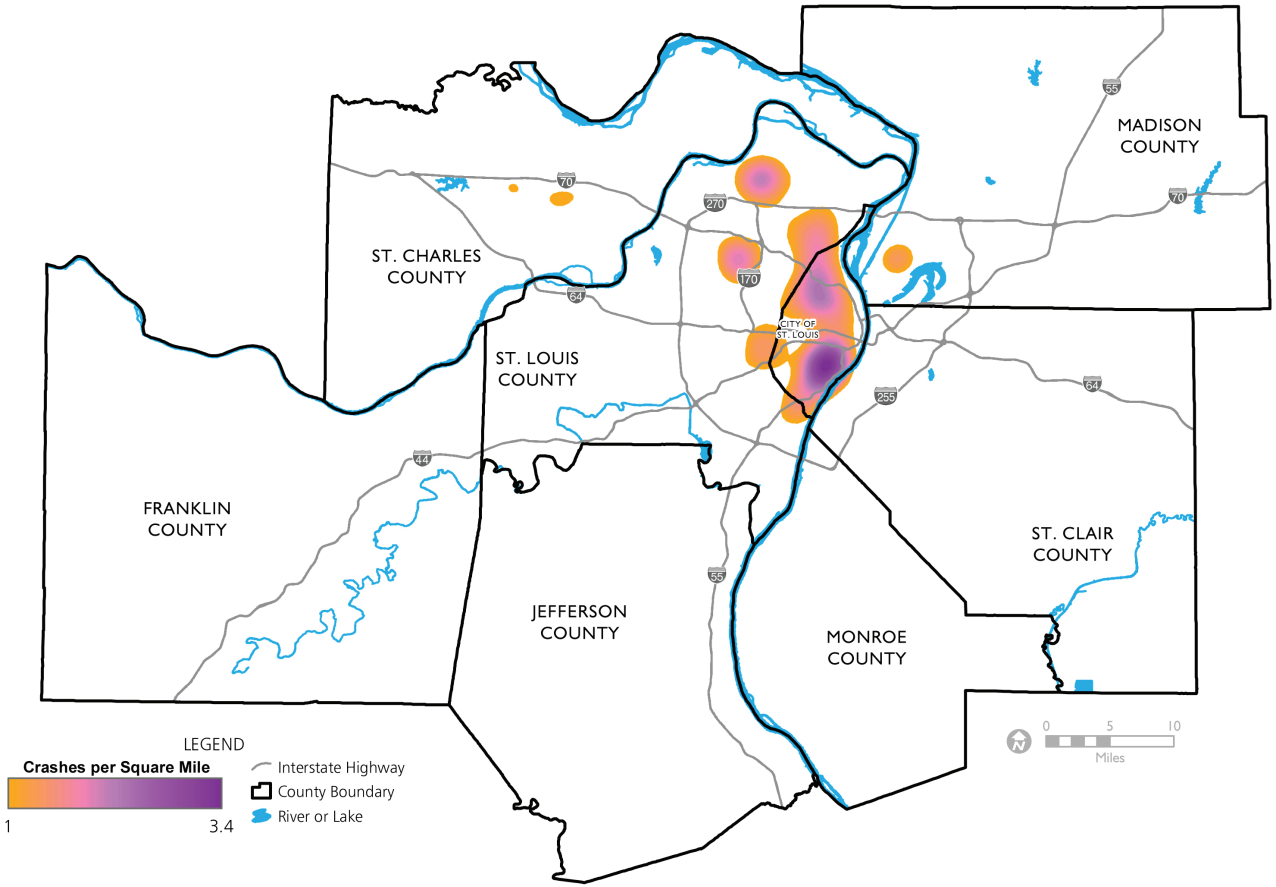
Figure 19: Bicyclists in Crashes by Age & Severity



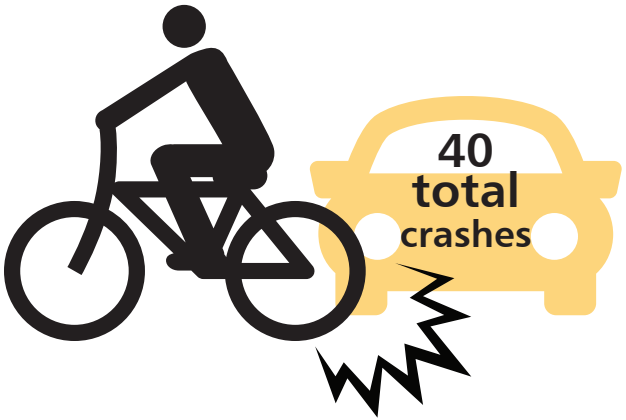
Bicyclists Under 18 Years of Age Per Square Mile

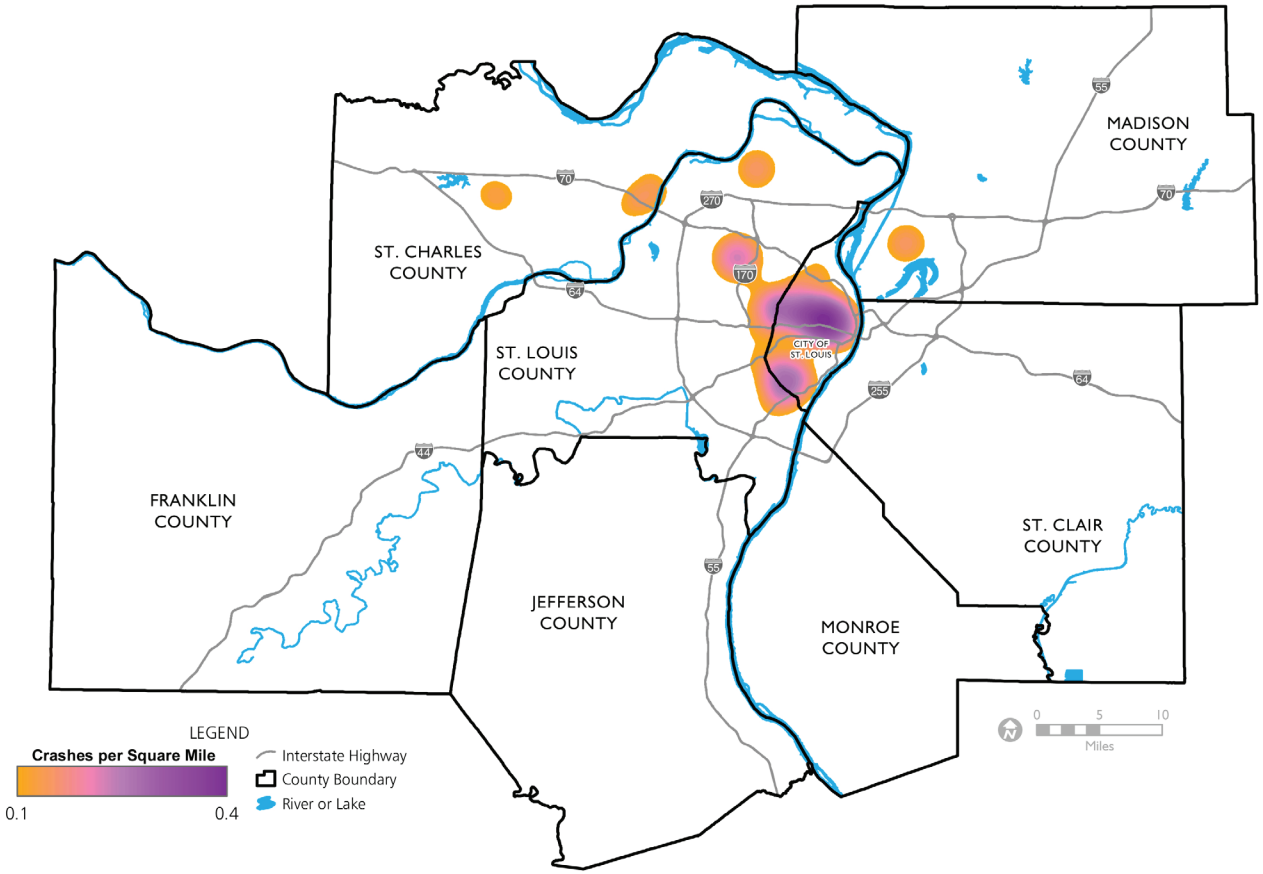
Bicycle crashes based on age reflect the regional trends in crash locations. The density of crashes involving individuals under 18 years of age and crashes involving individuals over 65 years of age (following page), although similar overall, have somewhat of an inverse relationship in the city of St. Louis. For those under age 18, the highest concentration of crashes is in south St. Louis. For those over age 65, the highest concentration of crashes is in north St. Louis and the central corridor.





