CHAMPAIGN-URBANA URBAN AREA SAFETY PLAN

December 2019

CHAMPAIGN COUNTY REGIONAL PLANNING COMMISSION

CUUATS

EXECUTIVE SUMMARY

The Champaign-Urbana Urban Area Safety Plan (CUUASP) is a guideline for safety stakeholders to identify and implement safety improvements and programs in the effort to reduce fatalities and serious injuries on roadways. Champaign-Urbana follows the state goal set forth in the Illinois Strategic Highway Safety Plan 2017 (ILSHSP)[1] to reduce roadway crash fatalities to zero.

The Champaign-Urbana urban area being analyzed in the CUUASP corresponds with the Champaign-Urbana Metropolitan Planning Area (MPA). Map 1 presents the boundaries of the study area.

The CUUASP presents analysis of crash trends, identifies emphasis areas based on a data-driven approach, and outlines effective strategies and approaches for each of the emphasis areas. The strategies are a compilation of the 4Es (Education, Enforcement, Emergency Medical Services, and Engineering).

In the Champaign-Urbana urban area, comparing the five-year average crashes between the 2007-2011 study period and the 2012-2016 study period, there was a 12 percent decrease in the total number of crashes, a 10 percent decrease in fatalities and a 22 percent decrease in A-injuries. In the 2012-2016 study period, a high of 12 fatalities occurred in 2016, three more fatalities than in 2015. Overall, there is an increasing trend of A-injuries with peak of 182 in 2012 and a low of 120 in 2013.

A high percentage of crashes in five years occurred at intersections (71 percent). Rear end, turning, and angle types of collision crashes are common intersection crash types. In addition, fixed object and parked motor vehicle collision crashes were also prevalent in the study area.

More male drivers than female drivers were involved in crashes, by a difference of 7 percentage points. Eighteen percent of drivers involved in crashes were between the ages of 20 and 24 years. Two percent of drivers involved in crashes were impaired at the time of the crash. Even though this number is relatively small, impaired driver related crashes tended to be more severe than crashes not related to driver impairment.

There were two percent each of pedestrian and bicyclist crashes. Thirty-one percent of pedestrian crashes were high severity crashes and 16 percent of bicycle crashes involved a fatality or severe injury.

The Highway Safety Improvement Program (HSIP) required all the Metropolitan Planning Organizations (MPOs) to set targets for five safety performance measures[2] by February 2018. The MPO area corresponds to the Champaign-Urbana Metropolitan Planning Area, which is the urban area considered in this study. The safety performance measures for the Champaign-Urbana MPA are shown in Table 1. On December 2017, the Champaign-Urbana MPO safety performance targets were adopted from the Long Range Transportation Plan (LRTP) 2040, presented in Table 1.[3] In 2019, as part of the development of the LRTP 2045, the Champaign-Urbana MPO set new safety performance targets as shown in Table 1.

Source: ***https://lrtp.cuuats.org/documents/***

Table 1 *LRTP 2040 Reduction Targets*

Safety Performance Measures	*LRTP 2040 Targets	**LRTP 2045 Targets
Fatalities	20% reduction	2% reduction
Fatalities rates	20% reduction	5% reduction
Serious Injuries	15% reduction	5% reduction
Serious Injuries rates	15% reduction	5% reduction
Pedestrian Fatalities	15% reduction	5% reduction
Pedestrian Serious Injuries	15% reduction	2% reduction
Bicyclist Fatalities	15% reduction	5% reduction
Bicyclist Serious Injuries	15% reduction	5% reduction

*LRTP 2040 targets were set for 2016-2020 with base year of 2011-2015

**LRTP 2045 targets were set for each year's five-year rolling average until 2025 with 2017 base year

EXECUTIVE SUMMARY

This study presents the trends of different targets for the five safety performance measures in the Champaign-Urbana urban area. This study is based on a data-driven approach to identify emphasis areas and high-priority locations. The next step will be to develop a systemic approach to safety. This systemic approach will identify potential risk factors and locations with high crash potential. Future improvements will be implemented by understanding the correlation between high-risk roadway features with specific severe crash types. This approach provides a more comprehensive method for safety planning and implementation that supplements and complements traditional site analysis. This approach also helps agencies to broaden their traffic safety efforts and consider risk as well as crash history when identifying where to make low-cost safety improvements.[4]

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1 INTRODUCTION

Motor vehicle crashes are one of the leading causes of death in the United States.[5] There were 37,461 motor vehicle fatalities in 2016; 47 percent of these fatalities occurred in urban areas. Of the urban fatalities, 26 percent were speeding-related and 13 percent were alcohol impairment-related. These numbers are of concern to transportation practitioners. In Champaign County, the number of fatal and injury crashes occurring in the Champaign-Urbana urban area is approximately five times greater than fatal and injury crashes occurring in rural areas.

In October 2016, the National Safety Council, in partnership with the U.S. Department of Transportation, launched the Road to Zero initiative with the goal of eliminating road traffic deaths in the United States by 2050.[6] The State of Illinois is also committed to the nationwide goal of "Zero Fatalities" on Illinois roadways.[1] The Illinois Strategic Highway Safety Plan 2017 (ILSHSP) identifies emphasis areas by understanding the statewide crash numbers. Champaign County is also working toward the statewide safety goal of zero roadway fatalities. Local staff understand the disparity of urban and rural characteristics. The safety stakeholders from rural Champaign County and from the Champaign-Urbana urban area will work together to achieve the long-term goal of zero fatalities.

This safety plan focuses on the Champaign-Urbana urban area, which is the area within the Metropolitan Planning Area (MPA) boundary (Map 1). The most recent five-year crash data available for this study was from the 2012-2016 study period. This data was acquired from the Illinois Department of Transportation (IDOT). The following are the vision, mission, and goal of the Champaign-Urbana Urban Area Safety Plan (CUUASP).

CUUASP Vision – Zero Fatalities

Champaign County has a long term vision of zero fatalities due to roadway crashes. The safety stakeholders in Champaign County are committed to taking immediate actions to reduce fatalities and injury severities due to crashes on Champaign County roadways. The safety stakeholders from the Champaign-Urbana urban area are working toward achieving "Zero Fatalities" goal.

CUUASP Mission

The CUUASP mission is to develop a data-driven practice for multiple stakeholders to improve vehicle performance, road characteristics, and roadway users' behavior to reduce fatalities and injury severities due to crashes on roadways in the Champaign-Urbana urban area.

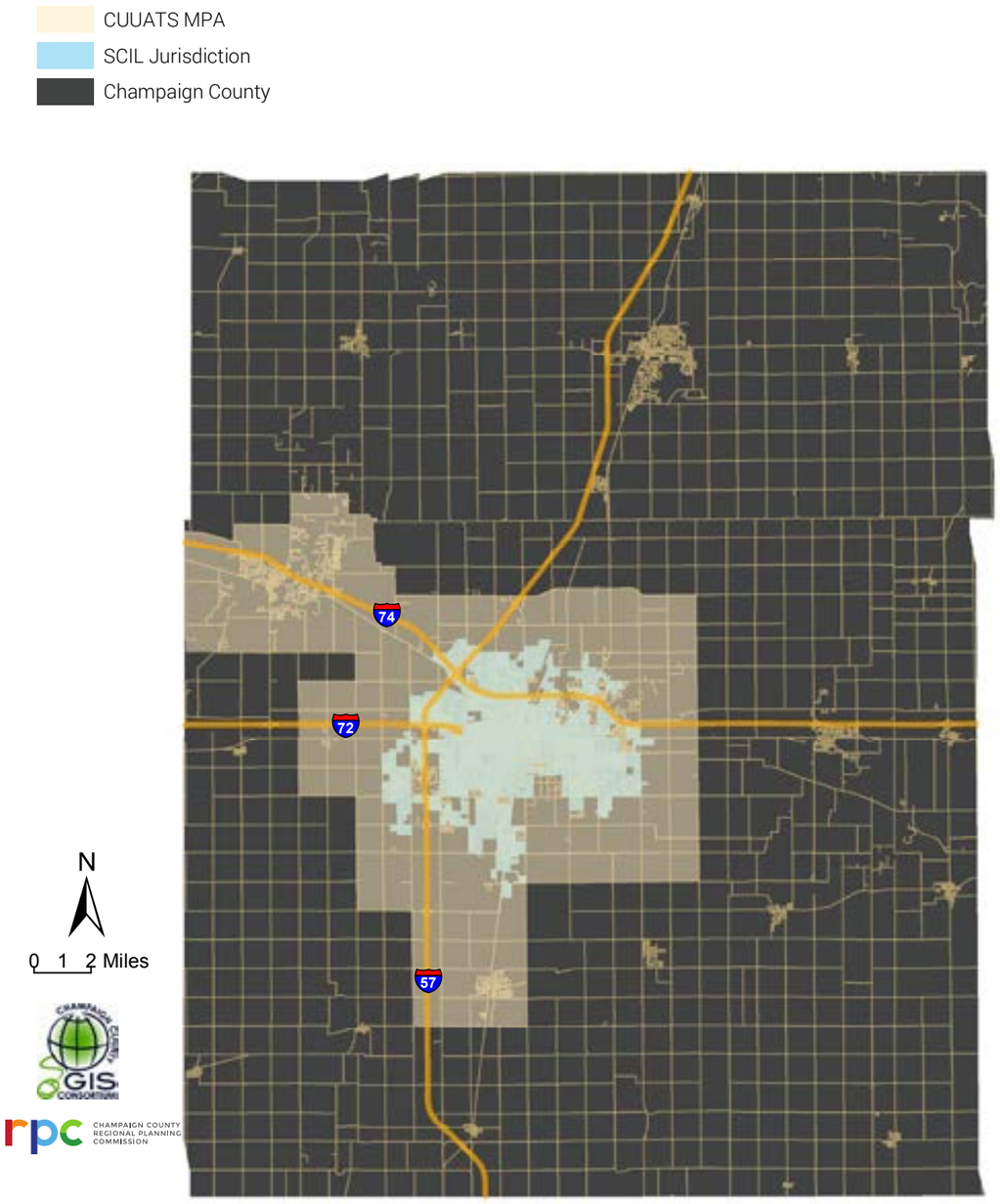
CUUASP Goal

The CUUASP goal is to consistently reduce the number of fatalities and injury severities using a data-driven, strategic approach that includes education, enforcement, engineering, and emergency response.

CUUASP Objectives

The CUUASP objectives were set based on the LRTP 2045[3] targets for the safety performance measures.

- Reduce the five-year rolling average of number of fatalities by 2 percent (from 9 to less than 8) by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of fatality rate (per 100 million DVMT) by 5 percent (from 1 to less than 1) by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of number of A-injuries by 5 percent (from 136 to 90) by 2025 based on 2017 in the Champaign-Urbana urban area.



Map 1 *Location and extent of the Champaign-Urbana urban area*

- Reduce the five-year rolling average of serious injury rates (A-injuries per 100 million DVMT) by 5 percent (from 12 to 8) by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of number of pedestrian/bike fatalities and A-injuries by 5 percent (from 21 to 14) by 2025 based on 2017 in the Champaign-Urbana urban area.

URBAN AREA SAFETY ANALYSIS STEPS

The CUUASP's data-driven approach is based on five years of geolocated crash data. The most recent crash data from 2012-2016 was obtained from IDOT*. This crash data also includes person- and vehicle-level information. The crash data was cleaned to be uniform across the crash-, person- and vehicle-level information. Crashes occurring at intersections were identified as "Intersection" crashes, while "Interstates" and "Segment" crashes were also identified by location type.

Crashes from 2012-2016 that occurred within the Champaign-Urbana MPA boundary area were considered in this study. The crash data analysis includes trend analysis that compares crashes in Illinois with crashes in the Champaign-Urbana urban study area. In addition, crash severities and other crash factors, including but not limited to collision type and driver condition, were studied. This analysis was further extended to identify emphasis areas, which were analyzed based on roadway condition, weather condition, lighting condition, driver age, and time of day. Staff identified strategies for each of these emphasis areas. Strategies were based on four categories: Education, Enforcement, Engineering, and Emergency Medical Services. High-priority intersections and segments were also identified. Figure 1 presents this multi-step approach.

***DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. Any conclusions drawn from analysis of the aforementioned data are the sole responsibility of the data recipient(s). Additionally, for coding years 2015 to present, the Bureau of Data Collection uses the exact latitude/longitude supplied by the investigating law enforcement agency to locate crashes. Therefore, location data may vary in previous years since data prior to 2015 was physically located by bureau personnel.**

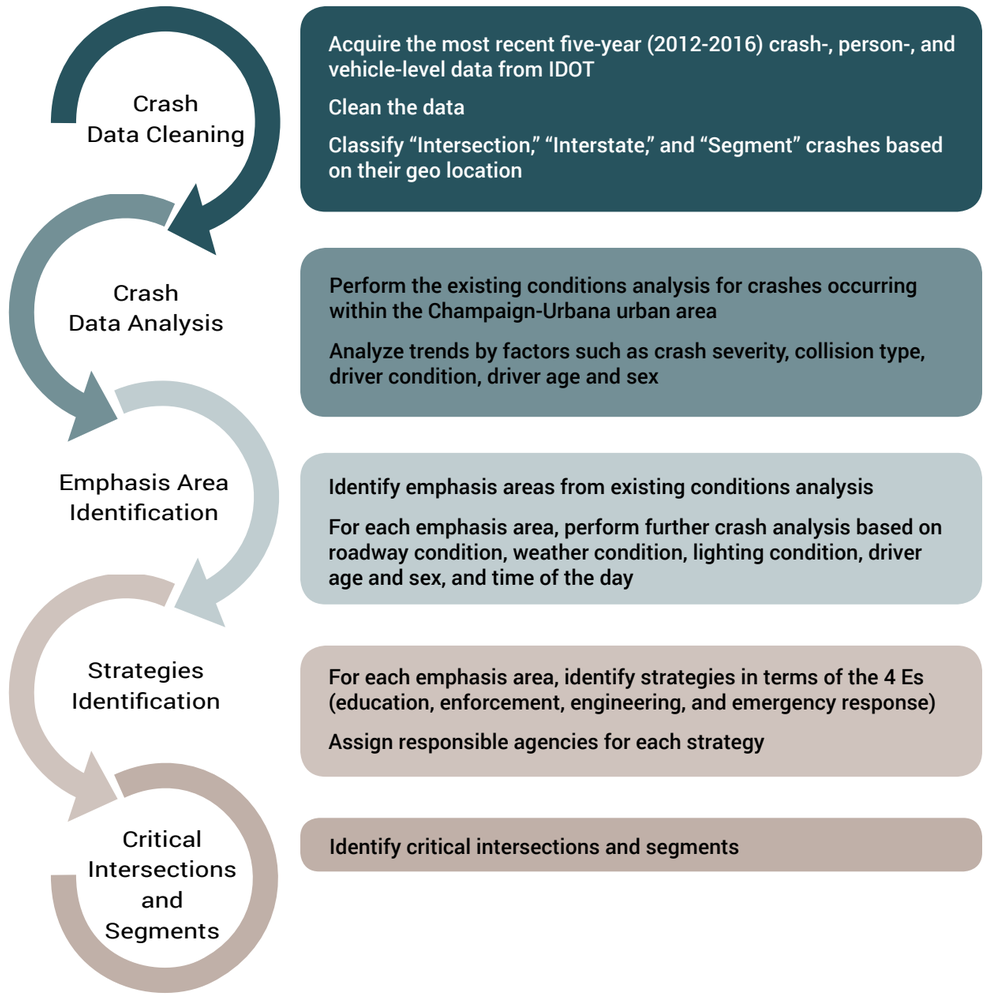


Figure 1 *Multi-step approach to the urban area safety analysis*

2 TREND ANALYSIS OF CRASHES, FATALITIES AND A-INJURIES

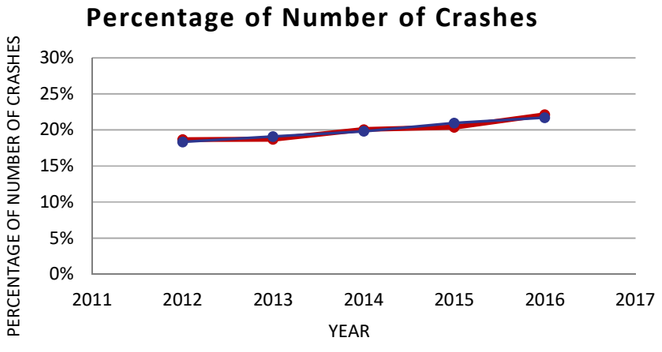


Figure 2 *Comparison of percentage of number of crashes in the Champaign-Urbana urban area and Illinois*

- The number of crashes in Illinois increased every year between 2012 and 2016.
- Similar to Illinois, the number of crashes in the Champaign-Urbana urban area increased from 2012 to 2016.

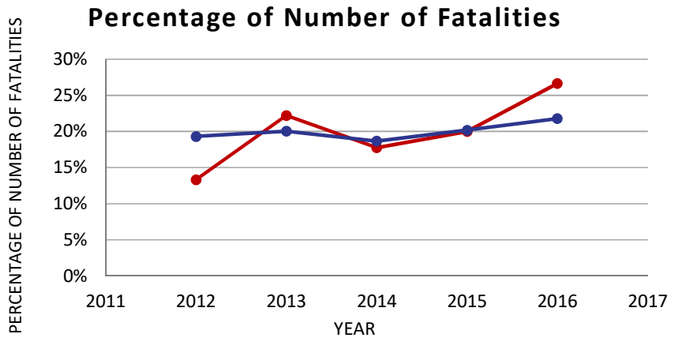


Figure 3 *Comparison of percentage of number of fatalities in the Champaign-Urbana urban area and Illinois*

- The percentage of fatalities in Illinois in 2016 was lower than the percentage of fatalities in the Champaign-Urbana urban area in the same year.
- The percentage of fatalities in Illinois increased in 2013, decreased in 2014, then increased in both 2015 and 2016.
- The percentage of fatalities in the Champaign-Urbana urban area increased in 2013, decreased in 2014, and then again increased in both 2015 and 2016.

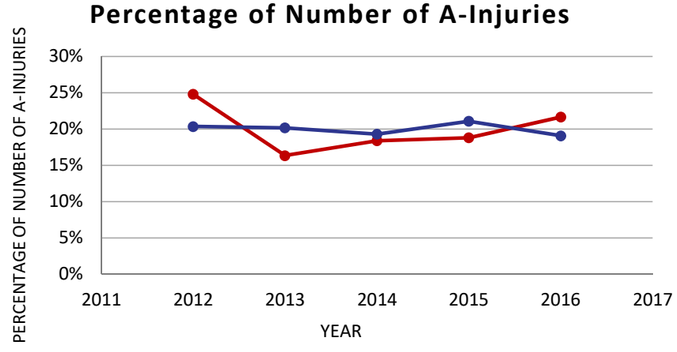


Figure 4 *Comparison of percentage of number of A-injuries (serious injuries) in the Champaign-Urbana urban area and Illinois*

- A-injuries are injuries where a person is incapacitated due to a crash.
- The percentage of A-injuries in Illinois stayed relatively stable in the 2012-2016 study period, while in the Champaign-Urbana urban area it dropped sharply in 2013, then increased in 2014, 2015, and 2016.

3 CRASH SEVERITY ANALYSIS

The severity of a crash is determined by the type of the most severe injury of a person in that crash. The crashes are classified in KABCO scale[7,8]: 'K' represents a fatal crash; 'A' represents a crash that caused an incapacitating injury, also referred as a serious injury; 'B' represents a crash that caused a non-incapacitating injury; 'C' represents a crash that caused a reported/not evident injury; and 'O' represents a crash with no indication of injury and that just resulted in property damage (PDO).

- There were three more fatal crashes in the Champaign-Urbana urban area in 2016 than there were in 2015; fatal crashes accounted for 0.3 percent of all crashes in the Champaign-Urbana urban area during the study period.
- The number of A-injury crashes increased from 116 in 2015 to 125 in 2016. These crashes accounted for 4.4 percent of all crashes in the Champaign-Urbana urban area during the study period.
- The number of B-injury and C-injury crashes increased in 2016. They accounted for 9.6 percent and 8.4 percent, of all crashes in the Champaign-Urbana urban area during the study period, respectively.

Table 2 *Number of crashes by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Number of Crashes by Severity Type in the Champaign-Urbana Urban Area							
Crash Severity	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**	**%**
Fatal	6	10	8	9	12	45	0.3%
A-Injury	147	85	117	116	125	590	4.4%
B-Injury	235	257	256	249	278	1,275	9.6%
C-Injury	151	207	217	266	275	1,116	8.4%
No Injury	1,951	1,938	2,080	2,083	2,261	10,313	77.3%
Total Crashes	2,490	2,497	2,678	2,723	2,951	13,339	100.0%

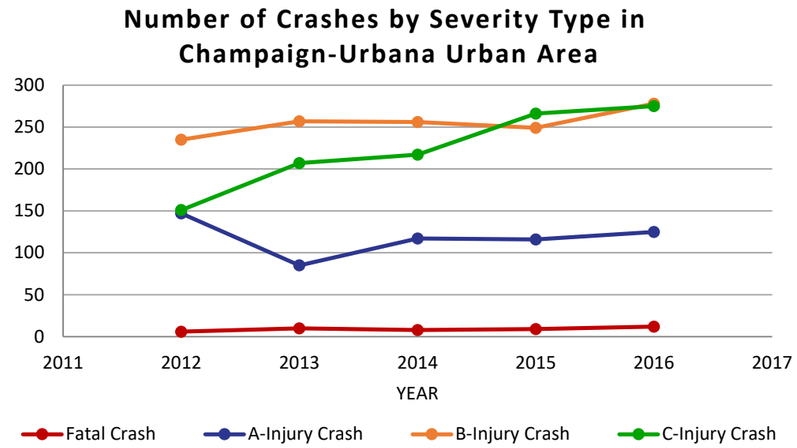
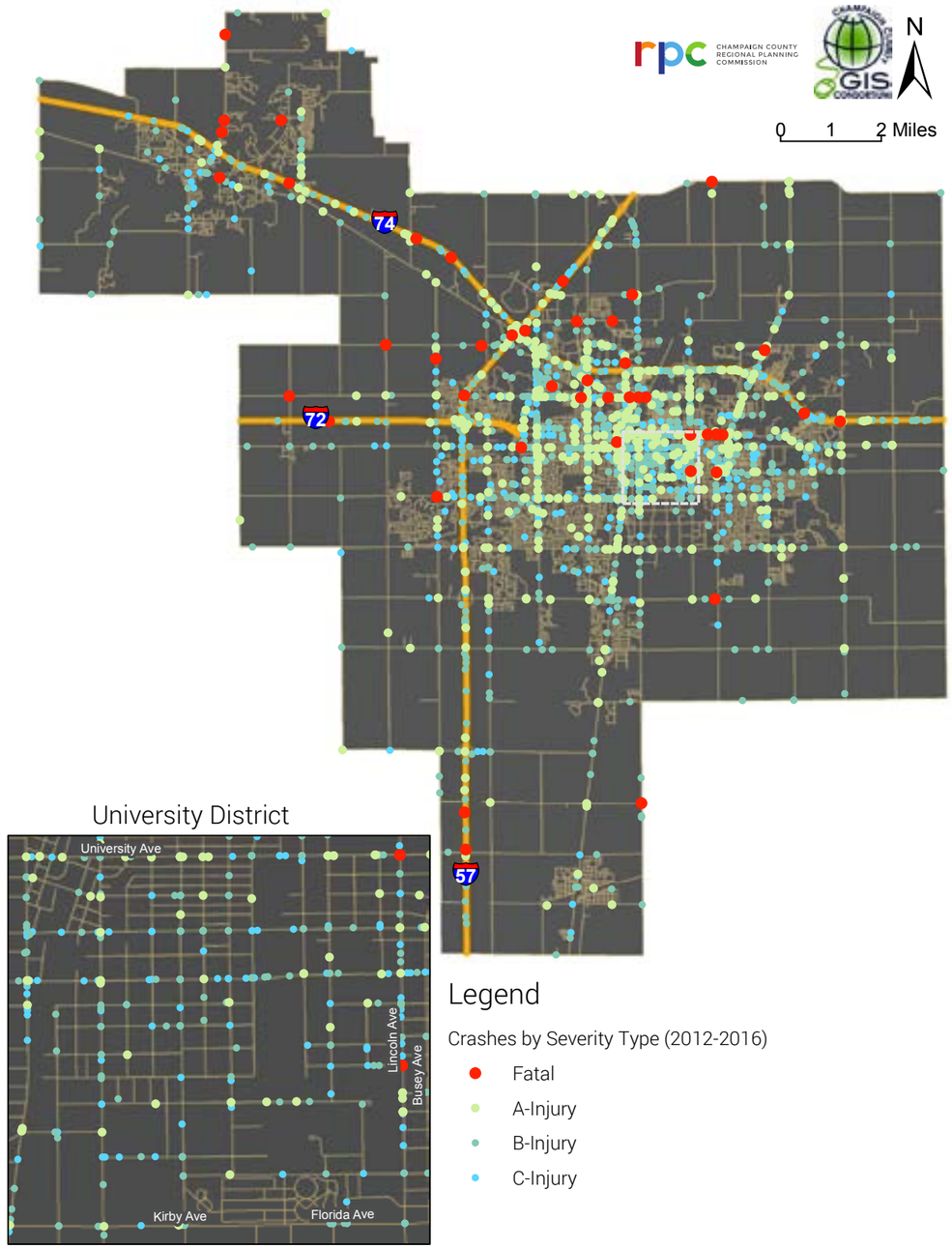


Figure 5 *Number of crashes by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*



Map 2 *Location of crashes by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

4 FATAL CRASH ANALYSIS

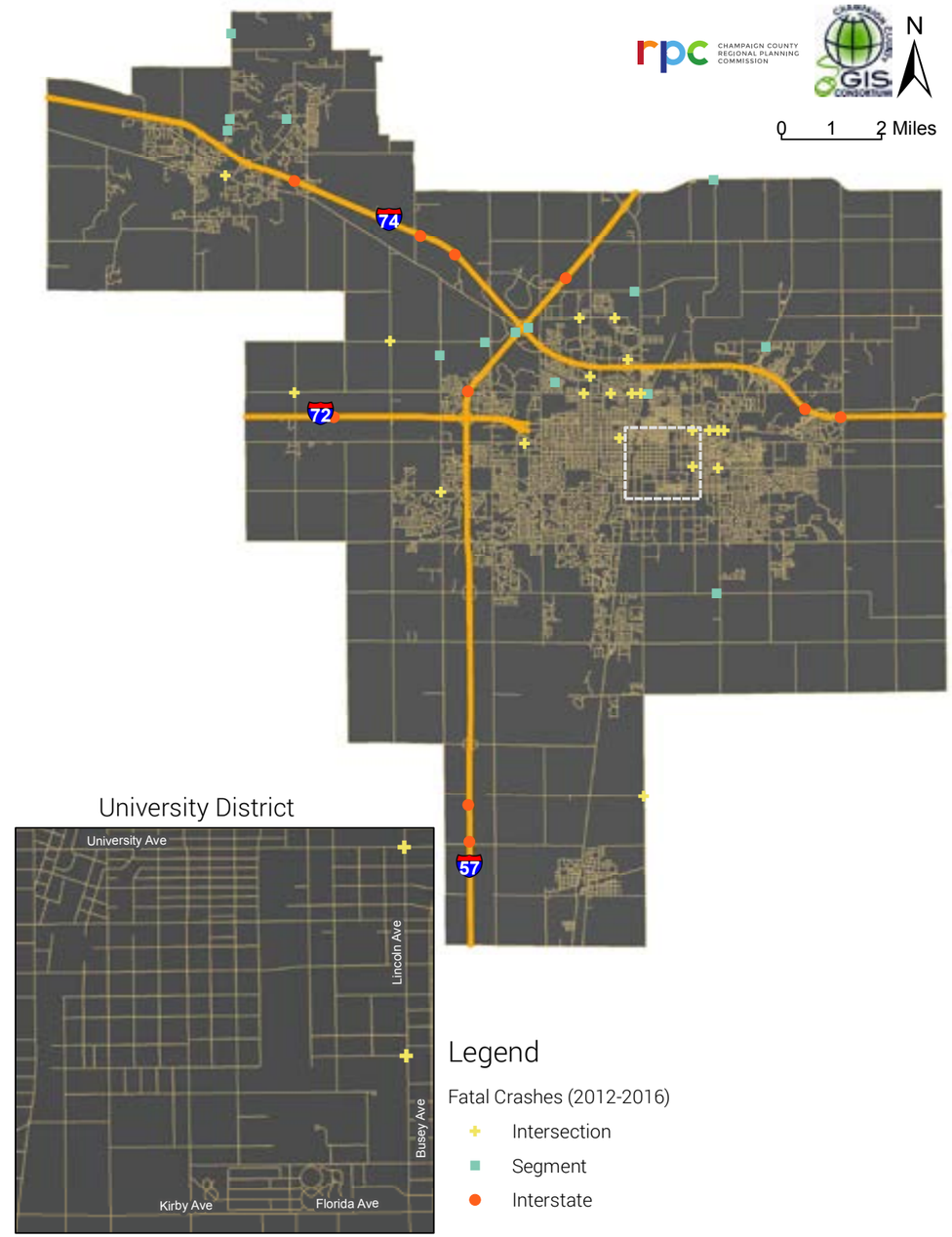
Fatal crashes are defined as crashes in which there is at least one fatality. Currently, there is an increasing trend in the number of fatalities in the Champaign-Urbana urban area. Number of fatalities and fatality rates are safety performance measures. The targets for these measures are presented below:

Champaign-Urbana Urban Area Safety Performance Target

- Reduce the five-year rolling average of number of fatalities by 2 percent (from 9 to less than 8) by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of fatality rates (per 100 million DVMT) by 5 percent (from 1 to less than 1) by 2025 based on 2017 in the Champaign-Urbana urban area.

IDOT Safety Performance Target for Illinois

- IDOT identified a safety performance goal of a two-percent reduction per year for 2018 and 2019 over the 2013-2017 baseline.



Map 3 *Location of fatal crashes in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Comparison of Fatality and Fatality Rate Trends

Figure 6 shows the number of fatalities in the Champaign-Urbana urban area between 2005 and 2016, and possible trend projections for 2017 to 2035. Similarly, Figure 7 shows the fatality rate in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035.