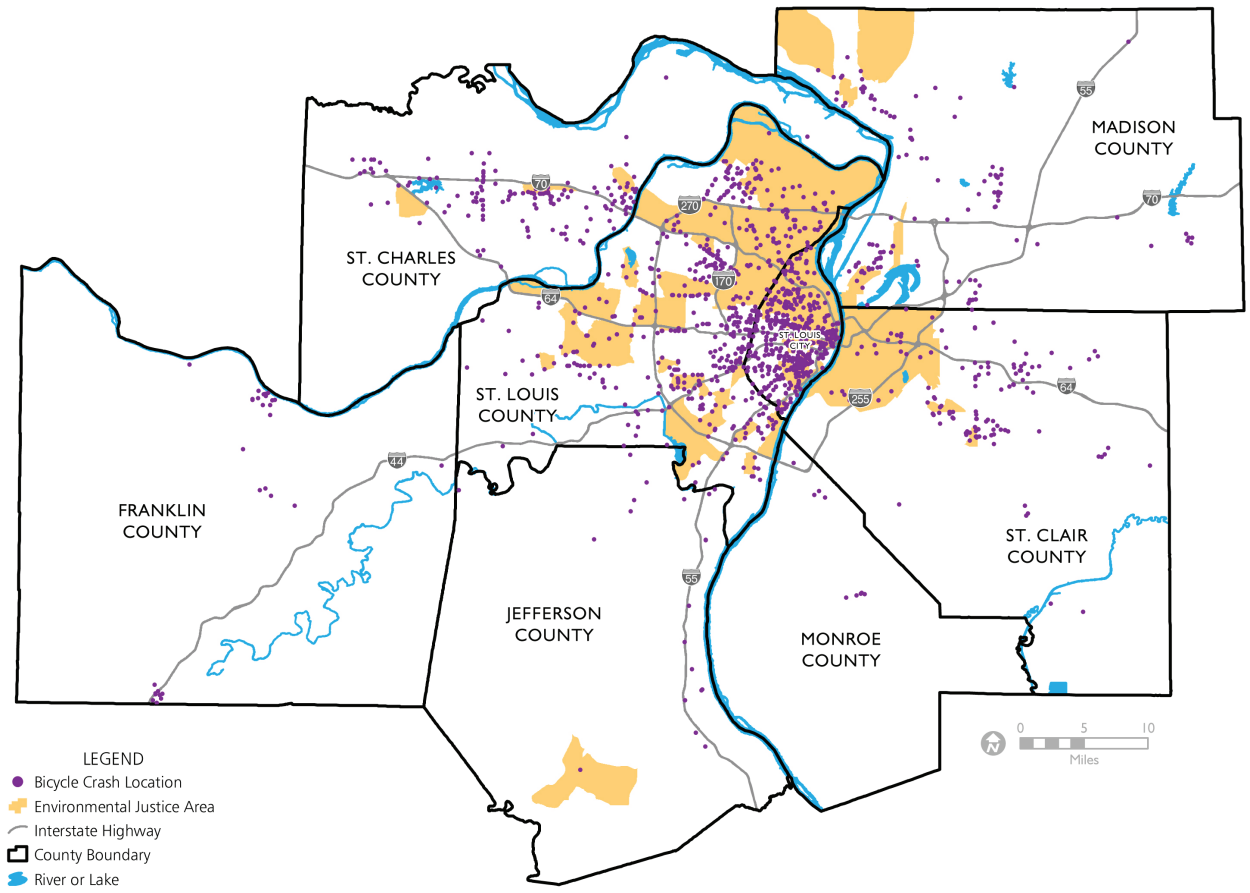
Bicyclists Over 65 Years of Age Per Square Mile





Bicycle Crash Locations with Environmental Justice Areas

Many bicycle crash locations in the city of St. Louis and north St. Louis County overlap with Environmental Justice (EJ) tracts. However, certain areas with high numbers of crashes, such as St. John and Florissant, fall into non-EJ pockets among large EJ swaths. Mid-St. Louis County and southwest portions of the city of St. Louis have high numbers of crashes, but are not located in an EJ tract.



Crashes by Gender of Bicyclist

In terms of gender, men comprised a significantly higher proportion of bicyclists involved in crashes, making up 82 percent of both the total number of crashes and the number of serious injuries, as well as 100 percent of fatalities.

Table 22:

Gender	2011	2012	2013	2014	2015	Total	Average
Female	63	53	76	43	42	277	55
Male	272	255	249	254	261	1,291	258

Figure 20: Bicyclists in Crashes by Gender

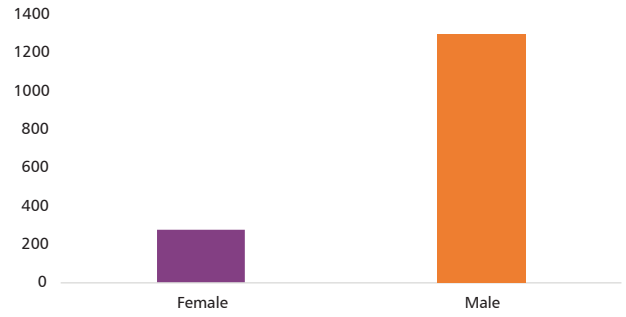
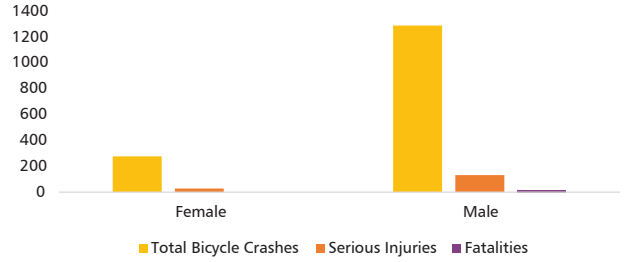


Table 23:

Gender	Total Bicycle Crashes	Minor and Non-Injuries	Serious Injuries	Fatalities
Female	277	249	28	0
Male	1,291	1,145	131	15

Figure 21: Bicyclists in Crashes by Gender & Severity



Strategies

The Federal Highway Administration, Missouri Department of Transportation, and Illinois Department of Transportation have many proven and recommended strategies and countermeasures for sponsors to use to make roadways a safer place for bicyclists. When talking about roadway safety, the Four E's are usually discussed: education, emergency medical services, enforcement and engineering. In this document we have combined the emergency medical services and enforcement strategies. The strategies and countermeasures provided in this document are a summary of strategies listed in Illinois and Missouri's strategic highway safety plans and the Federal Highway Administration's website.

Education

These strategies focus on educating the general public and roadway users on traffic safety. Those who can help implement these strategies are advocacy groups, safety coalitions, community groups, educators, communication professionals, etc.

- Improve public awareness to promote safe behavior by all roadway users relative to bicycle traffic.
- Educate bicyclists about:
  - –dangers of distraction while riding.
  - –value of wearing personal protective gear, especially bicycle helmets and high-visibility reflective clothing/equipment and bicycle lighting.
  - –increased crash risk during peak travel times.
- Educate drivers on the importance of:
  - –being aware and alert of bicyclists on the roadway, especially in or near intersections and downtown areas.
  - –leaving a safe distance when passing a bicyclist with a preferred minimum of 3 feet.
- Develop bicycle safety education and awareness programs targeting healthcare and schools.
- Reach out to bicycle advocacy groups to specifically target and address the local bike needs and concerns.
- Disseminate bicycling safety messages through the use of social media.
- Increase and enhance training programs and events for state and local planners, engineers, safety practitioners, and officials, which are focused on best practices in bicycle facility design.
- Promote and conduct training for local agencies on innovative strategies and techniques for bicycle accommodation.
- Promote research and identify effective policies to improve bicycle safety that can be implemented by state and local governments.

Emergency Medical Services (EMS)/Enforcement

These strategies focus on what first responders can do to help lower pedestrian crashes. Partners who can help implement these strategies include first responders, fire, rescue, paramedics and law enforcement.

- Increase enforcement of traffic laws for both bicyclist and motorists for public safety.
- As appropriate, implement the Enhancing Bicycle Safety: Law Enforcement's Role made available by NHTSA on-line.
- Disseminate bicycling safety messages through the use of social media.
- More fully utilize existing funding and seek to support safety programs to improve bicycle safety.
- Pilot and conduct equitable enforcement programs for all roadway users relative to bicycle traffic.
- Have first responders receive Traffic Incident Management (TIM) training to understand how to set up a safe work environment for those attending to a traffic incident.

Engineering

These strategies include countermeasures that can be physically made to roadways, sidewalks, intersections, etc. Engineering partners include highway design, traffic, maintenance, operations, and planning professionals.

- Utilize best practices for Complete Streets design from AASHTO and NACTO sources.
- Promote systemic design solutions that reduce conflict points, minimize exposure at roadway crossings, separate modes and reduce speed when practical.
- Create and implement a bike network plan with the goal of improving the viability of this travel mode and encouraging its use.
- Install:
  - "Share the Road" signs where appropriate.
  - "Bike Route" wayfinding signage for direction and distance to destinations.
  - pavement markings where appropriate (e.g., bike lanes, bike boxes at intersections, etc.).
  - protected bike lanes where practical.
  - four-foot wide minimum shoulders where appropriate.
  - signals with technology that detect bicyclists.
- Continue to fund and implement the Safe Routes to School program through the Transportation Alternatives Program.
- Evaluate and implement innovative best practices to improve bicycle accommodations and safety.
- Consider diverse options for bicycle travel including along through routes with lower traffic volumes, while seeking to fill network gaps.

Funding for Bicycle Improvements

This section identifies possible state and federal funding sources that sponsors can use for implementing bicycle safety strategies. It is important to note that this list is not an all-inclusive list and sponsors can use other funding such as local funds, grants, and donations.

Surface Transportation Block Grant Program – Suballocated (STP-S)

STP-S is a federally funded program that is administered by EWG. STP-S provides flexible funding that may be used by state and local governments for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. This program is funded through the Surface Transportation Block Grant Program which was authorized by the current transportation law the Fixing America's Surface Transportation (FAST) Act. Under this program, bicycle and pedestrian facilities may be constructed regardless of the roadway functional classification.

Transportation Alternatives Program (TAP)

TAP is a federally funded program that is administered by EWG. TAP provides funding for a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity. This program is authorized by the current transportation law the FAST Act. TAP projects must have a direct relationship to surface transportation and funding may be used for any phase of the project, including preliminary engineering/design, environmental, right-of-way, or construction.

Congestion Mitigation and Air Quality Improvement (CMAQ) Program

CMAQ is a federally funded program that is administered by EWG. The CMAQ program provides a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas, including the St. Louis region, that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former non-attainment areas that are now in compliance (maintenance areas). This program is authorized by the current transportation law the FAST Act. Bicycle and pedestrian facilities are eligible activities under CMAQ.

Highway Safety Improvement Program (HSIP)

HSIP is a federally funded program that is administered by the state Department of Transportation. The goal of HSIP is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-state-owned public roads and roads on tribal lands. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. This program is authorized by the current transportation law the FAST Act.

Illinois Transportation Enhancement Program (ITEP)

ITEP is a federally funded program that is administered by the Illinois Department of Transportation. ITEP provides funding for projects that expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of our transportation infrastructure. The ITEP is designed to promote and develop alternative transportation options, including bike and pedestrian travel, along with streetscape beautification. The federal funds are awarded competitively, and projects must be related to surface transportation. Eligible applicants include all entities that were previously eligible to apply for Transportation Alternatives Program (TAP) funds, and include any local or state government with taxing authority. In addition, the FAST Act allows nonprofit entities responsible for the administration of local transportation safety programs to apply. Local matching funds are required.

Traffic Engineering Assistance Program (TEAP)

TEAP is administered by the Missouri Department of Transportation (MoDOT) with funds coming from MoDOT and the local public agencies (LPA). The Missouri Highway and Transportation Commission (MHTC) developed TEAP to provide Missouri LPAs with assistance to proficiently study traffic engineering problems. LPAs facing a traffic safety or operational problem can utilize the LPA On-Call Consultant List to perform a traffic study. Typical studies may include corridor safety and/or operational analysis, intersection(s) safety and/or operational analysis, speed limit review, sign inventory, pedestrian/bike route analysis, parking issues, and other traffic studies including elements necessary to develop an ADA transition plan.