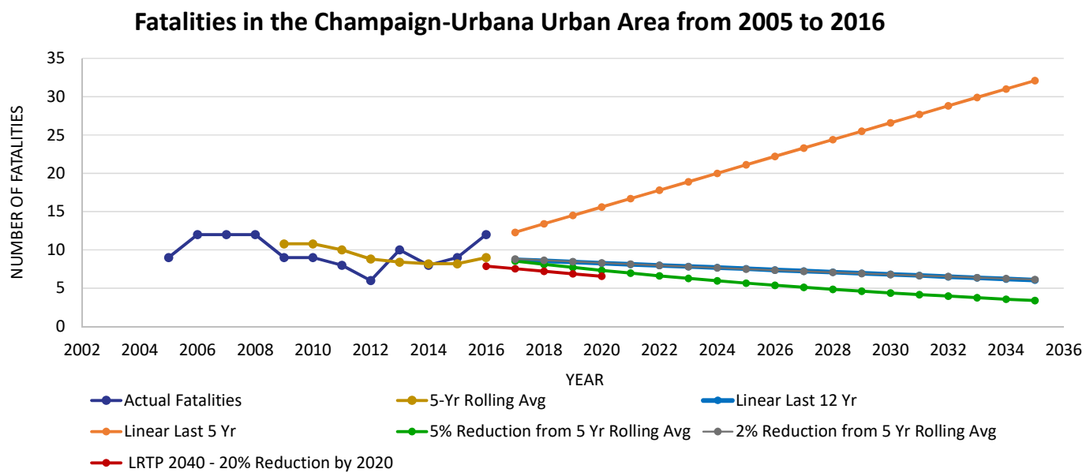


Figure 6 *Fatalities in the Champaign-Urbana urban area from 2005 to 2016*

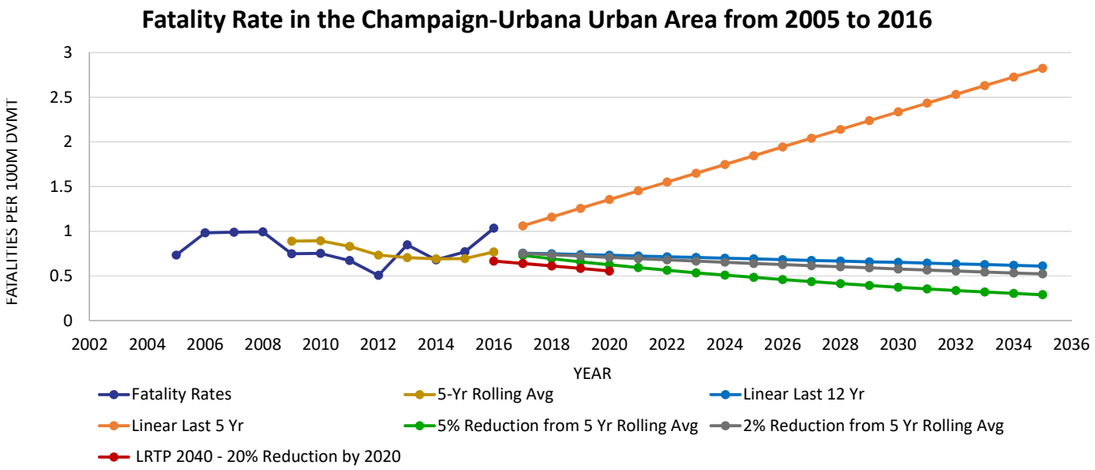
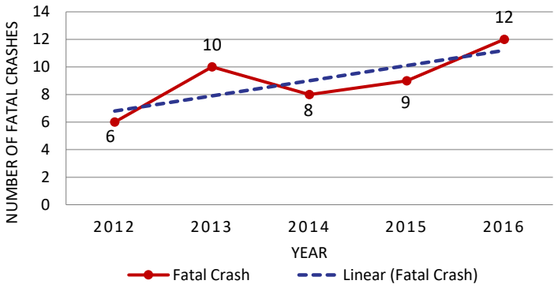


Figure 7 *Fatality rate in the Champaign-Urbana urban area from 2005 to 2016*

FATAL CRASHES

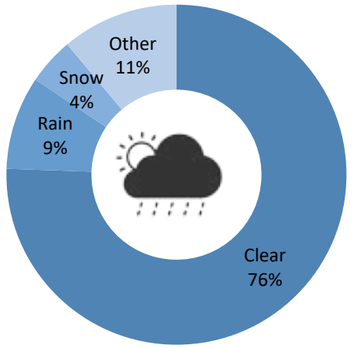
The 2012-2016 crash data in the Champaign-Urbana urban area was considered in this study.

Fatal crashes are defined as crashes in which there is at least one fatality. The five-year average of fatalities was 10 percent lower in 2012-2016 than in 2007-2011. Currently, there is an increasing trend in the number of fatalities in the Champaign-Urbana urban area.

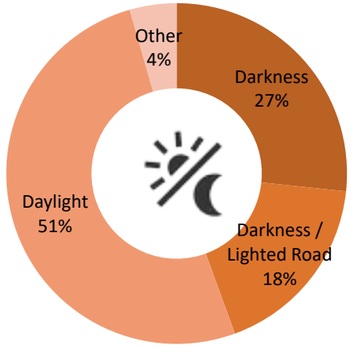


OBJECTIVE

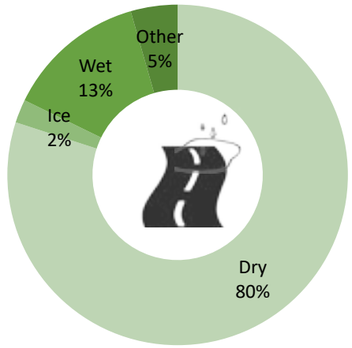
Reduce the five-year rolling average of number of fatalities by 2 percent by 2025 based on 2017 in the Champaign-Urbana urban area.



Weather Condition



Lighting Condition

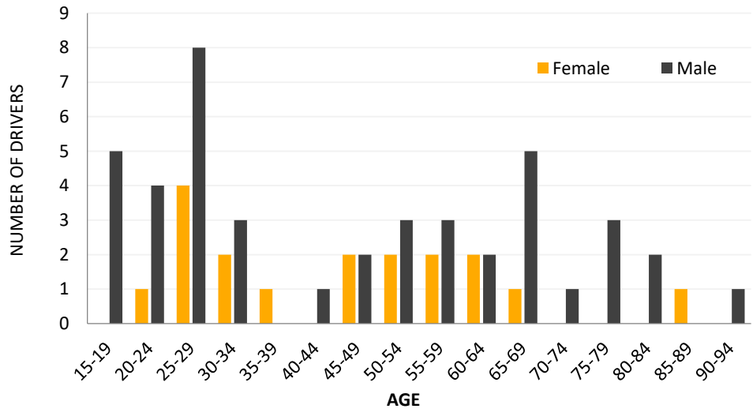


Road Surface Condition

Nine percent of fatal crashes between 2012 and 2016 occurred in rainy conditions, while four percent occurred in snowy conditions.

More than one quarter of fatal crashes (27 percent) occurred in dark conditions, while another 18 percent occurred in dark conditions with roadway lighting.

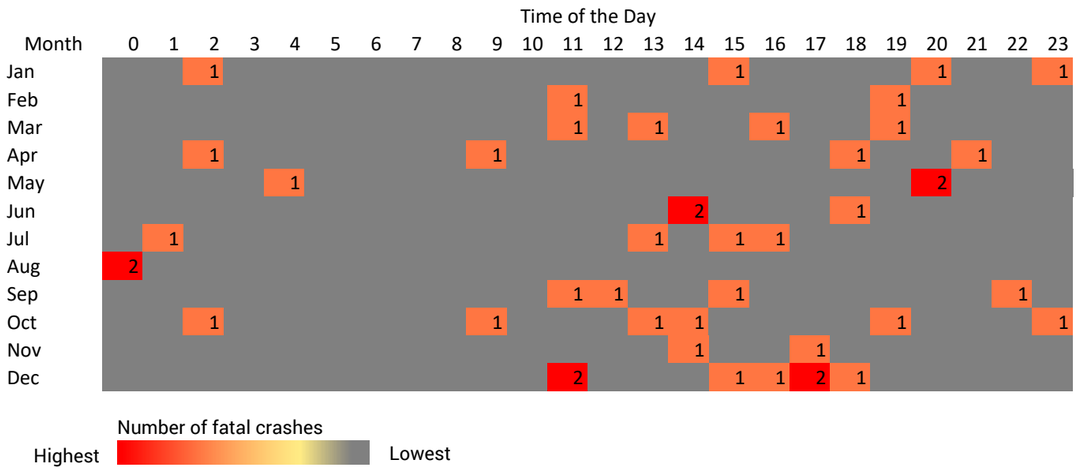
Thirteen percent of fatal crashes took place on a wet road surface, and another two percent took place on icy road condition.



7 out of **10**
drivers involved in fatal crashes were **Male**

Twelve drivers between the ages of 25 and 29 were involved in fatal crashes in the Champaign-Urbana urban area between 2012 and 2016, the largest number of drivers from any age cohort.

Six drivers aged 65-69, five drivers aged 15-19, and five drivers aged 20-24 were involved in fatal crashes. Of the 64 total drivers who were involved in a fatal crash in the Champaign-Urbana urban area during the study period, 44 (69 percent) were male, 18 (28 percent) were female and 3 percent were drivers of unknown sex.



During the 2012-2016 study period, there were five fatal crashes in the Champaign-Urbana urban area that occurred between 11 a.m. and 12 p.m., the most in any one-hour period.

Other than the identified peak period, fatal crashes were evenly distributed through the afternoon and evening hours, while there were low number of fatal crashes in the morning.

Seven and six fatal crashes occurred in December and October, respectively, in the Champaign-Urbana urban area during the study period.

5 A-INJURY CRASH ANALYSIS

A-injuries are injuries where a person is incapacitated due to a crash, and A-injury crashes are crashes where the highest level of injury that occurred was an incapacitating injury. In the 2012-2016 study period, a decreasing trend of A-injury crashes was observed. A-injuries are also referred to as serious injuries. The number of A-injuries and A-injury rates are safety performance measures. The targets for these measures are presented below:

Champaign-Urbana Urban Area Safety Performance Target

The LRTP 2045 (under development) identified two safety performance targets related to A-injury crashes in the near-term:

- Reduce the five-year rolling average of number of A-injuries by 5 percent (from 136 to 90) by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of serious injury rates (A-injuries per 100 million DVMT) by 5 percent (from 12 to 8) by 2025 based on 2017 in the Champaign-Urbana urban area.

IDOT Safety Performance Target for Illinois

- IDOT identified a safety performance goal of a two-percent reduction per year for 2018 and 2019 over the 2013-2017 baseline.

Map 4 *Location of A-injury crashes in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Comparison of Fatality and Fatality Rate Trends

Figure 8 shows the number of A-injuries in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035. Figure 9 shows the A-injury rate in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035.

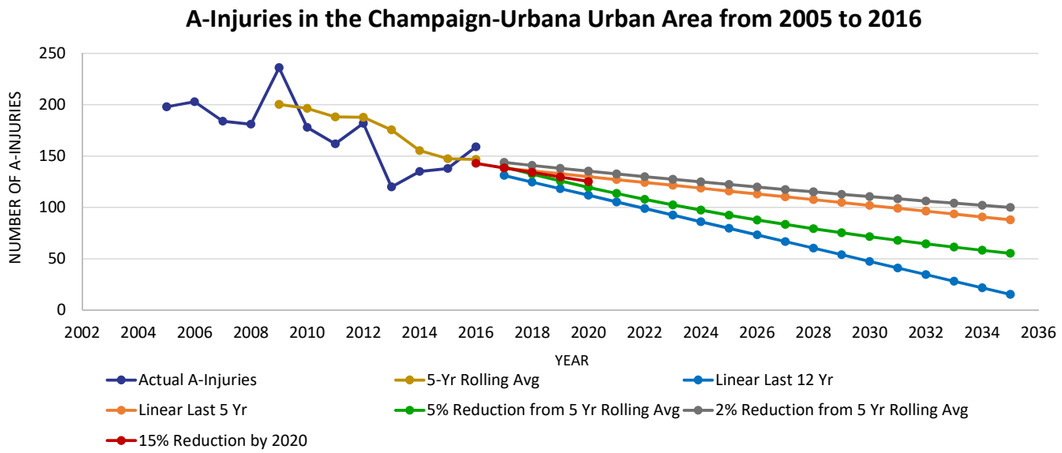


Figure 8 *A-injuries in the Champaign-Urbana urban area from 2005 to 2016*

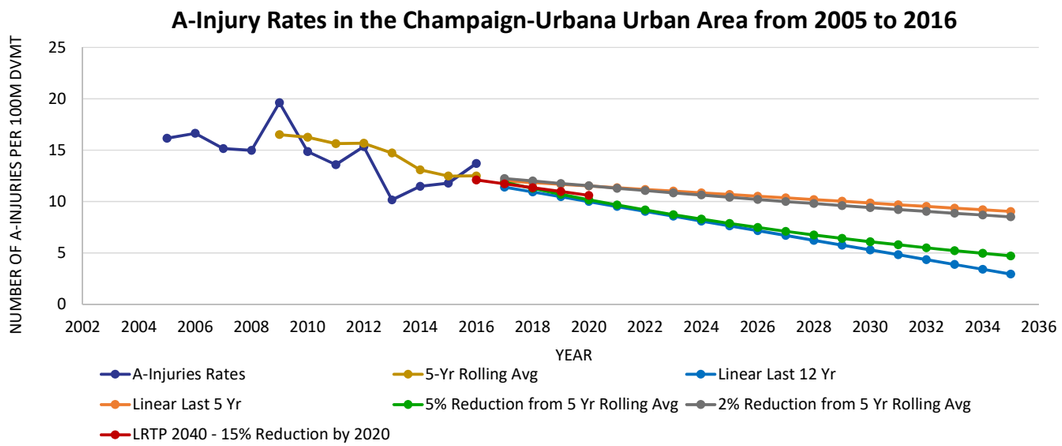
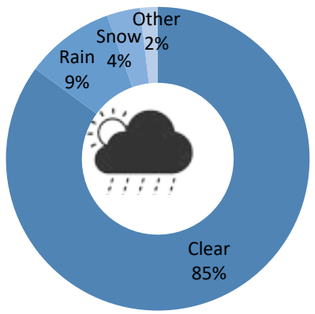


Figure 9 *A-injury rates in the Champaign-Urbana urban area from 2005 to 2016*

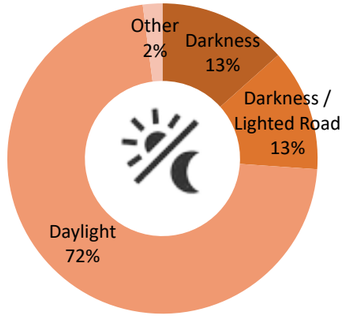
A-INJURY CRASHES

The 2012-2016 crash data in the Champaign-Urbana urban area was considered in this study.

A-injuries are injuries where a person is incapacitated due to a crash, and A-injury crashes are crashes where the highest level of injury is an incapacitating injury. A-injuries are also referred to serious injuries.



Weather Condition



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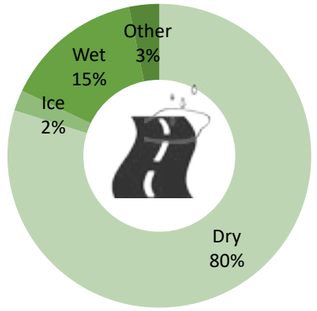
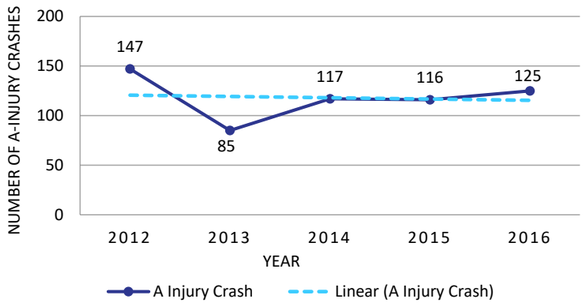


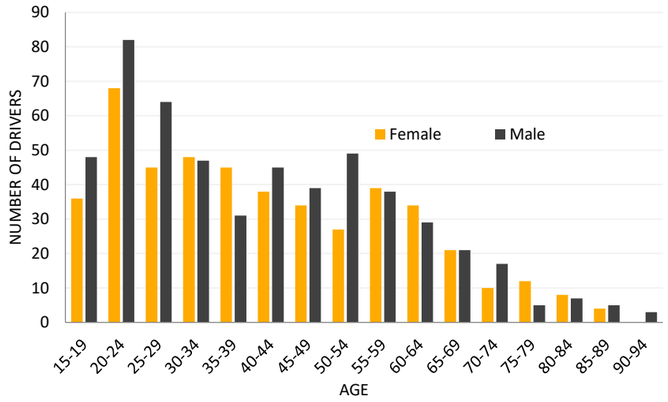
Road Surface Condition

Nine percent of A-injury crashes in the study area took place in rainy conditions, and four percent took place in snowy conditions

Thirteen percent of A-injury crashes took place in dark conditions, and another 13 percent in dark conditions with roadway lighting.