Resources

Federal Highway Administration: Bicycle Safety

https://safety.fhwa.dot.gov/ped_bike/

https://safety.fhwa.dot.gov/ped_bike/ped_focus/

https://safety.fhwa.dot.gov/ped_bike/ped_focus/focus_cities_states2015.cfm

http://pedbikesafe.org/

Illinois Strategic Highway Safety Plan

http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/SHSP/SHSP_2017.pdf

Missouri Strategic Highway Safety Plan

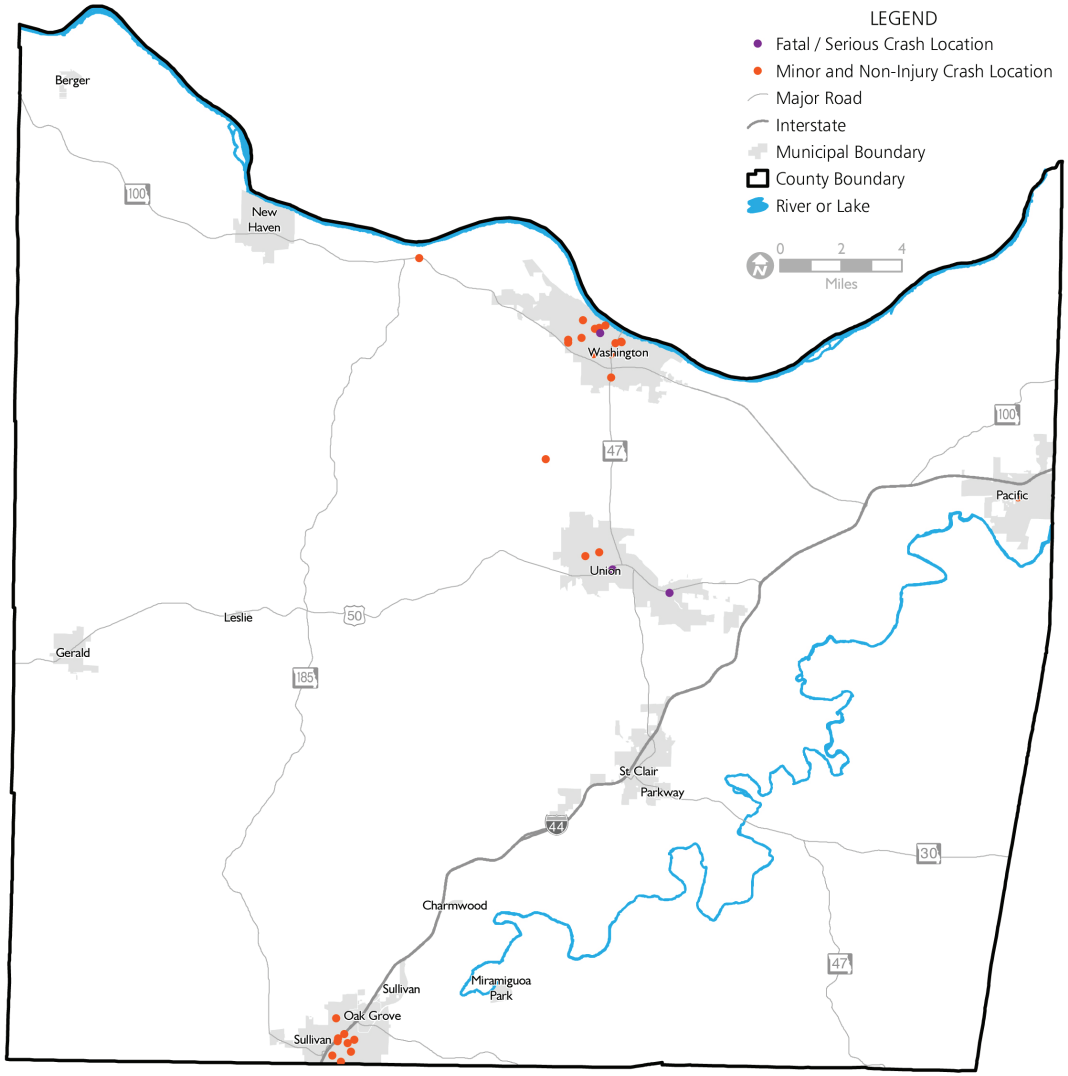
http://s3-us-west-2.amazonaws.com/modot-pdfs/Blueprint_2016-2020.pdf

National Highway Traffic Safety Administration

https://www.nhtsa.gov/road-safety/bicycle-safety

https://one.nhtsa.gov/Driving-Safety/Bicycles/Enhancing-Bicycle-Safety:-Law-Enforcement percent27s-Role