Fifteen percent of A-injury crashes took place on a wet road surface, while two percent took place on an icy road surface.





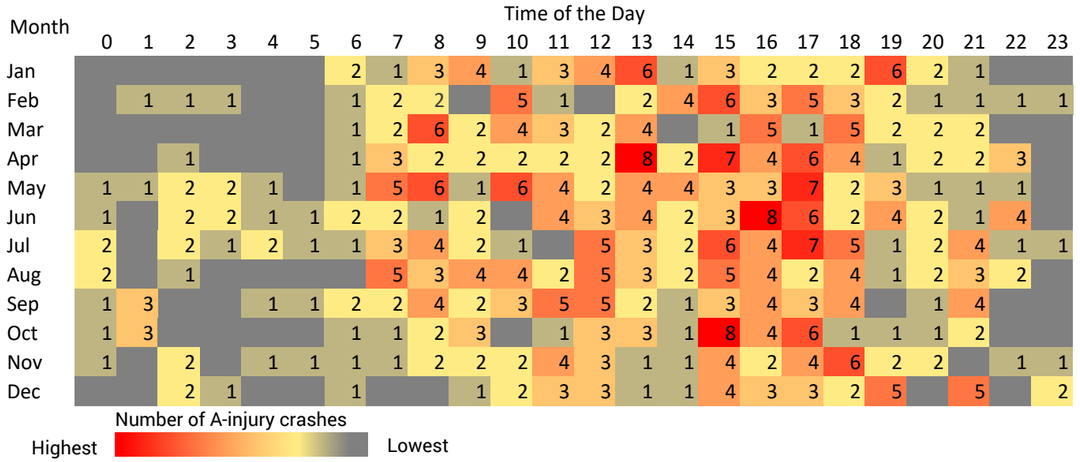
5 out of **10**
drivers involved in A-injury crashes were **Male**

One hundred and fifty drivers who were involved in A-injury crashes were between the ages of 20 and 24 years old, the largest number of drivers from any age cohort.

There were 1,019 drivers involved in A-injury crashes in the Champaign-Urbana urban area between 2012 and 2016. Of these, 53 percent were male and 46 percent were female. The sex of remaining one percent drivers were unknown.

OBJECTIVE

Reduce the five-year rolling average number of A-injuries by 5 percent by 2025 based on 2017 in the Champaign-Urbana urban area.



Peak periods for A-injury crashes in the Champaign-Urbana urban area between 2012-2016 were 3 p.m. to 4 p.m. and 5 p.m. to 6 p.m., each with more than 50 A-injury crashes. Fewer A-injury crashes took place overnight and into the early morning.

A high number of A-injury crashes were observed in summer, between May and July.

6 ANALYSIS BY COLLISION TYPE

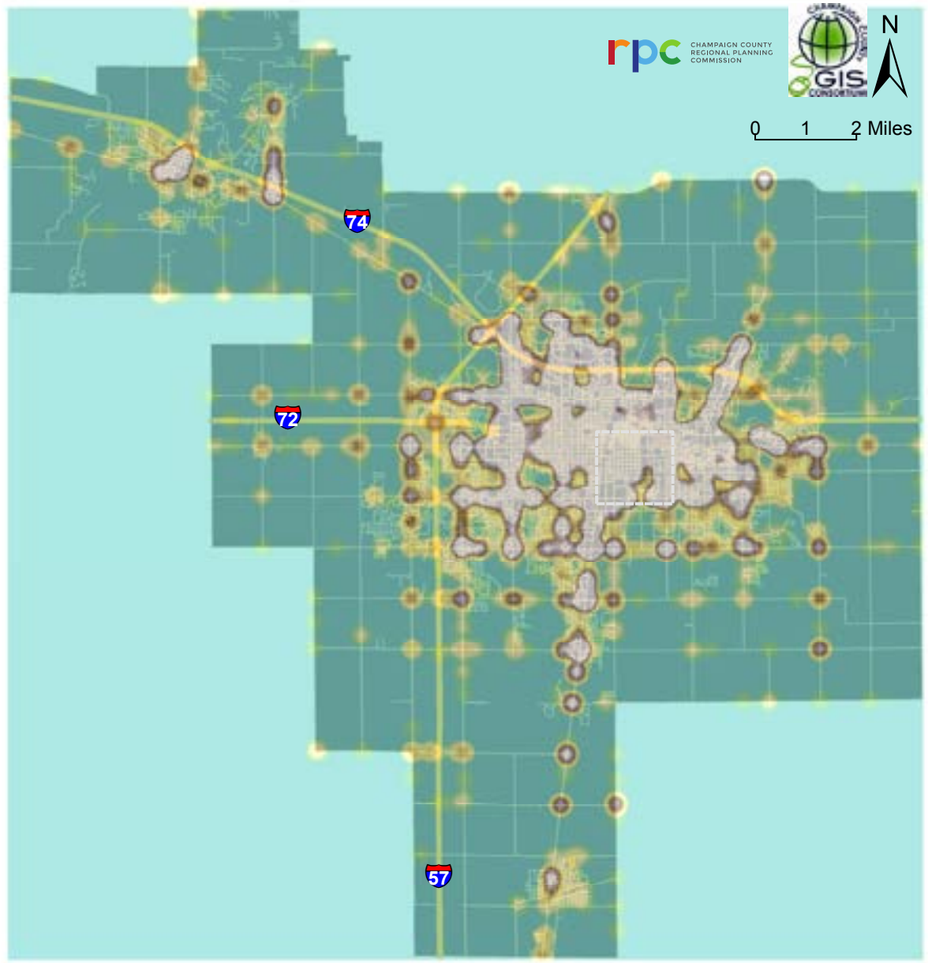
Crashes were categorized by collision type and are listed in Table 3 by percentage. The five most frequent collision types were rear end crashes (28 percent), turning crashes (19 percent), angle crashes (14 percent), fixed object crashes (12 percent), and parked motor vehicle crashes (9 percent). All these collision type of crashes are more prevalent at intersections than on road segments. Considering only the intersection- and road segment-related crashes, the significant causes of the crashes for the five collision types identified above are listed below:

- For rear end crashes were failing to reduce speed and following too closely.
- For turning crashes was failing to yield the right-of-way.
- For angle crashes were failing to yield the right-of-way and disregarding signs and road markings.
- For fixed object crashes were improper lane usage, exceeding speed, and failing to reduce speed to avoid a crash.
- For parking motor vehicle crashes were improper backing and undetermined cause.

Failing to reduce speed and failing to yield were common causes for crashes at intersections and road segments in the Champaign-Urbana urban area between 2012 and 2016.

Table 3 *Number of crashes by collision type from 2012 to 2016 in the Champaign-Urbana urban area*

Number of Crashes occurring at Intersections, Segments, and Interstates by Collision Types in the Champaign-Urbana urban area					
Collision Types	**Intersection**	**Interstate**	**Segment (Non-Interstate)**	**Total**	**Percent**
Angle	**1,758**	**11**	**134**	**1,903**	**14%**
Animal	56	183	95	334	3%
Fixed Object	**700**	**494**	**436**	**1,630**	**12%**
Head On	67	3	29	99	1%
Other Non-Collision	39	42	32	113	1%
Other Object	81	39	44	164	1%
Overturned	50	63	90	203	2%
Parked Motor Vehicle	692	6	445	1,143	9%
Pedalcyclist	193	0	26	219	2%
Pedestrian	174	3	37	214	2%
Rear End	**2,841**	**273**	**606**	**3,720**	**28%**
Sideswipe Opposite Direction	69	3	42	114	1%
Sideswipe Same Direction	563	248	186	997	7%
Train	2	0	3	5	0%
Turning	**2,170**	**21**	**290**	**2,481**	**19%**
Grand Total	9,455	1,389	2,495	13,339	100%



Note: The crashes are of Fixed Object, Rear End, Turning and Angle Collision Types at Intersections and Road Segments

Map 5 *Crash density heat map in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

7 ANALYSIS BY DRIVER AGE AND SEX

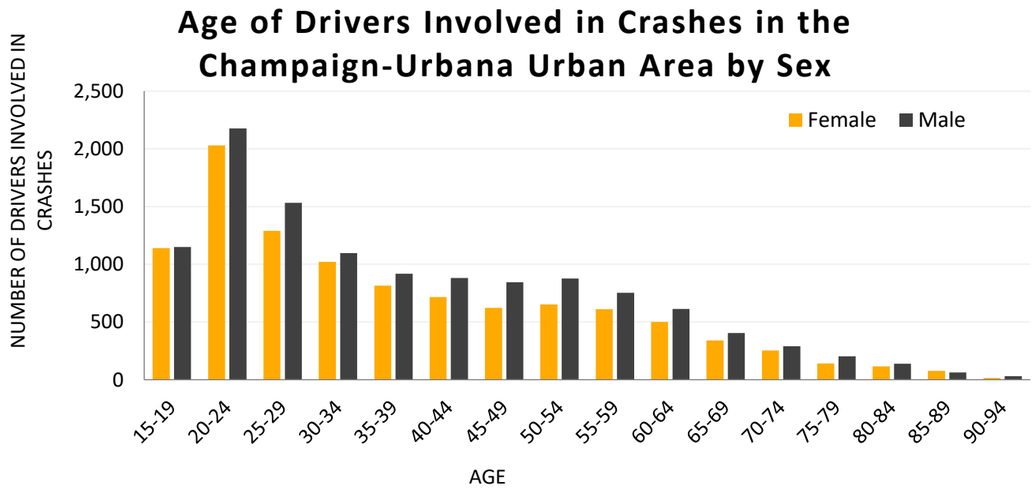
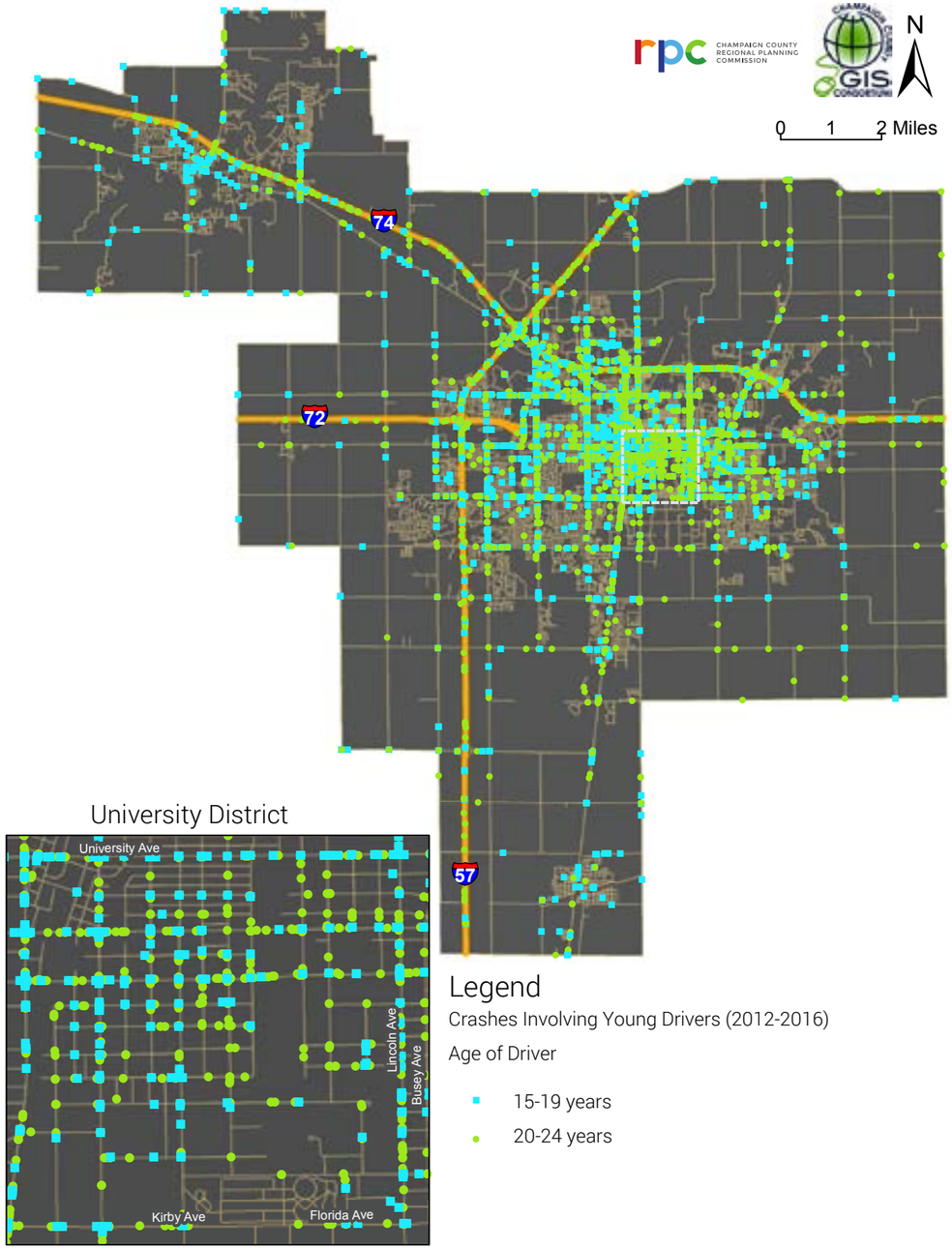


Figure 10 *Age of drivers by sex involved in crashes in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

All drivers involved in crashes in the Champaign-Urbana urban area between 2012 and 2016 were categorized by age and sex.

- In all age cohorts except for 85-89 years, more male drivers were involved in crashes than female drivers between 2012 and 2016. Overall, 51 percent of drivers involved in crashes were male, and 44 percent were female. The sex of the remaining percentage of drivers was unknown.
- More than 4,200 drivers aged 20-24 years (17.7 percent) were involved in crashes between 2012 and 2016. More than 2,800 drivers aged 25-29 (11.9 percent) and more than 2,200 drivers aged 15-19 years (9.7 percent) were involved in crashes between 2012 and 2016.



Map 6 *Crash locations by age of drivers in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

8 ANALYSIS BY DRIVER PHYSICAL CONDITION

Table 4 *Number of drivers by physical condition at the time of the crash in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Number of Drivers by Physical Condition at the Time of the Crash in the Champaign-Urbana urban area				
Driver Physical Condition	**A-Injury**	**Fatal**	**Total**	**Percent**
Normal	364	12	20,765	87%
Impaired	**43**	**14**	**518**	**2%**
Asleep/Fainted/Illness	8	0	72	0%
Medicated	0	0	9	0%
Had Been Drinking	1	0	49	0%
Fatigued	4	0	125	1%
Other/Unknown	29	0	2,070	9%
Emotional (Added in 2013)	1	0	81	0%
Removal by EMS (Added in 2013)	13	0	43	0%
Total	463	26	23,732	100%

The physical conditions of drivers involved in fatal and A-injury crashes in the Champaign-Urbana urban area between 2012 and 2016 were also considered.