Map Appendix



Franklin County, Missouri

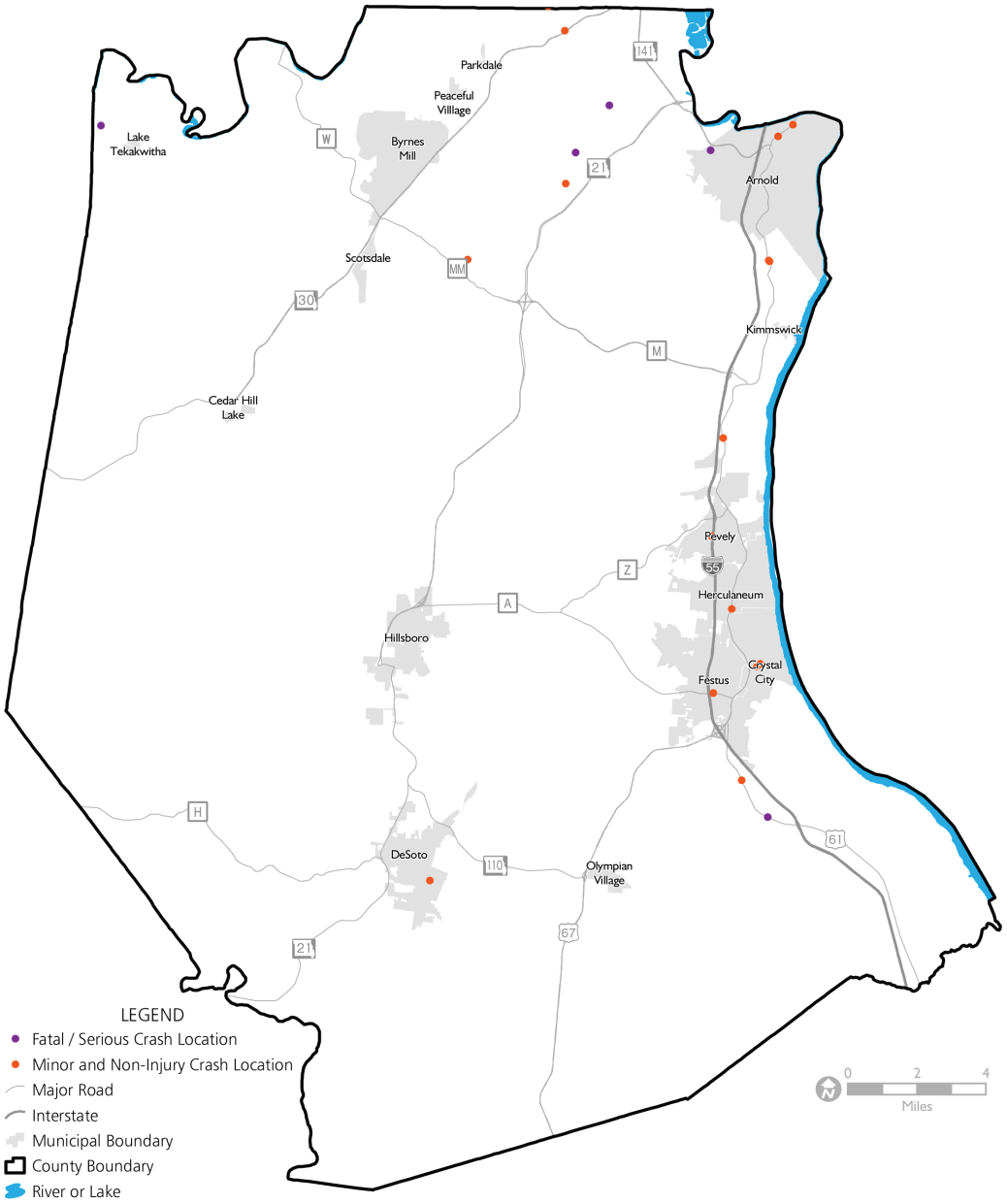
Bicycle Crash Locations

2011-2015

Jefferson County, Missouri

Bicycle Crash Locations

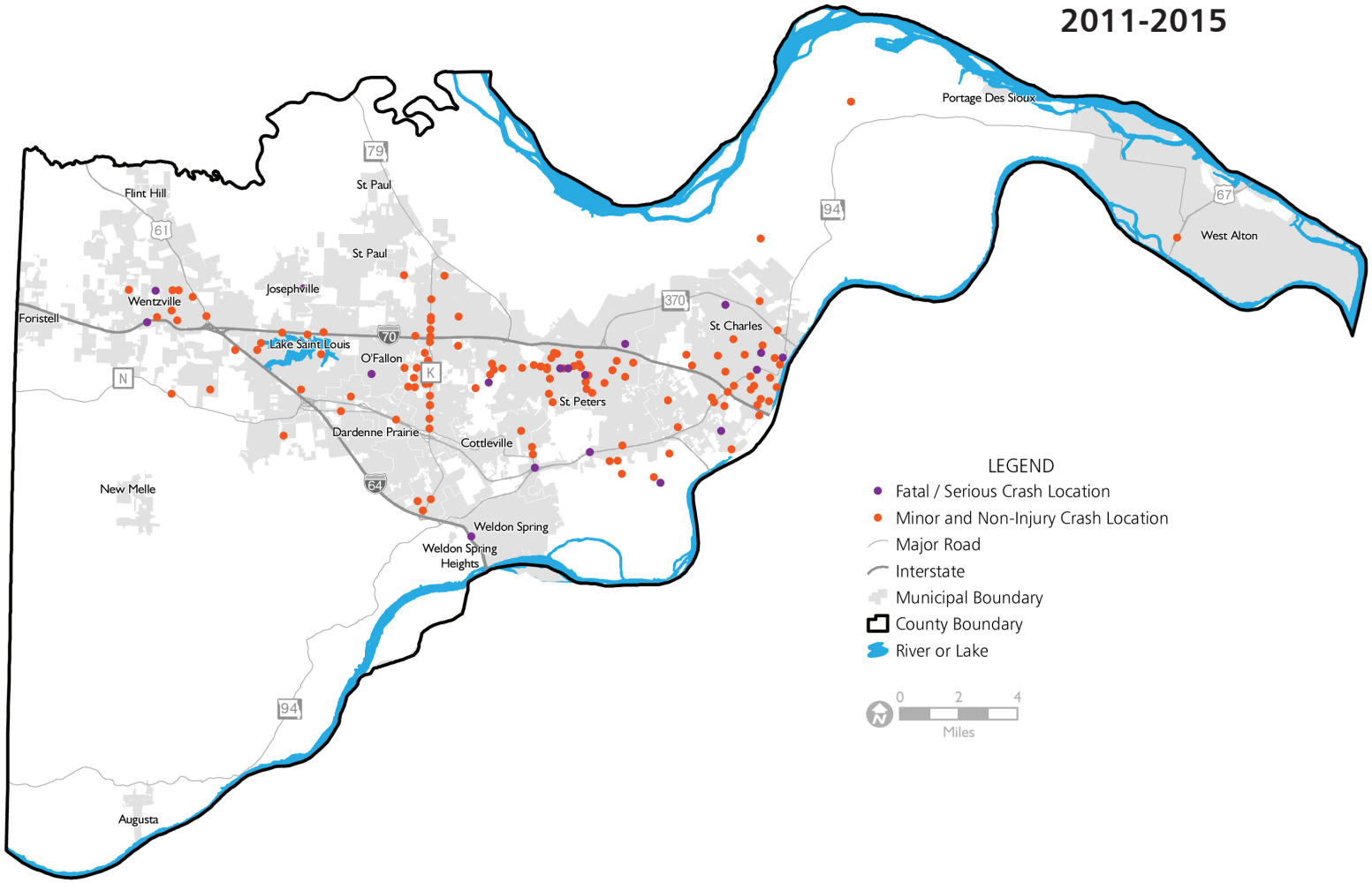
2011-2015



St. Charles County, Missouri

Bicycle Crash Locations

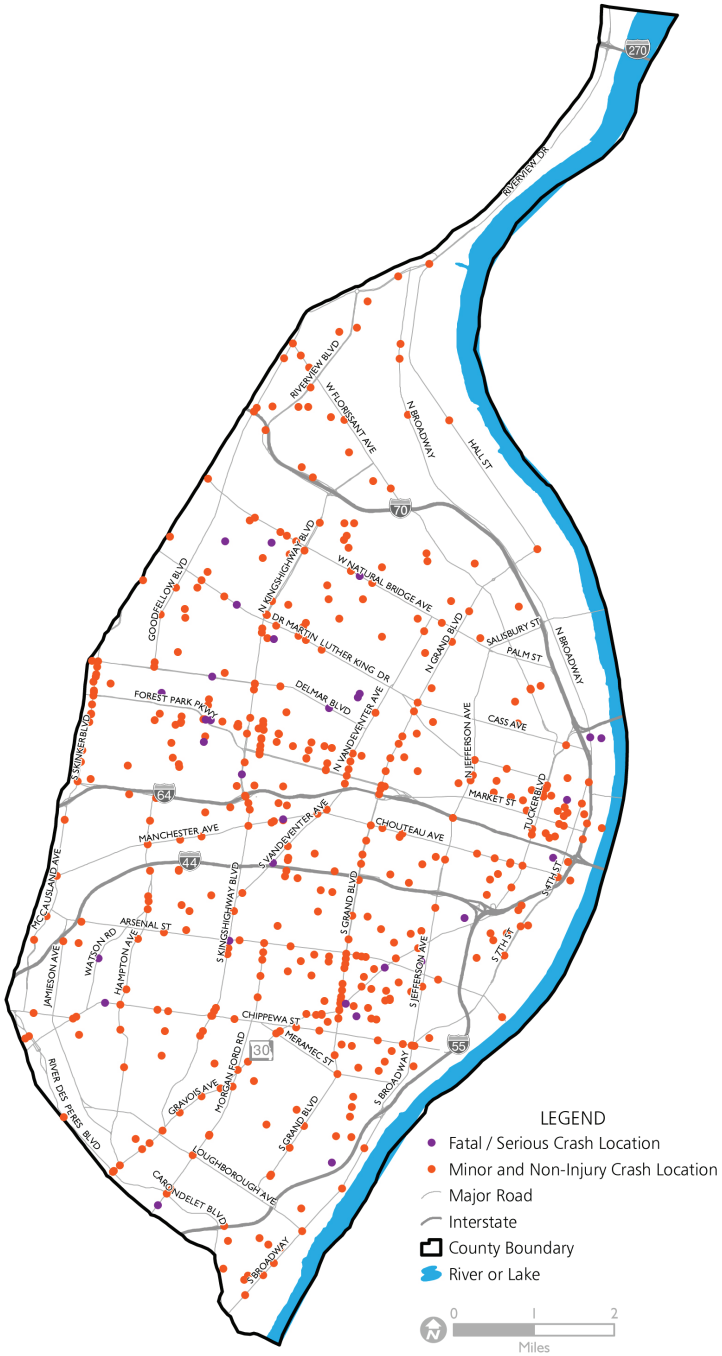
2011-2015

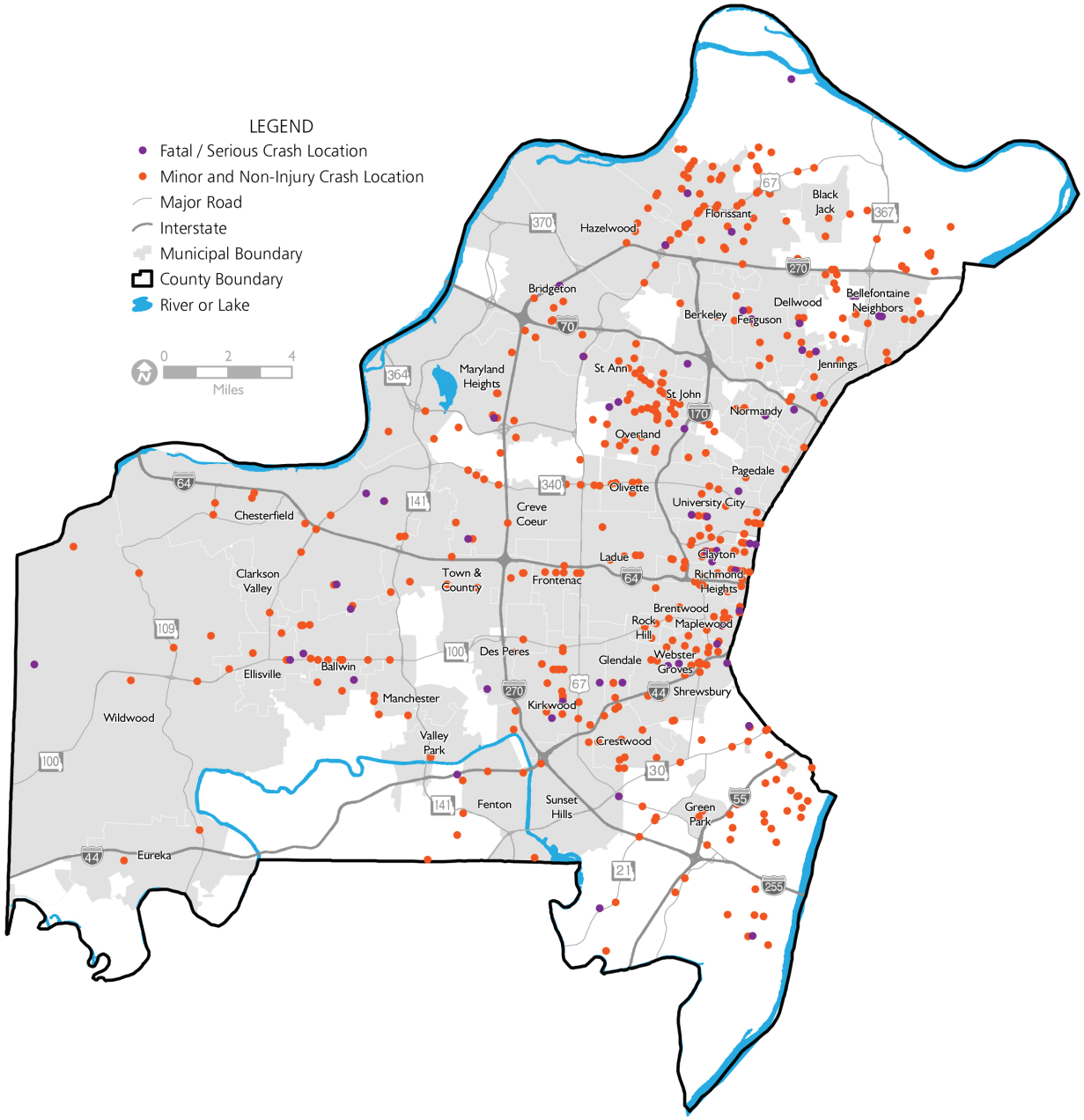


City of St. Louis, Missouri

Bicycle Crash Locations

2011-2015





St. Louis County, Missouri

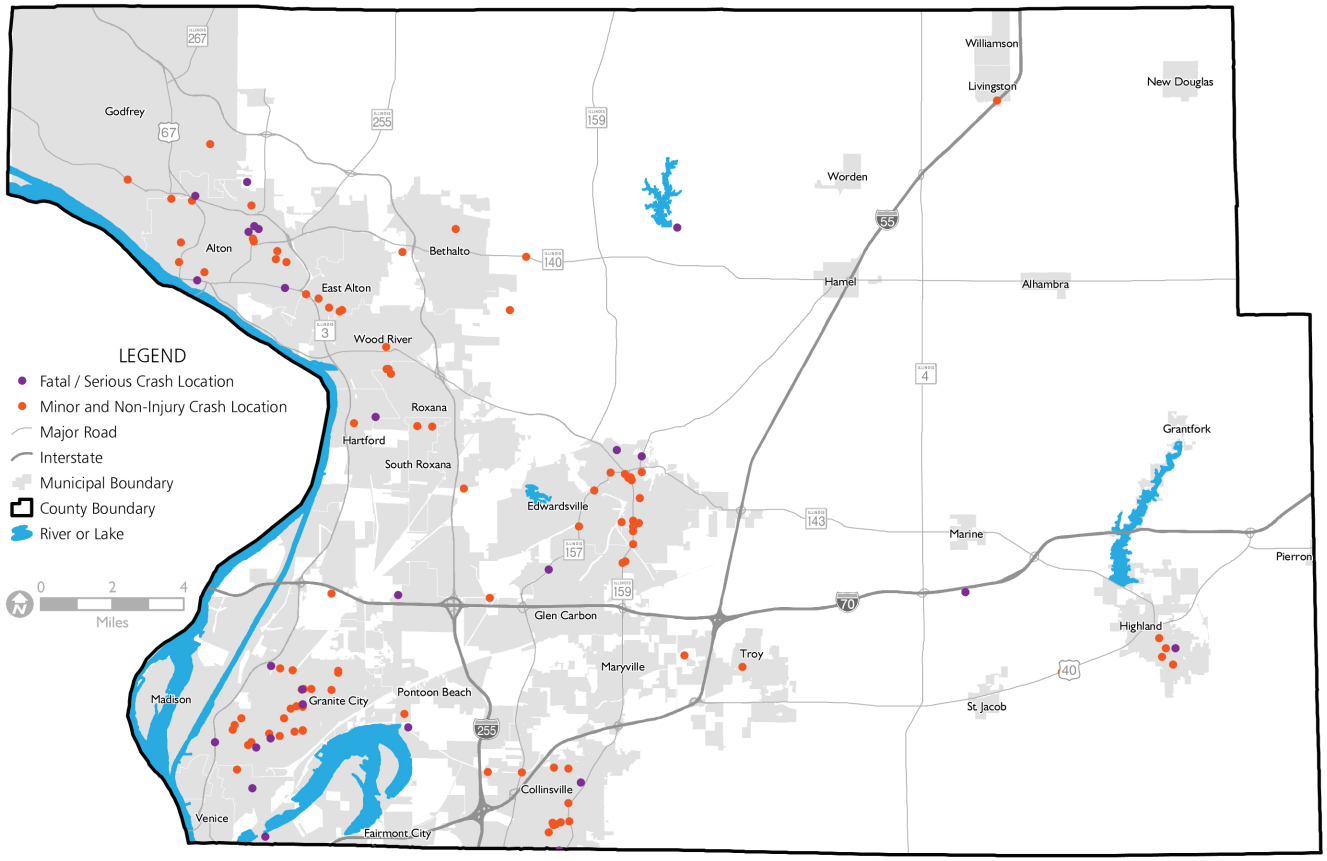
Bicycle Crash Locations

2011-2015

Madison County, Illinois

Bicycle Crash Locations

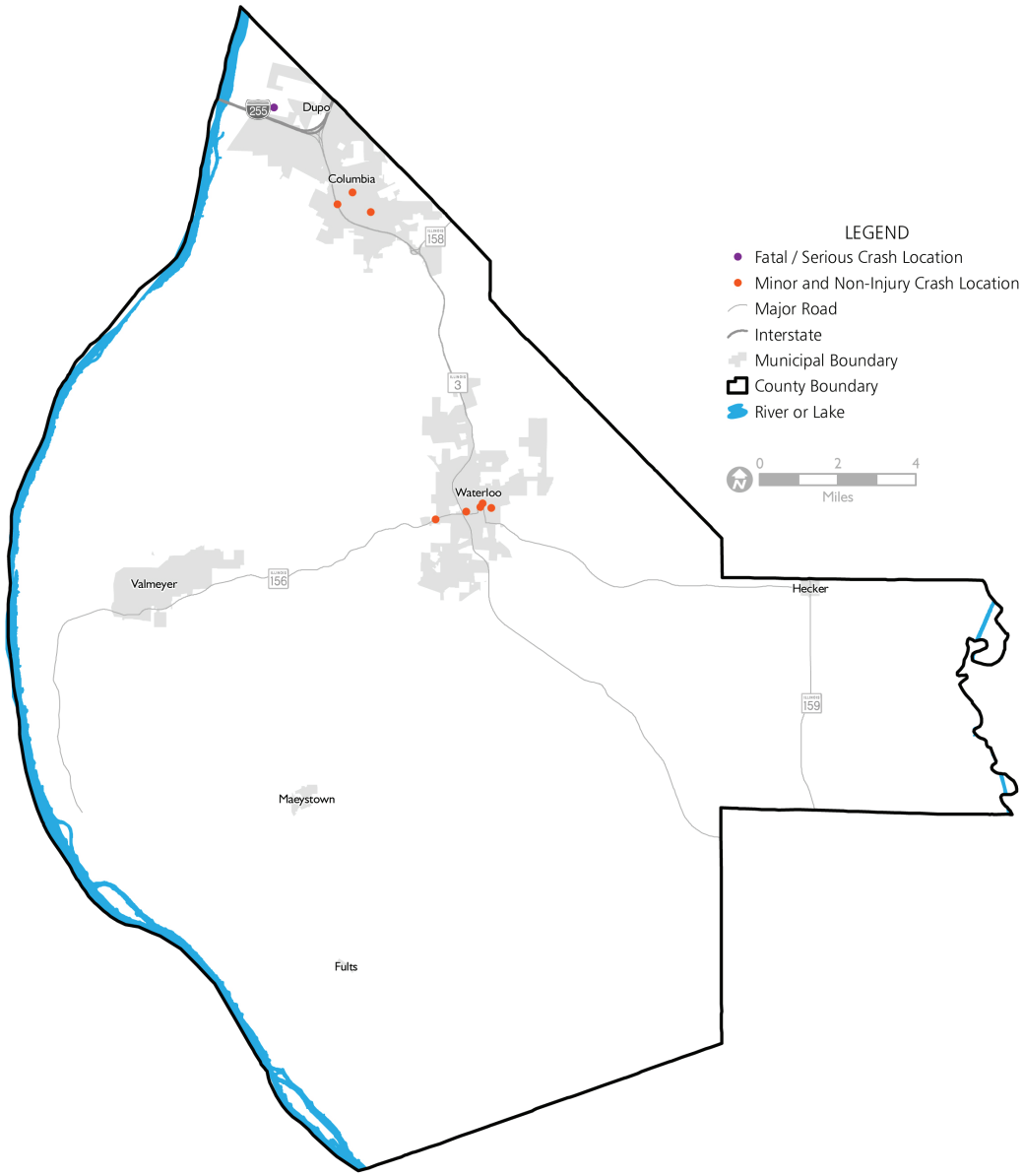
2011-2015



Monroe County, Illinois

Bicycle Crash Locations