- A large majority (87 percent) of drivers involved in fatal or A-injury crashes in the Champaign-Urbana urban area during the study period had a normal physical condition at the time of the crash.
- Two percent of drivers involved in fatal or A-injury crashes were impaired at the time of the crash, meaning that alcohol or drug use had impacted their physical condition.
- Although impaired drivers make up a small percentage of drivers involved in all crashes, the crashes that they are involved in tend to be more severe. Fifty-four percent of all fatal crashes during the study period involved an impaired driver, and almost nine percent of all A-injury drivers during the study period involved an impaired driver.

9 CRASH DISTRIBUTION

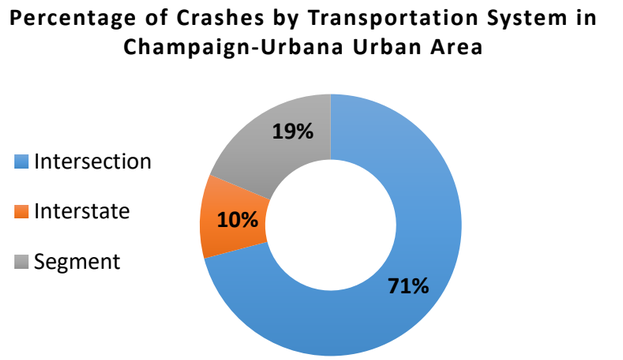


Figure 11 *Distibution of crashes across transportation system types (intersection, road segments, and interstates) in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

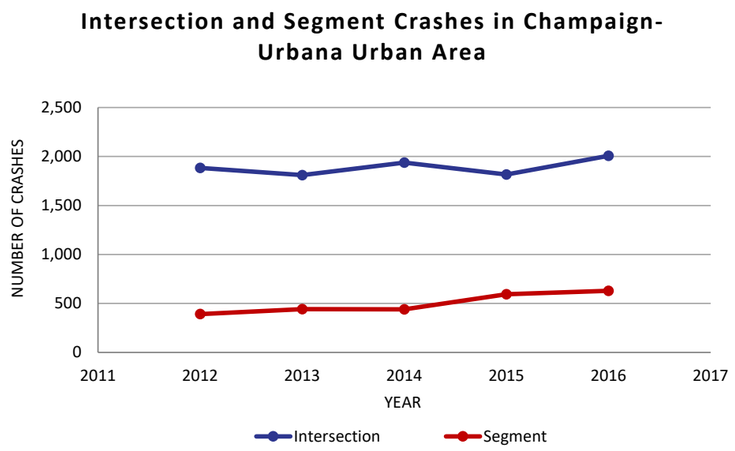


Figure 12 *Number of intersection and segment crashes in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

In the 2012-2016 study period, crashes were not distributed evenly throughout the transportation system in the Champaign-Urbana urban area.

- A majority of crashes (71 percent) in the Champaign-Urbana urban area between 2012 and 2016 took place at an intersection.
- Nineteen percent of crashes took place on a road segment.
- Ten percent of crashes took place on an interstate.
- There were more crashes at both intersections and road segments in 2016 than there were in 2012.

Table 5 *Number of crashes by system in five-year study period (2012-2016) in the Champaign-Urbana urban area*

Transportation System	Number of Crashes	Percent
Intersection	9,455	71%
Interstate	1,389	10%
Road Segment	2,495	19%
Grand Total	13,339	100%

Based on the analysis of crash severity, crash distribution, fatal crashes, A-injury crashes, collision types, and driver characteristics, four emphasis areas were identified:

- Intersections
- Pedestrians
- Bicyclists
- Impaired Driving

In addition, crashes on roadway segments were analyzed and high-priority segments were identified.

10 ROAD SEGMENT CRASHES

Crashes that were not intersection or interstate crashes were assumed to be roadway segment crashes.

Table 6 presents the summary of the roadway segment crashes: 0.6 percent of the crashes that occurred on road segments were fatal, and 3.9 percent were A-injury crashes.

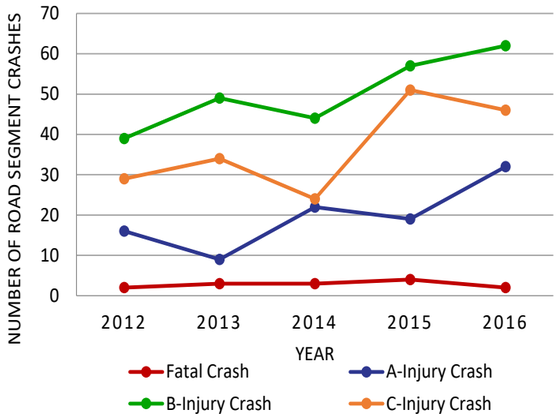
Table 6 *Number of crashes on road segments by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Number of Crashes at Road Segments by Severity Type in the Champaign-Urbana Urban Area							
Crash Severity	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**	**Percent**
Fatal	2	3	3	4	2	14	0.6%
A-Injury	16	9	22	19	32	98	3.9%
B-Injury	39	49	44	57	62	251	10.1%
C-Injury	29	34	24	51	46	184	7.4%
No Injury/ Property Damage Only	305	347	347	462	487	1,948	78.1%
Total	391	442	440	593	629	2,495	100%

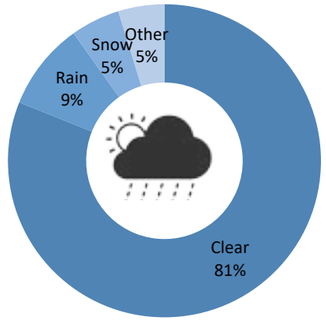
ROAD SEGMENT CRASHES

The 2012-2016 crash data in the Champaign-Urbana urban area was considered in this study.

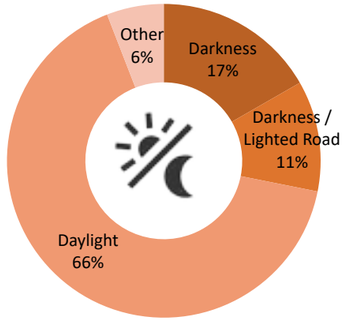
Crashes that were not intersection or interstate crashes were assumed to be roadway segment crashes. Currently, there is an increasing trend in number of road segment crashes in the Champaign-Urbana urban area.



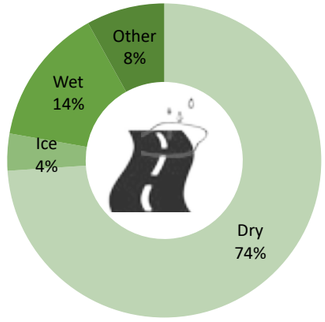
Less than one percent of road segment crashes were **fatal,** while about **4 percent** and 10 percent were **A-injury** and B-injury, respectively.



Weather Condition



Lighting Condition

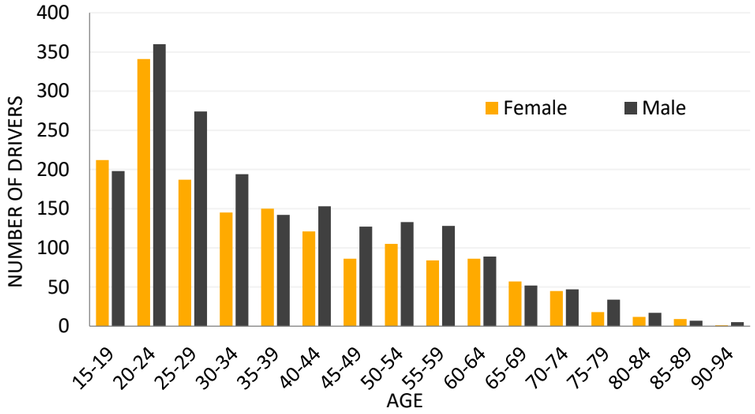


Road Surface Condition

Nine percent of crashes on road segments took place in rainy conditions, and five percent took place in snowy conditions.

Seventeen percent of crashes on road segments took place in dark conditions, and another 11 percent in dark conditions with roadway lighting.

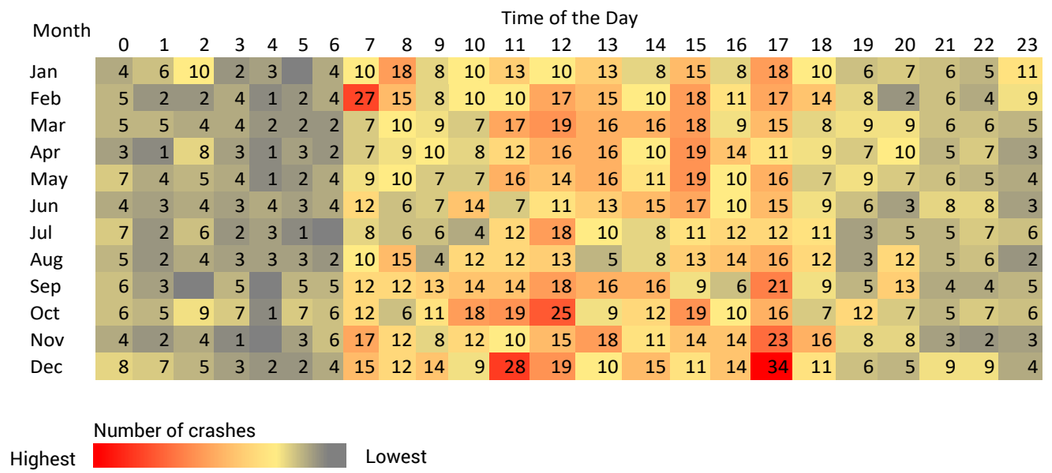
Fourteen percent of crashes on road segments took place on a wet road surface, while four percent took place on an icy road surface.



5 out of **10** drivers involved in roadway segment crashes were **Male**

Seven hundred and two drivers involved in crashes on road segments in the Champaign-Urbana urban area between 2012 and 2016 were between the ages of 20 and 24.

There were 3,955 drivers involved in crashes on road segments in the Champaign-Urbana urban area between 2012 and 2016. Of these 50 percent were male and 42 percent were female. The sex of remaining 8 percent were unknown.



Peak periods for crashes on road segments in the Champaign-Urbana urban area between 2012 and 2016 were 12 p.m. to 1 p.m. and 5 p.m. to 6 p.m., each with more than 190 crashes over the course of the study period. Fewer crashes took place overnight and into the early morning.

A high number of road segment crashes occurred in winter months, with a peak of 256 road segment crashes in December.

10.1 High-Priority Segments

High-priority segments were identified based on equivalent crashes, crash frequency, and crash frequency per mile. Equivalent crashes were calculated based on crash severity: more severe crashes (e.g., fatal crashes) were weighted more heavily than less severe crashes (e.g., C-injury crashes). Crash frequency is the average number of crashes over the five-year study period, and crash frequency per mile is the average crashes per mile of the segment. These measures were combined to produce a Priority Index, which is used to identify high-priority road segments in the Champaign-Urbana urban area.

$$\textbf{Equivalent Crashes} = \frac{(25*\text{Fatal Crashes} + 10*\text{A-Injury Crashes} + \text{B-Injury Crashes} + \text{C-Injury Crashes})}{5}$$

$$\textbf{Crash Frequency} = \frac{\text{Total Number of Crashes}}{5}$$

$$\textbf{Crash Frequency Per Mile} = \frac{\text{Total Number of Crashes}}{5*\text{Length of Segment}}$$

Methodology to Identify High-Priority Segments:

High-priority segments were identified based on three factors: Equivalent Crashes, Crash Frequency, and Crash Frequency per Mile.

- Equivalent Crashes, Crash Frequency, and Crash Frequency per Mile were calculated for each segment based on the equations presented.
- Considering all the segments, a mean and standard deviation for the three factors were calculated.
- For each segment, based on the equivalent crashes, crash frequency and crash frequency per length values from its mean, an index was assigned.
- The three index values were combined to give a priority index value.
- The higher the priority index value, the higher the priority given to the segment was.
- A list of high-priority segments was identified.

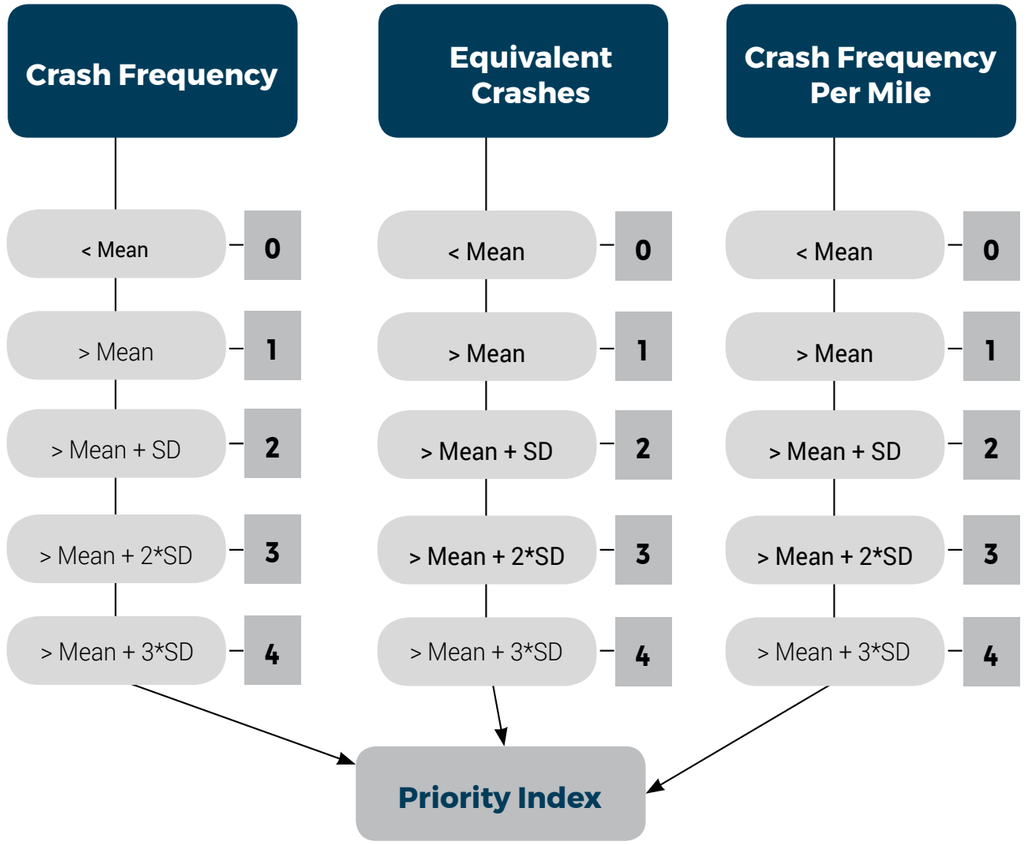
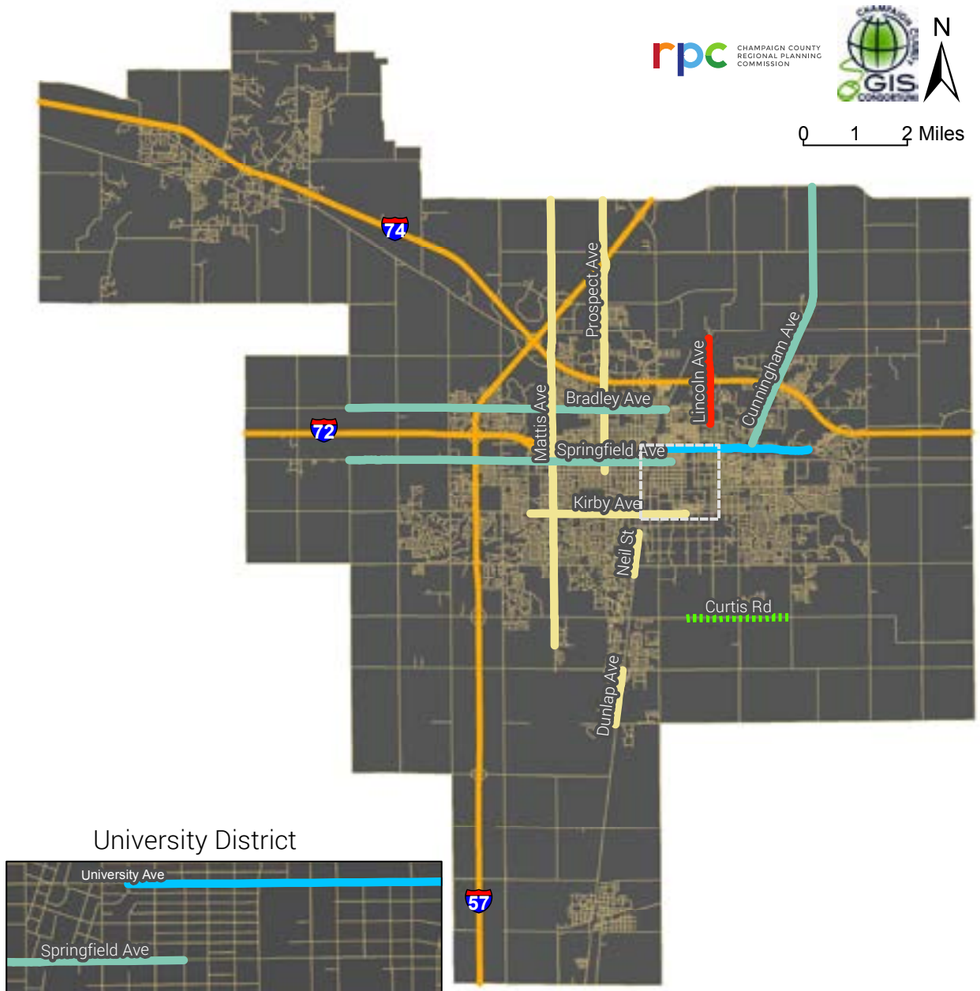