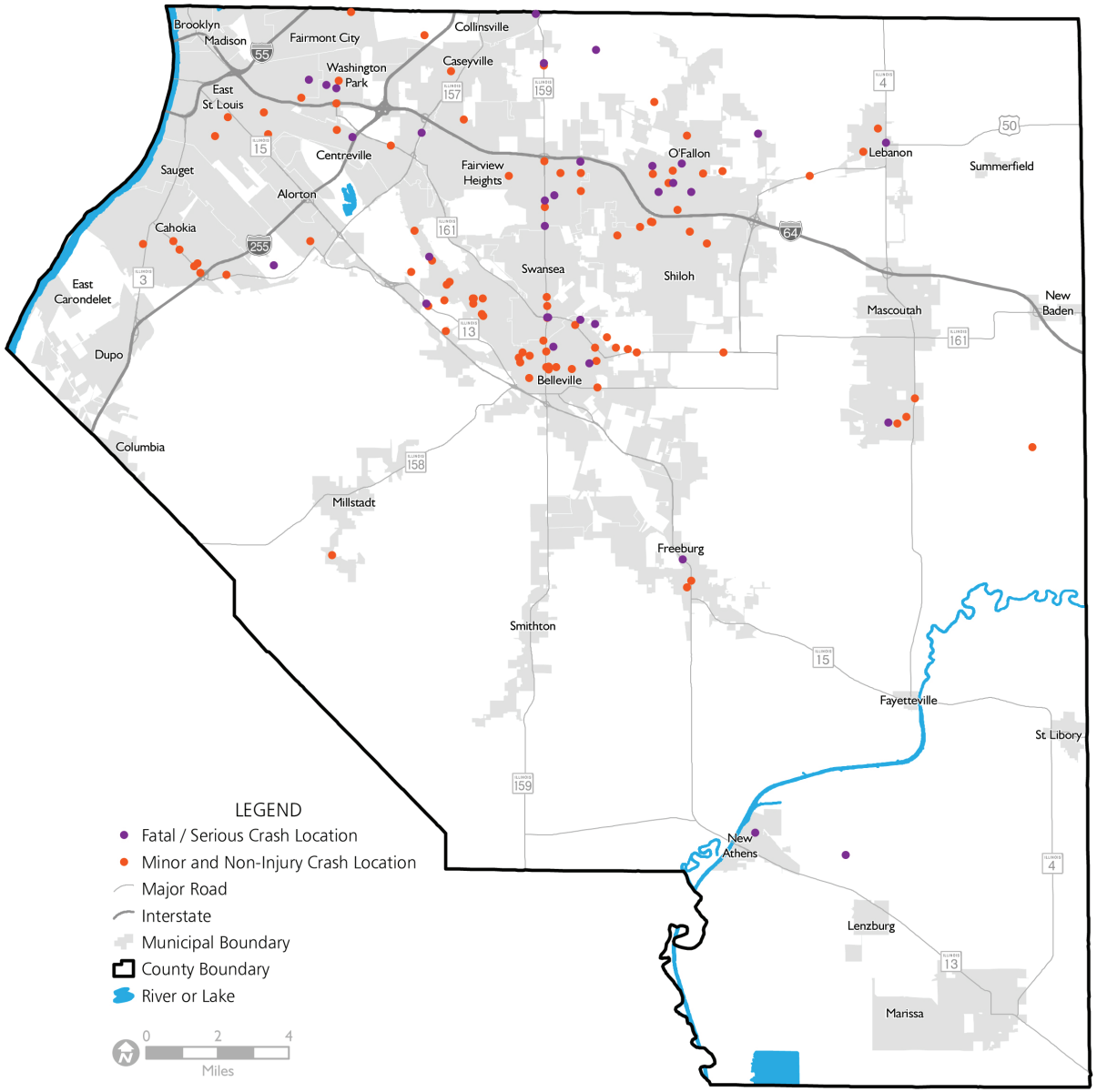
2011-2015

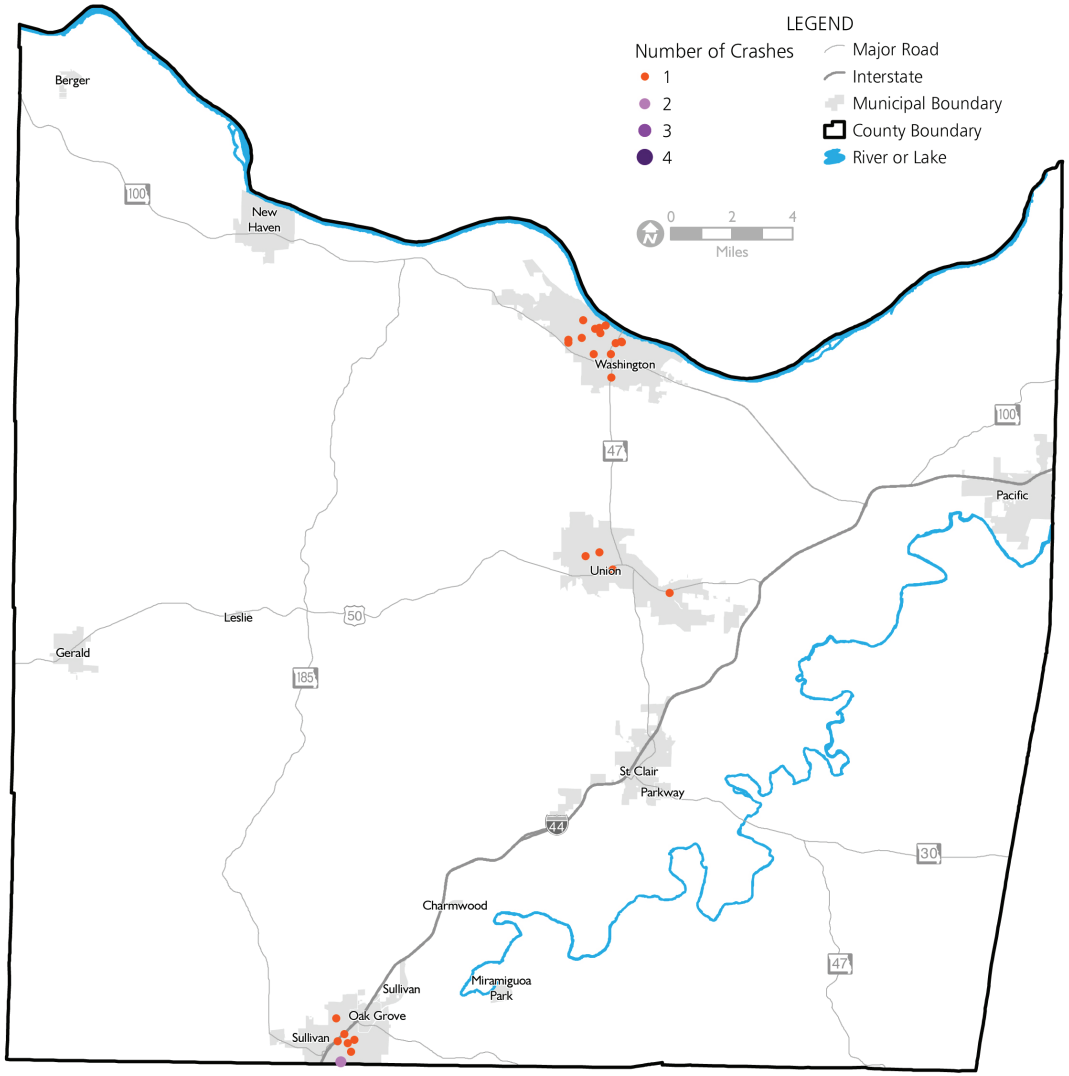


St. Clair County, Illinois

Bicycle Crash Locations

2011-2015





Franklin County, Missouri

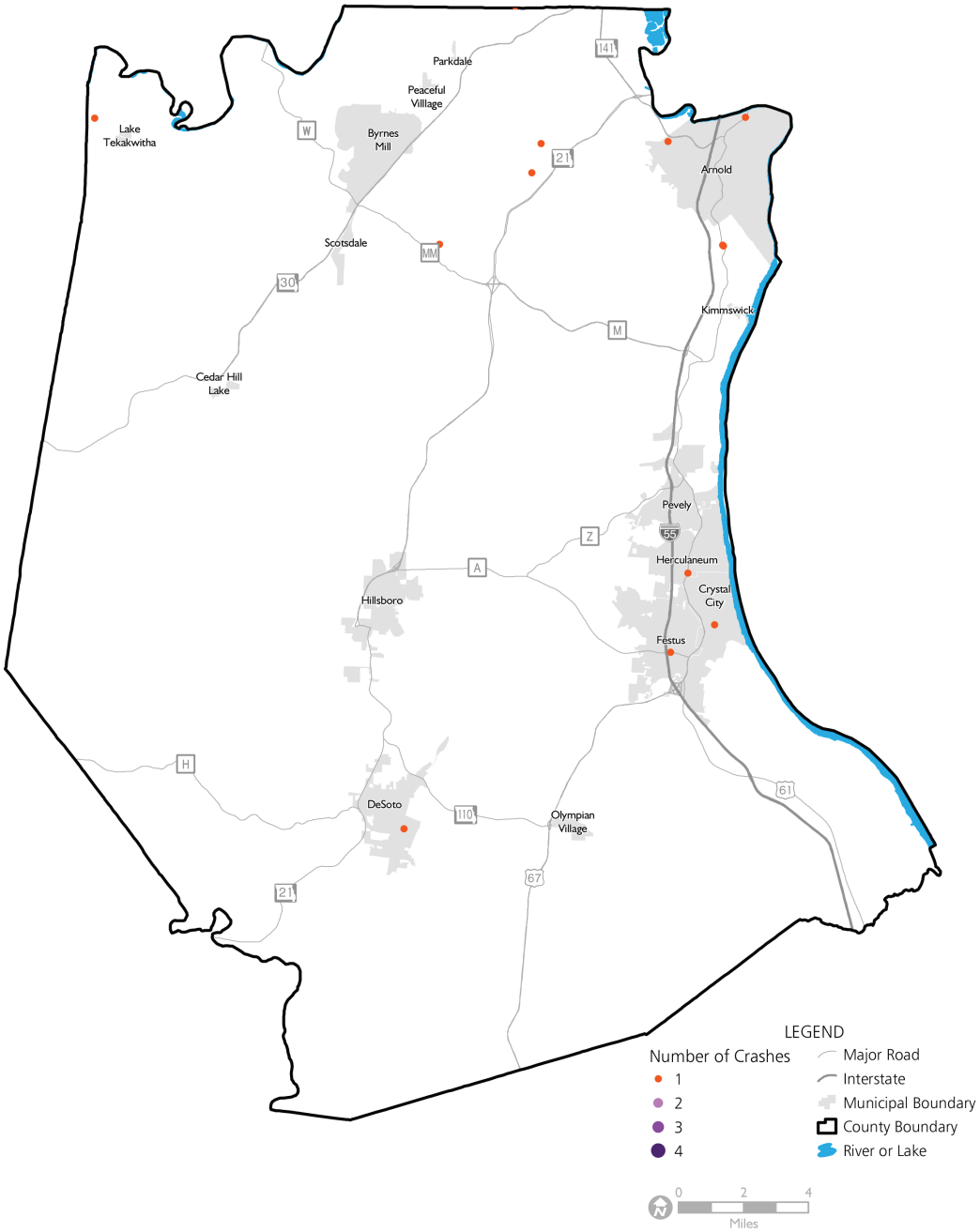
Bicycle Crashes by Intersection

2011-2015

Jefferson County, Missouri

Bicycle Crashes by Intersection

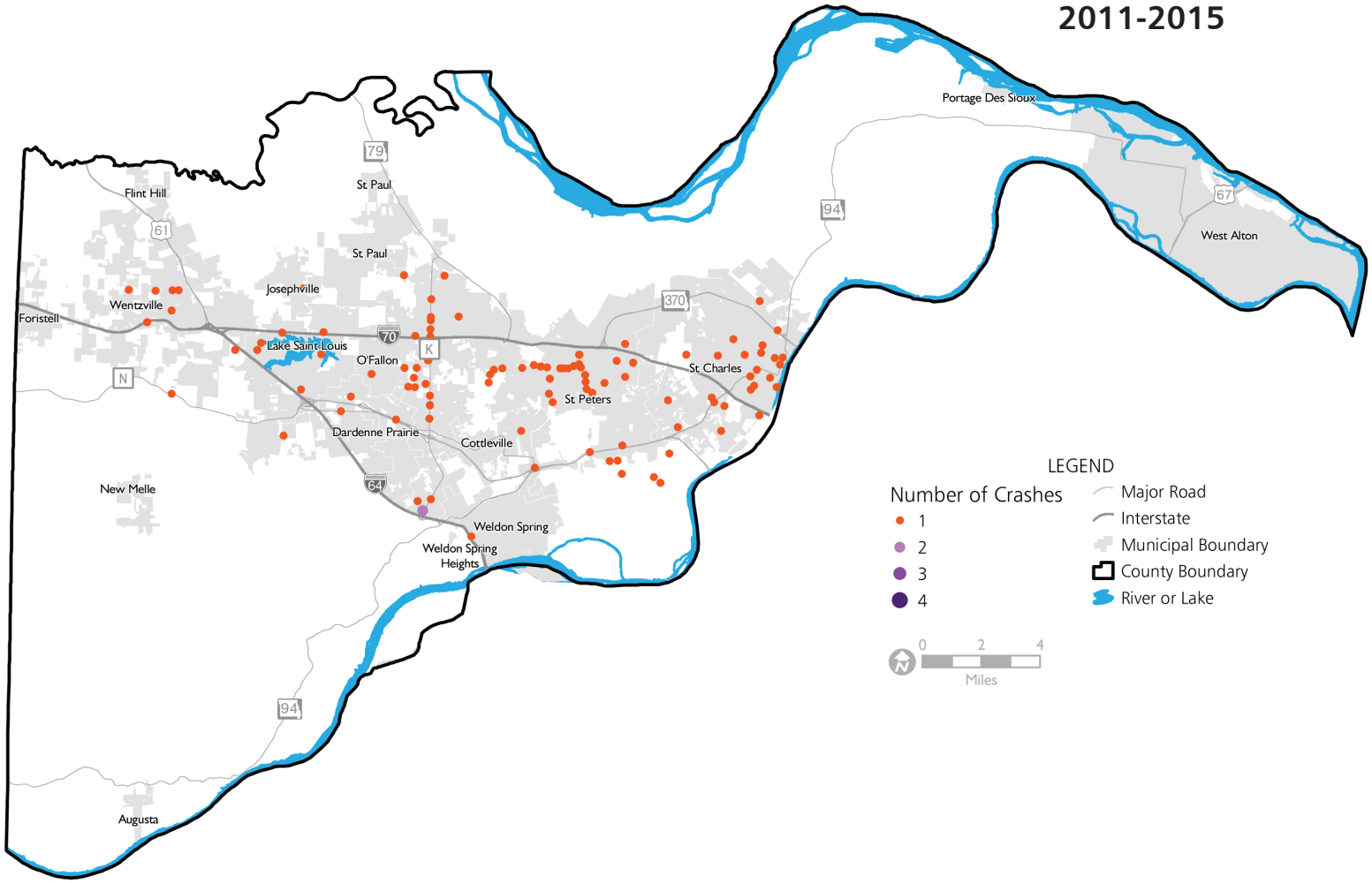
2011-2015



St. Charles County, Missouri

Bicycle Crashes by Intersection

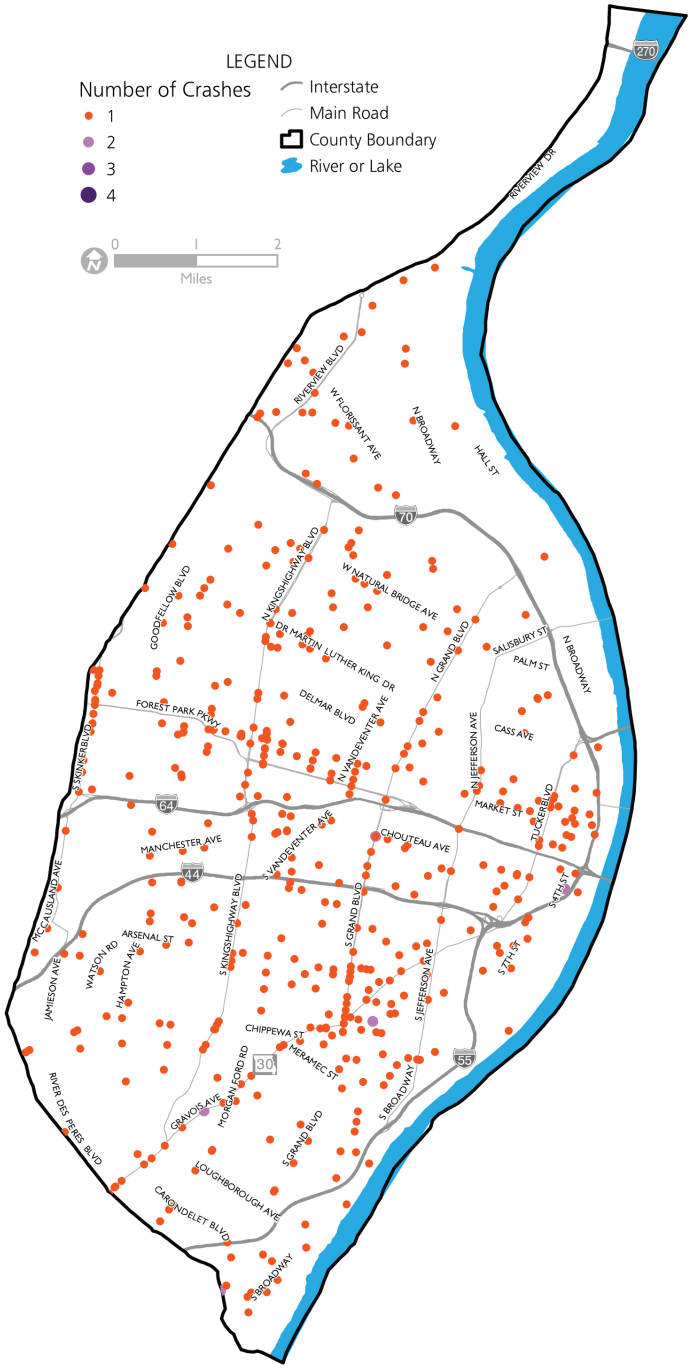
2011-2015

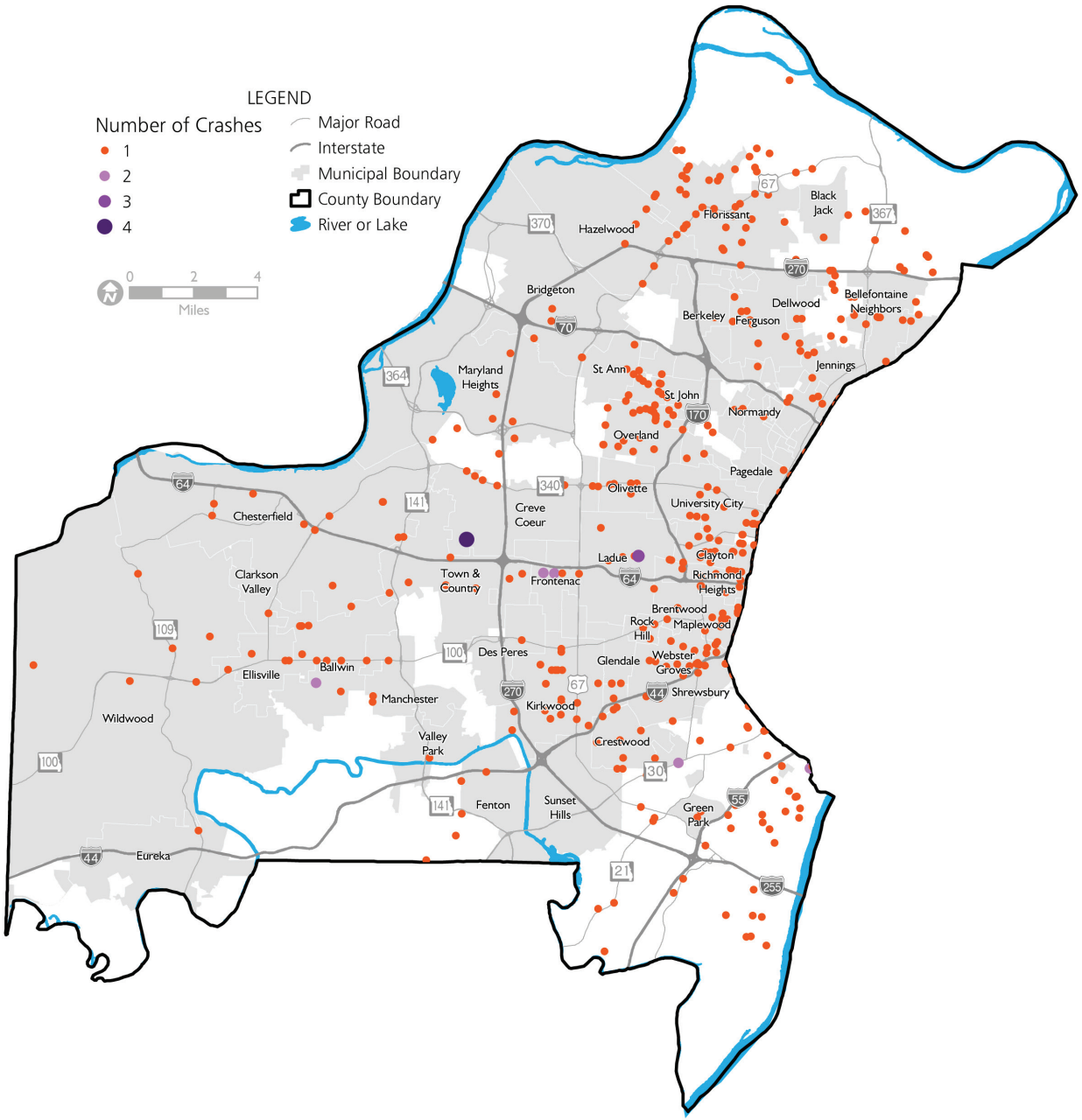


City of St. Louis, Missouri

Bicycle Crashes by Intersection

2011-2015





St. Louis County, Missouri

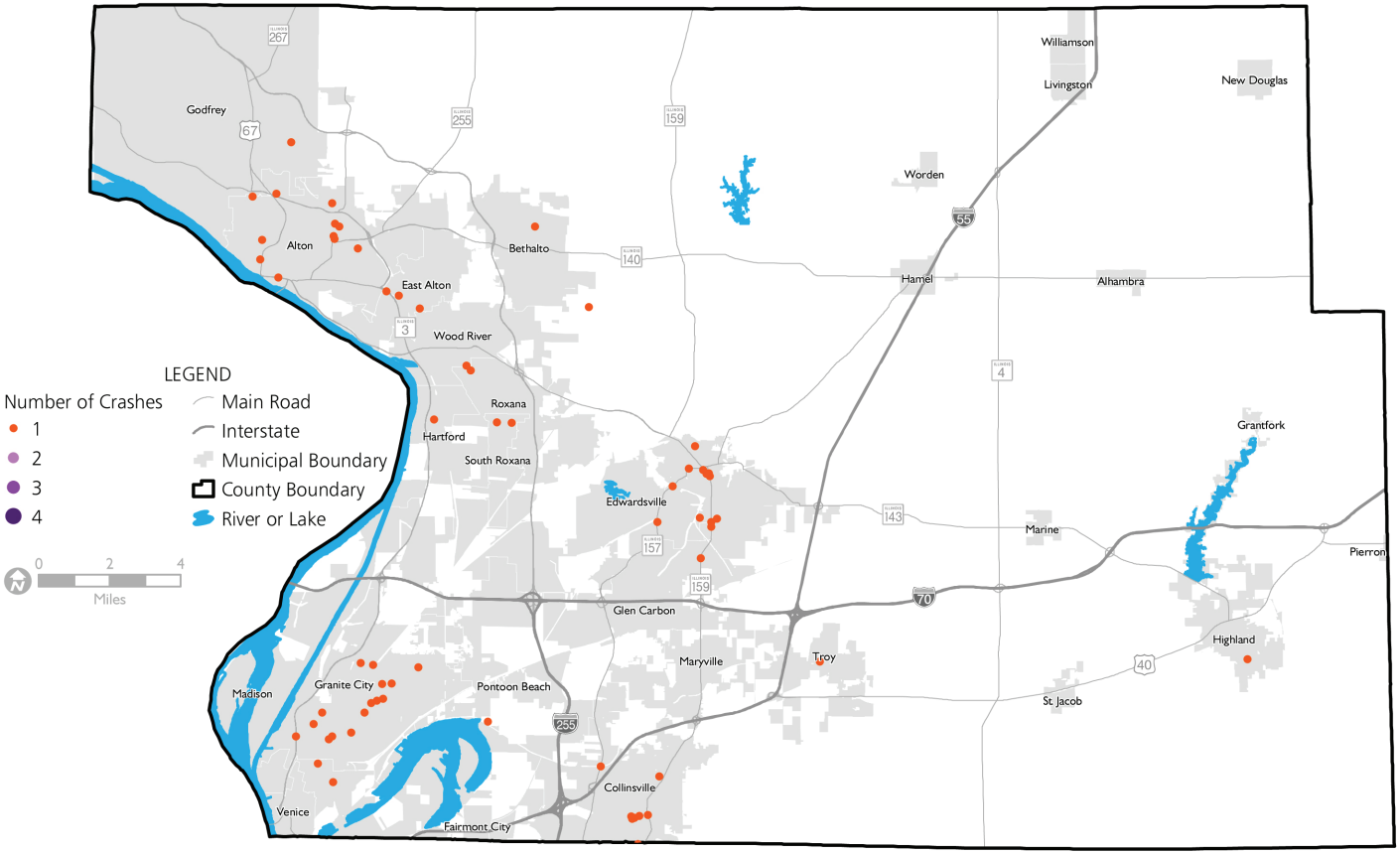
Bicycle Crashes by Intersection