Figure 13 *Methodology to identify high-priority segments*

Map 7 presents the high-priority segments considering all roadway types except for interstates in the Champaign-Urbana urban area. These segments were identified using the methodology explained above (Figure 13). Map 7 also presents IDOT five percent critical segments, which were identified using the crashes from 2011-2015.

Map 7 presents high-priority roadway segments. There are different agencies responsible for different roadway types; thus, a separate analysis was done to identify high-priority county highways, in which only crashes occurring on county highways in Champaign County were considered. High-priority interstate segments were also identified. The lists of high-priority county highways, US and state routes, and interstates are presented in the appendices. The most recent safety improvement projects from different agencies are listed in Appendix B.



Map 7 *High-priority road segments identified in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

EMPHASIS AREAS

- **Intersections**
- **Pedestrians**
- **Bicyclists**
- **Impaired Driving**

EMPHASIS AREA: INTERSECTIONS

In the Champaign-Urbana urban area, the highest number of crashes (71 percent) occurred at intersections. Angle, rear end, and turning collisions are more prone to occur at intersections. Significant causes of these collision types at intersections were failing to reduce speed, following too closely, failing to yield the right-of-way and disregarding signs and road markings. In this study, intersection crashes are defined as crashes that took place within a 150-foot radius of an intersection that lies outside the Champaign-Urbana urban area, and within a 100-foot of an intersection that lies within the Champaign-Urbana urban area. Table 7 presents the number of intersection crashes by severity type. Among intersection crashes, 0.2 percent were fatal and 4.5 percent were A-injury crashes.

OBJECTIVE

- Reduce the five-year rolling average of number of fatalities at intersections by 5 percent (from 4 to 3) by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of number of A-injuries at intersections by 2 percent (from 105 to 88) by 2025 based on 2017 in the Champaign-Urbana urban area.

Table 7 *Number of crashes at intersections by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Number of Crashes at Intersections by Severity Type							
Crash Severity	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**	**Percent**
Fatal	2	3	5	4	7	21	0.2%
A-Injury	118	67	83	86	69	423	4.5%
B-Injury	171	179	183	152	192	877	9.3%
C-Injury	113	162	180	197	212	864	9.1%
No Injury/ Property Damage Only	1,480	1,399	1,486	1,378	1,527	7,270	76.9%
Total	1,884	1,810	1,937	1,817	2,007	9,455	100.0%

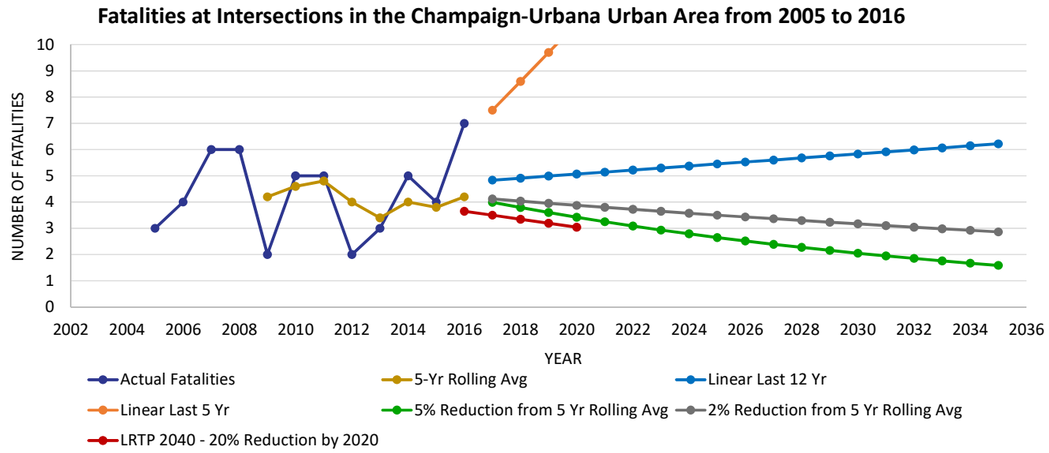


Figure 14 *Trend for the number of fatalities due to intersection crashes in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035*

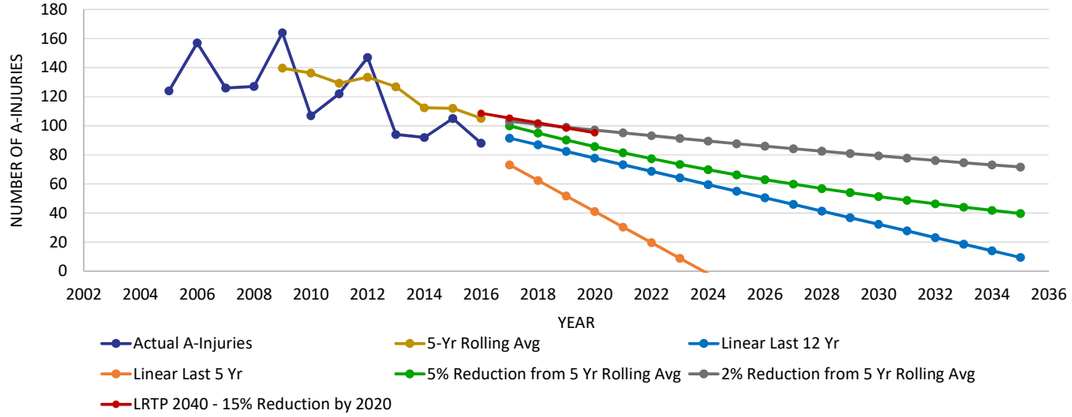
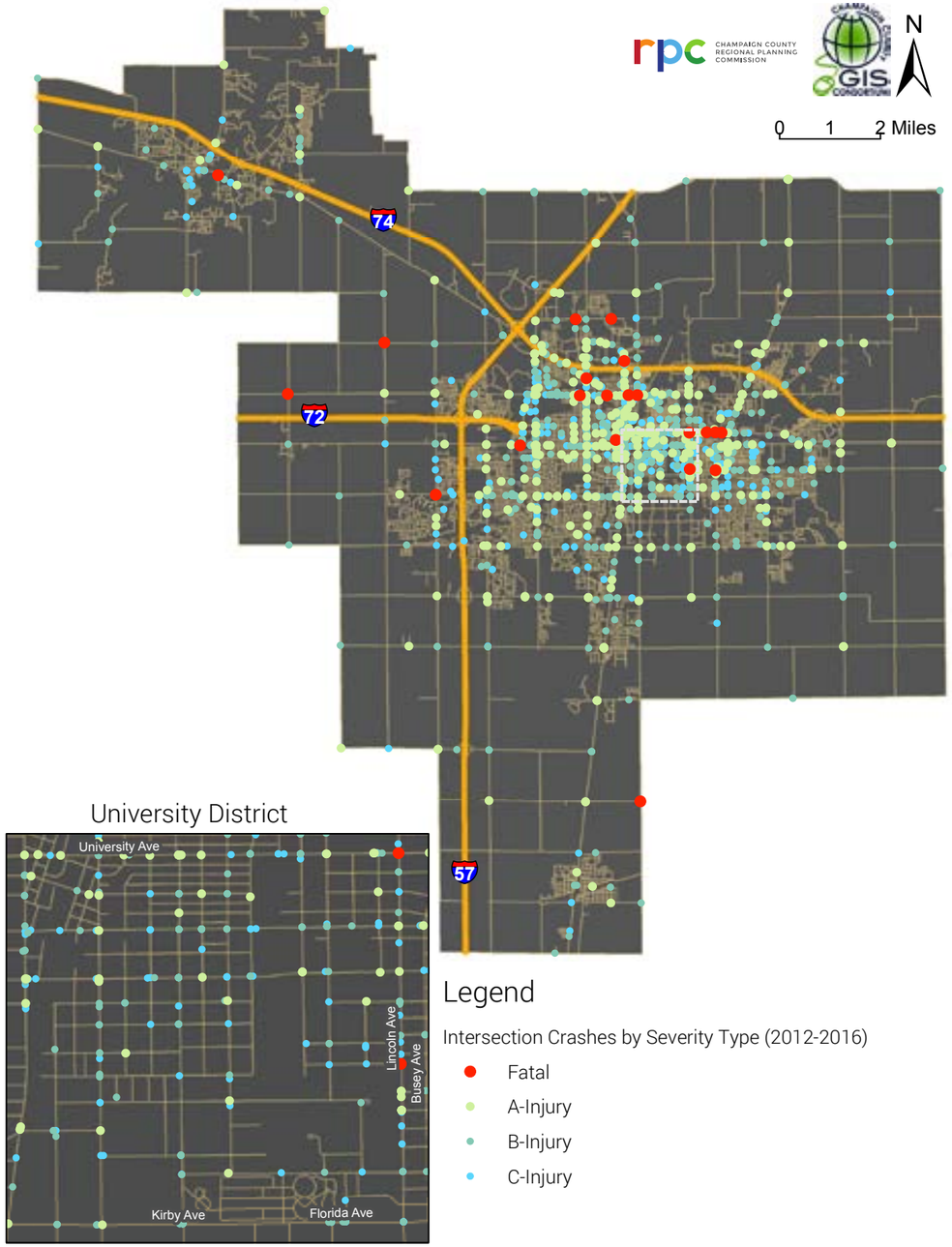


Figure 15 *Trend for the number of A-injuries due to intersection crashes in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035*

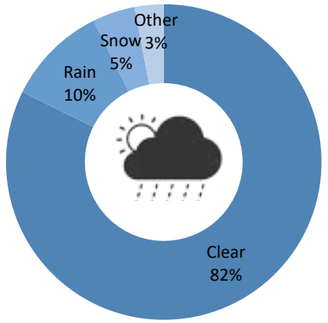


Map 8 *Location of intersection crashes by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

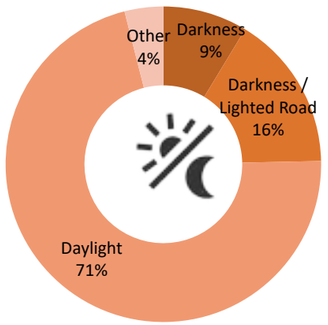
EMPHASIS AREA: INTERSECTIONS

The 2012-2016 crash data in the Champaign-Urbana urban area was considered in this study.

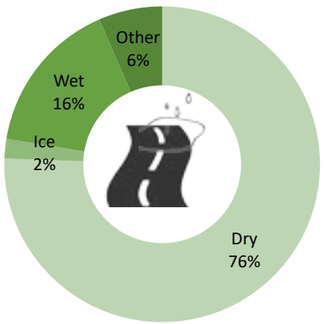
In this study, intersection crashes are defined as crashes that took place within a 150-foot radius of an intersection that lies outside the Champaign-Urbana urban area, and within a 100-foot of an intersection that lies within the Champaign-Urbana urban area.



Weather Condition



Lighting Condition

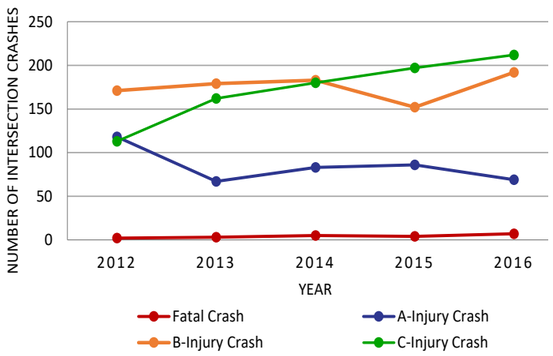


Road Surface Condition

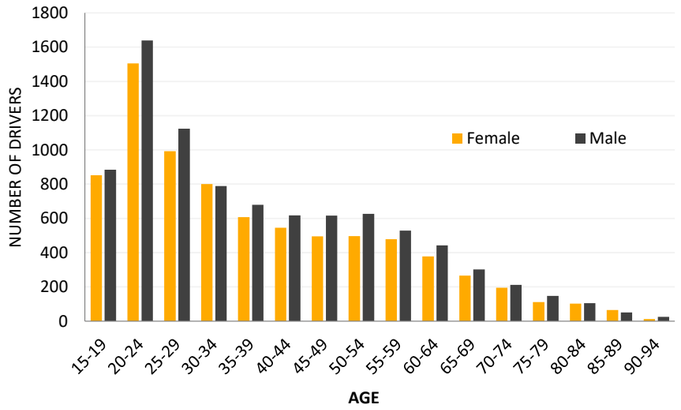
Ten percent of intersection crashes took place in rainy conditions, and five percent took place in snowy conditions.

Nine percent of intersection crashes occurred in dark conditions, and another 16 percent occurred in dark conditions with roadway lighting.

Sixteen percent of intersection crashes occurred on a wet road surface, and two percent occurred on an icy road surface.



Less than one percent of intersection crashes were **fatal,** while **4.5 percent** and 9.3 percent were **A-injury** and B-injury, respectively.



5 out of **10** drivers involved in intersection crashes were **Male**

Significantly more drivers involved in intersection crashes in the Champaign-Urbana urban area between 2012 and 2016 were in the 20-24 age cohort than in any other age cohort. The age cohort 25-29 had the second-largest number of drivers involved in intersection crashes during the study period.

More male drivers (51 percent) than female drivers (45 percent) were involved in intersection crashes in the Champaign-Urbana urban area during the study period. The sex of the remaining four percent was unknown.