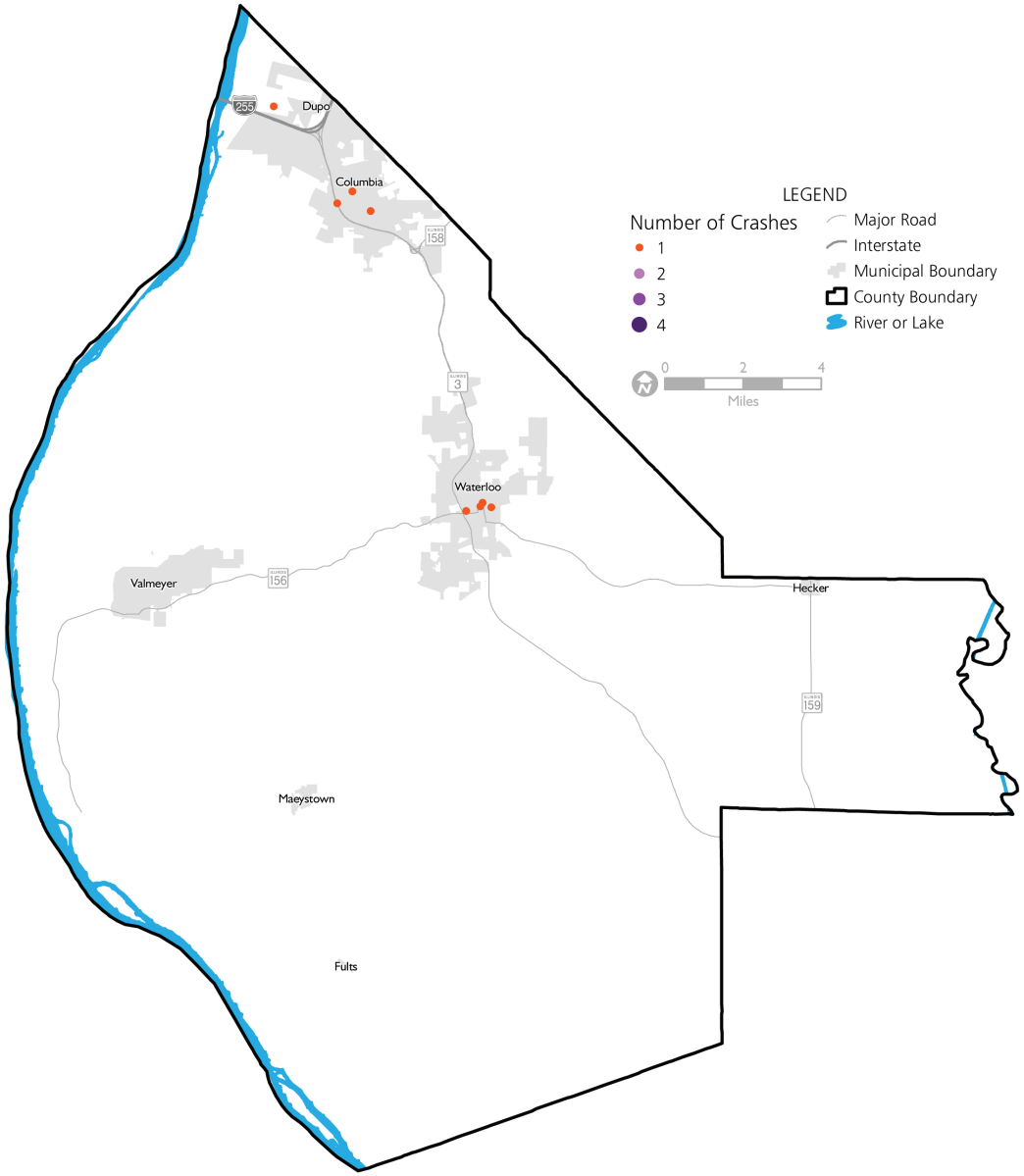
2011-2015

Madison County, Illinois

Bicycle Crashes by Intersection

2011-2015





Monroe County, Illinois

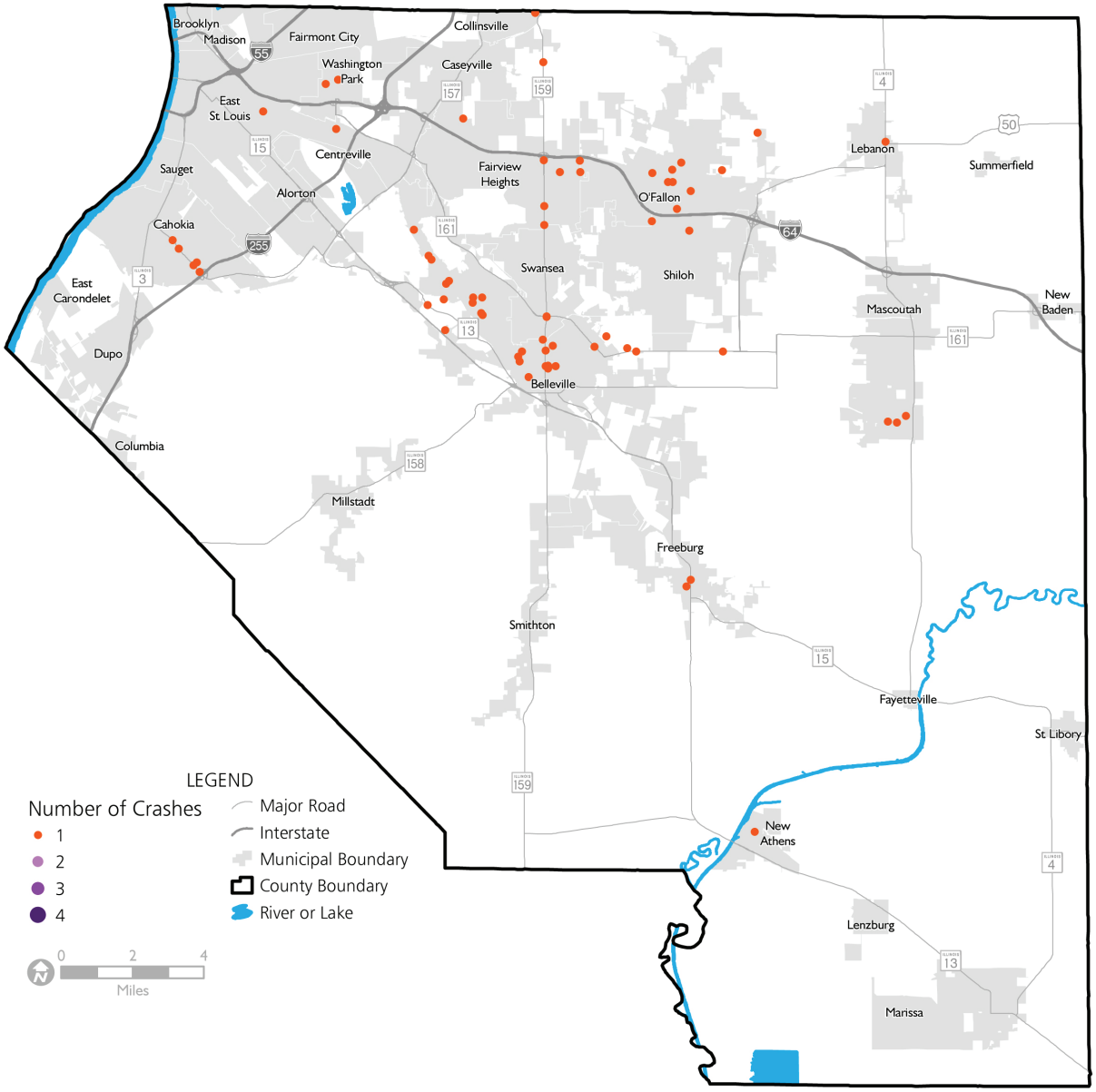
Bicycle Crashes by Intersection

2011-2015

St. Clair County, Illinois

Bicycle Crashes by Intersection

2011-2015



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