Time of the Day

Month	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Jan	7	13	16	10	2	12	10	36	48	40	34	44	65	51	52	65	58	68	37	40	23	15	12	11
Feb	13	12	22	8	9	3	24	41	50	26	36	36	39	48	47	71	64	59	43	36	22	24	13	12
Mar	14	10	9	6	1	7	11	42	42	30	35	31	48	36	48	62	57	61	35	25	28	25	14	16
Apr	9	9	17	6	7	3	16	28	28	28	30	42	57	51	59	65	58	91	43	19	31	22	14	10
May	12	16	18	10	5	3	15	27	38	31	41	43	55	55	53	57	67	74	50	21	30	23	15	17
Jun	13	20	16	8	7	2	7	29	34	33	32	48	61	59	56	46	64	59	35	30	13	30	22	9
Jul	12	7	15	9	12	5	12	20	32	21	34	38	61	48	51	52	68	59	42	36	15	24	14	13
Aug	9	9	19	6	6	7	8	45	27	37	45	47	56	69	52	54	73	69	50	31	37	23	13	16
Sep	19	16	17	10	10	6	15	41	45	25	39	50	59	62	56	64	70	94	46	33	30	22	23	15
Oct	15	12	20	16	10	11	10	51	58	39	35	45	68	58	49	82	71	80	55	34	34	27	26	17
Nov	12	13	17	9	8	10	10	39	44	25	23	52	62	49	52	58	61	107	65	30	21	20	20	16
Dec	12	15	15	8	5	9	15	39	52	39	42	50	59	55	58	56	65	78	70	30	27	24	16	23

Number of crashes

Highest — Lowest

The greatest number of crashes during the study period in any single hour of the day occurred between 5 p.m. and 6 p.m., followed by 4-5 p.m. and 3-4 p.m.

Overnight until 7 a.m., there was a low number of crashes at intersections, after which the number of crashes increases until 6 p.m., then decreases into the evening.

Nine hundred and twenty-three intersection-related crashes occurred in October in the study period, which is more than in any other month. September had the second-highest number of intersection-related crashes at 867.

High-Priority Intersections

High-priority intersections were identified based on equivalent crashes and crash frequency. Equivalent crashes were calculated based on crash severity: more severe crashes (e.g., fatal crashes) were weighted more heavily than less severe crashes (e.g., C-injury crashes). Crash frequency is the average number of crashes over the five-year study period. These measures were combined to produce a Priority Index, which is used to identify high-priority intersections in the Champaign-Urbana urban area.

$$\textbf{Equivalent Crashes} = \frac{(25*\text{Fatal Crashes} + 10*\text{A-Injury Crashes} + \text{B-Injury Crashes} + \text{C-Injury Crashes})}{5}$$

$$\textbf{Crash Frequency} = \frac{\text{Total Number of Crashes}}{5}$$

Methodology to Identify High-Priority Intersections:

High-priority intersections were identified based on two factors: Equivalent Crashes and Crash Frequency.

- Equivalent Crashes and Crash Frequency were calculated for each intersection based on the equations presented.
- Considering all the intersections, a mean and standard deviation for the two factors were calculated.
- For each intersection, based on the equivalent crashes and crash frequency values from its mean, an index was assigned.
- The two index values were combined to give a priority index value.
- The higher the priority index value, the higher the priority given to the intersection was.
- A list of high-priority intersections were identified.

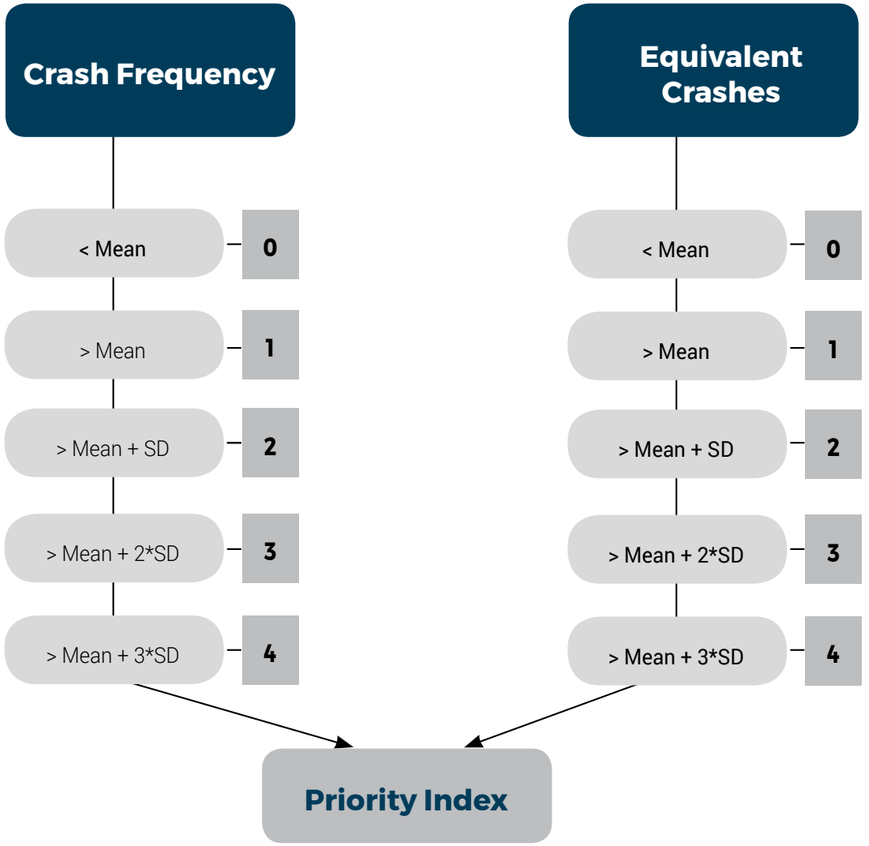
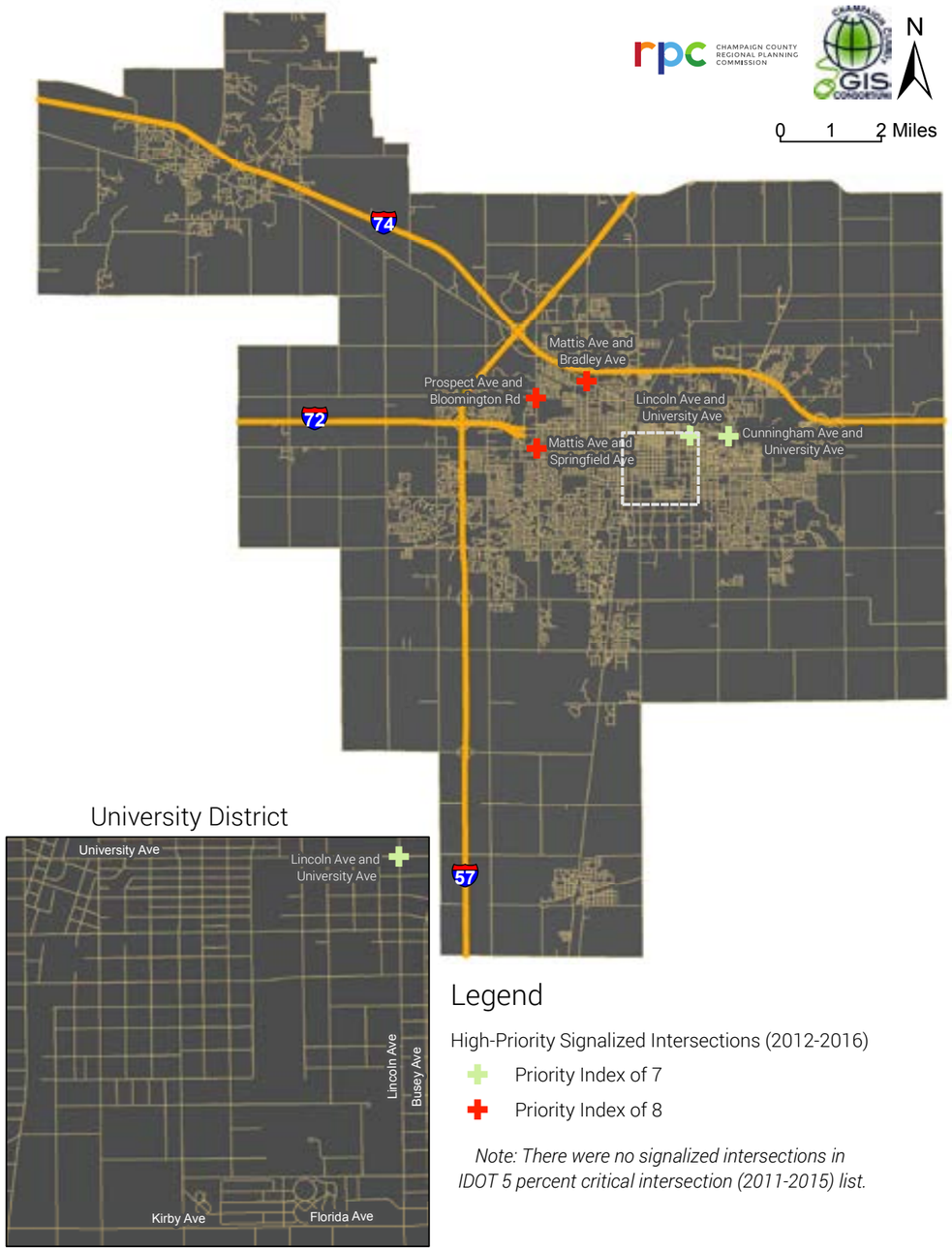


Figure 16 *Methodology to identify high-priority intersections*

Table 8 *High-priority signalized intersections in the Champaign-Urbana urban area*

High-Priority Signalized Intersections in the Champaign-Urbana Urban Area									
No.	**N-S Roadway**	**E-W Roadway**	**Control Type**	**Fatal Crashes**	**A-Injury Crashes**	**Total Crashes**	**Crash Frequency Index**	**Equivalent Crash Index**	**Priority Index**
1	Prospect Ave	Bloomington Rd	Signal	1	5	131	4	4	8
2	Mattis Ave	Bradley Ave	Signal	0	6	98	4	4	8
3	Mattis Ave	Springfield Ave	Signal	0	5	84	4	4	8
4	Lincoln Ave	University Ave	Signal	1	2	99	4	3	7
5	Cunningham Ave	University Ave	Signal	0	4	91	4	3	7

The most recent safety improvement projects from different agencies are listed in Appendix B.

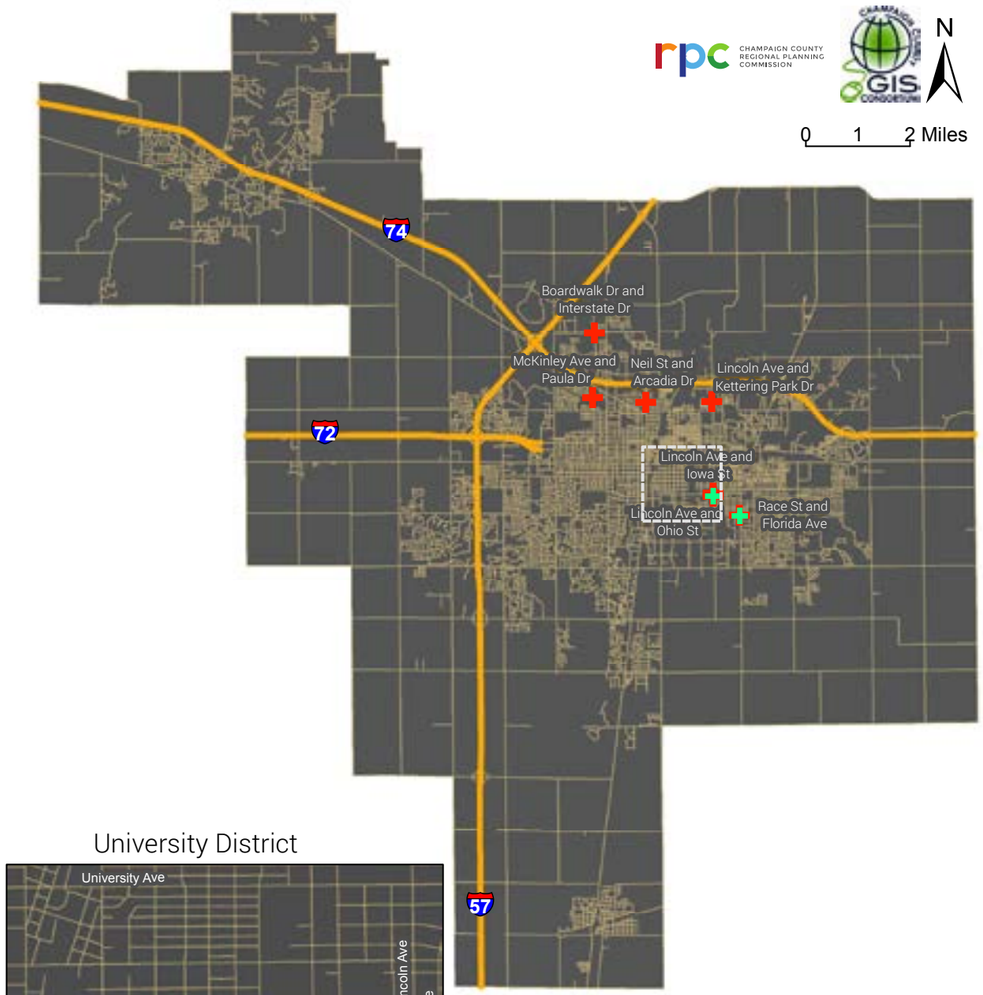


Map 9 *High-priority signalized intersections identified in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Table 9 *High-priority unsignalized intersections in the Champaign-Urbana urban area*

High-Priority Unsignalized Intersections in the Champaign-Urbana Urban Area									
No.	**N-S Roadway**	**E-W Roadway**	**Control Type**	**Fatal Crashes**	**A-Injury Crashes**	**Total Crashes**	**Crash Frequency Index**	**Equivalent Crash Index**	**Priority Index**
1	Boardwalk Dr	Interstate Dr	1WSC (N)	1	2	24	4	4	8
2	Lincoln Ave	Ohio St	1WSC (W)	0	5	30	4	4	8
3	Lincoln Ave	Iowa St	1WSC (W)	0	3	24	4	4	8
4	McKinley Ave	Paula Dr	2WSC (E-W)	0	2	19	4	4	8
5	Neil St	Arcadia Dr	2WSC (E-W)	0	2	17	4	4	8
6	Lincoln Ave	Kettering Park Dr	1WSC (W)	0	2	17	4	4	8
7	Race St	Florida Ave	AWSC	0	2	27	4	4	8

The most recent safety improvement projects from different agencies are listed in Appendix B.



Map 10 *High-priority unsignalized intersections identified in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Table 10 *Strategies to reduce intersection crashes*

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
1. Enhance intersection safety performance	**1.1** Apply network screening data to identify the crash types (angle and turning) contributing most to fatalities and injuries, and apply systematic low-cost improvements such as protected turns and signal progression to decrease the number of these crashes.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.2 Evaluate intersection user lines of sight to traffic control devices and approaching motorists, pedestrians, and bicyclists.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.3 Revise design of intersection geometry and road skew.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.4 Provide/improve left- and right-turn channelization and storage.		ILSHSP	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.5 Evaluate pavement design for intersection friction value and consider high-friction surface treatment where appropriate.		ILSHSP	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.6 Evaluate existing intersection locations with high crash trends.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.7 Incorporate access management techniques, including median construction, driveway closures or consolidations, and/or imposing left-turning restrictions.		ILSHSP	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.8 Evaluate and implement pedestrian and bicyclist accommodations.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages and townships (Public Works)

Implementation Areas: Engineering Enforcement Education Emergency Services

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
1. Enhance intersection safety performance (continued)	**1.9** Consider nontraditional intersection types where appropriate, such as roundabouts, J-turns, median U-turn intersections, jughandles, displaced left turn intersections, offset T-intersections, and continuous flow intersections.		ILSHSP	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.10 Improve conspicuity of the intersection and its users through a variety of approaches, such as lighting, advance warning devices, and upgrading of intersection signal head placement.		ILSHSP	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.11 Improve availability of gaps in traffic and assist drivers in judging gap sizes at unsignalized intersections.		Systemic Safety Improvements	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.12 Provide traffic calming on intersection approaches through a combination of geometrics and traffic control devices.		Systemic Safety Improvements	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.13 Improve driver awareness of intersection as viewed from the intersection: for example, providing supplementary messages, such as STOP AHEAD, installing flashing beacons at stop-controlled intersections, etc.		Systemic Safety Improvements	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.14 Consider intersection signing improvements to improve safety.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages and townships (Public Works)
2. Increase traffic law compliance near intersections	**2.1** Increase law enforcement presence and enforcement at known high-crash intersections.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	2.2 Develop a procedure for law enforcement officers to request engineering assessments of crash sites.		ILSHSP	IDOT, ISP, Champaign County, local cities, villages and townships (Public Works and Police Departments)

Implementation Areas: Engineering Enforcement Education Emergency Services

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
3. Increase awareness and education	**3.1** Establish education campaign for intersection safety.		ILSHSP	IDOT, schools, Secretary of State (DMV)
	3.2 Increase intersection information in the Rules of the Road.		ILSHSP	Secretary of State (DMV)
	3.3 Improve content and testing of driver education regarding intersection safety.		ILSHSP	Secretary of State (DMV)
	3.4 Implement training and education for innovative intersection configurations.		ILSHSP	Secretary of State (DMV), schools

Sources:

Systemic Safety Improvements: Analysis, Guidelines and Procedures (Link: ***http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Manuals-Guides-&-Handbooks/Safety/Systemic%20Safety%20Improvements%20Analysis,%20Guidelines%20and%20Procedures.pdf***)

ILSHSP (Link: ***http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/SHSP/SHSP_2017.pdf***)

Implementation Areas: Engineering Enforcement Education Emergency Services

EMPHASIS AREA: PEDESTRIANS

As the Champaign-Urbana urban area is highly populated, there are many pedestrians, especially in the University of Illinois District. Pedestrians were selected as an emphasis area because they are one of the most vulnerable types of road users; unlike drivers, they are unprotected in a crash.

Between 2012 and 2016, there were 214 pedestrian crashes in the Champaign-Urbana urban area. The largest percentage, 41 percent, were B-injury crashes; A-injury and C-injury crashes were almost equally represented, at 28 percent and 26 percent, respectively, while three percent of all pedestrian crashes during the study period were fatal.

OBJECTIVE

- Reduce the five-year rolling average of number of pedestrian fatalities by 5 percent (from 2 to 1) by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of number of pedestrian A-injuries by 2 percent (from 13 to 11) in the Champaign-Urbana urban area.

Table 11 *Number of pedestrian crashes by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Number of Pedestrian Crashes by Severity Type in the Champaign-Urbana Urban Area							
Crash Severity	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**	**Percent**
Fatal	1	1	0	3	3	8	4%
A-Injury	14	9	15	12	9	59	28%
B-Injury	17	23	12	17	19	88	41%
C-Injury	11	12	6	9	18	56	26%
No Injury/ Property Damage Only	1	0	1	0	1	3	1%
Total	44	45	34	41	50	214	100%

Map 11 presents the pedestrian crashes located in the study area. The majority of pedestrian crashes in the Champaign-Urbana Urban Area between 2012 and 2016 that resulted in fatalities or injuries were concentrated within the City of Champaign and City of Urbana. There was one fatal pedestrian crash in the University District (City of Urbana) and one fatal crash in the Village of Mahomet.

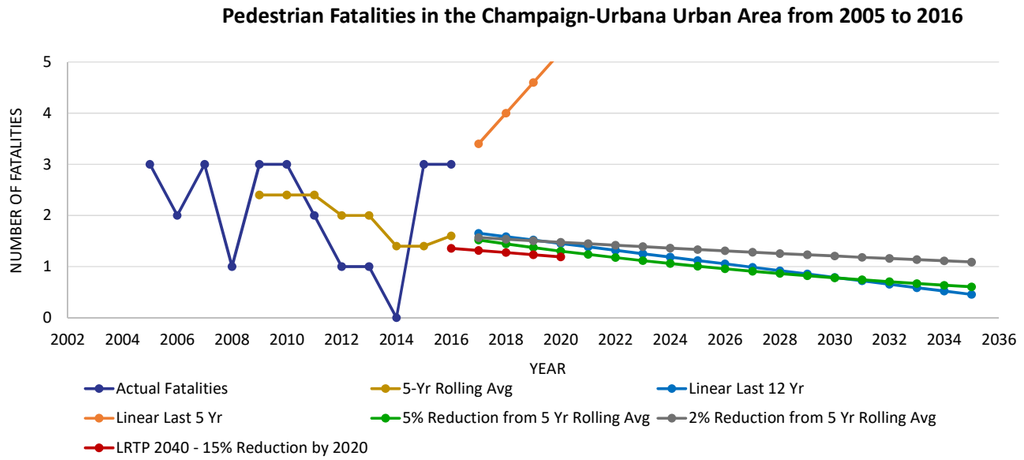


Figure 17 *Trend for the number pedestrian fatalities in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035*

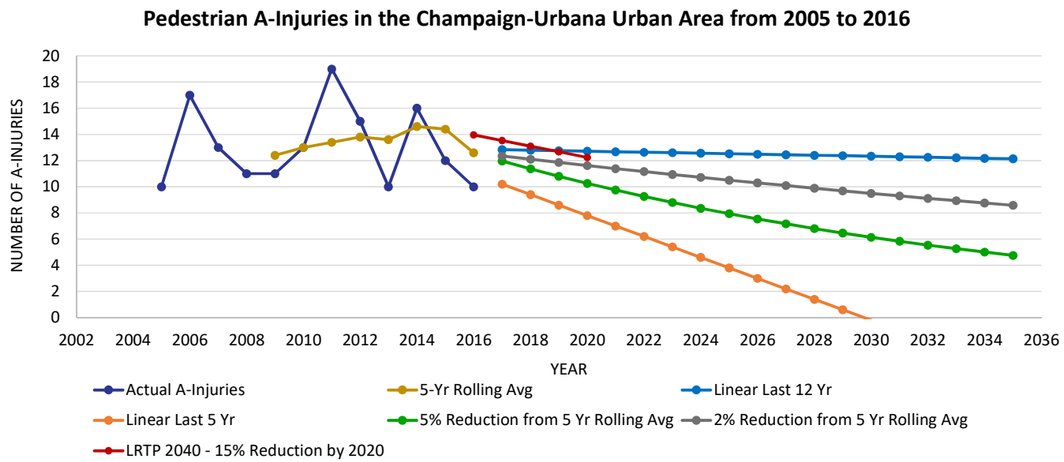
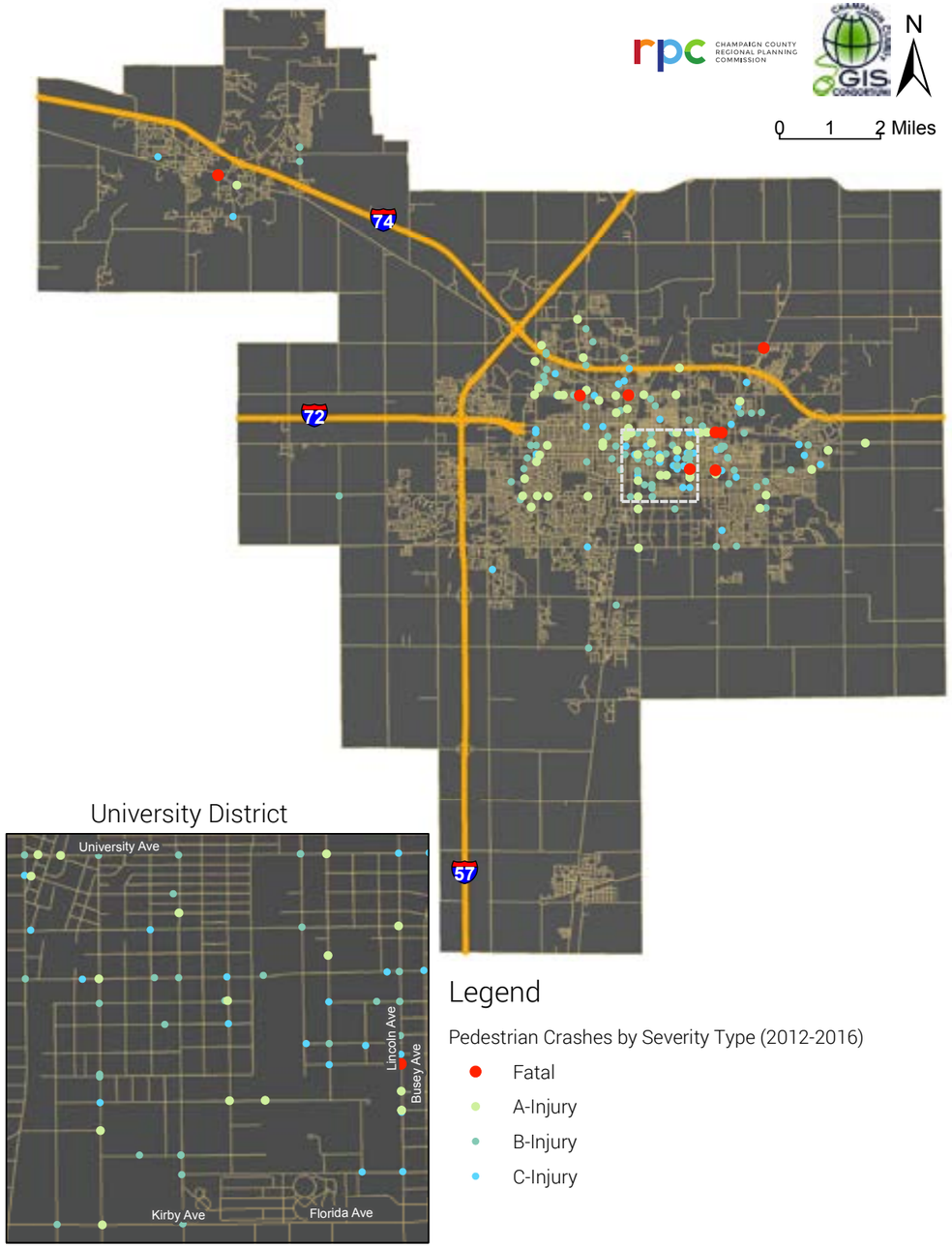


Figure 18 *Trend for the number of pedestrian A-injuries in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035*

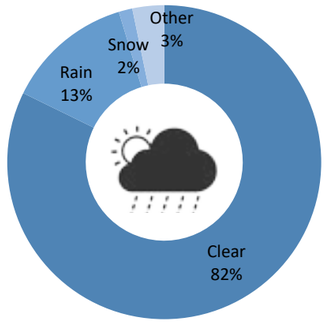


Map 11 *Location of pedestrian crashes by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

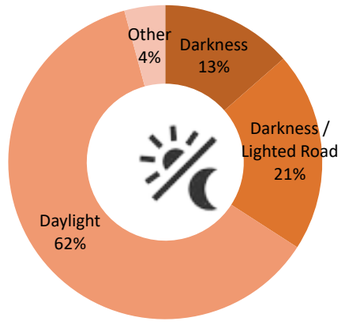
EMPHASIS AREA: PEDESTRIANS

The 2012-2016 crash data in the Champaign-Urbana urban area was considered in this study.

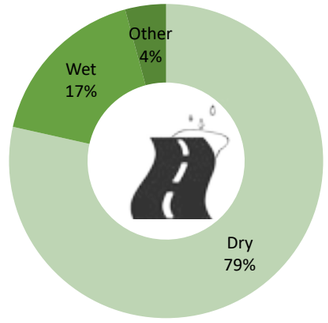
Pedestrians are some of the most vulnerable road users. A crash involving at least one pedestrian is considered as pedestrian crash. There were 214 pedestrian crashes in Champaign-Urbana urban area between 2012-2016.



Weather Condition



Lighting Condition

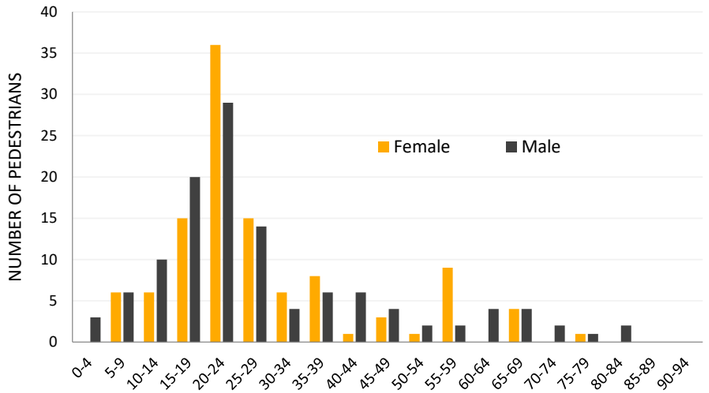


Road Surface Condition

Thirteen percent of pedestrian crashes took place in rainy conditions, and two percent took place in snowy conditions.

Thirteen percent of pedestrian crashes took place in dark conditions, and another 21 percent took place in dark conditions with roadway lighting.

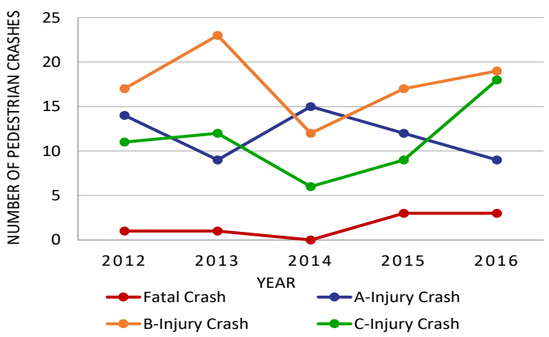
Seventeen percent of pedestrian crashes took place on a wet road surface.



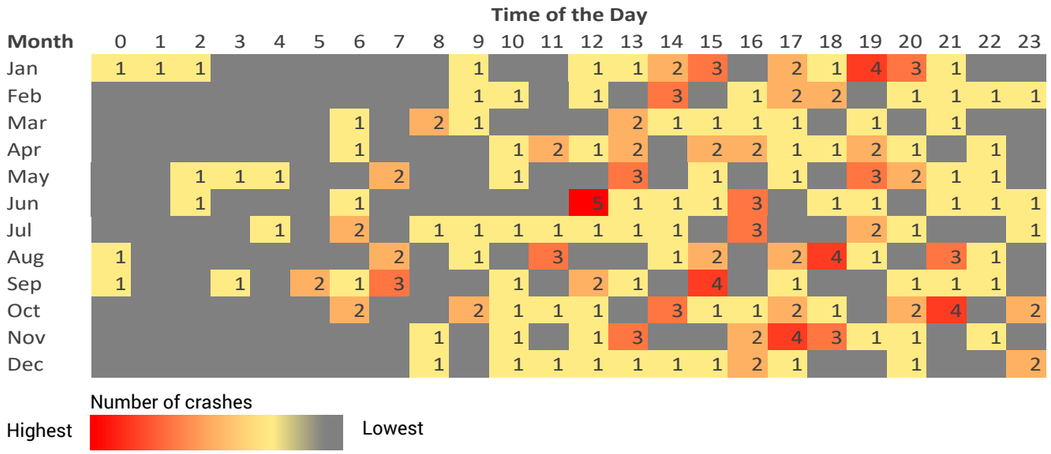
5 out of **10** pedestrians involved in pedestrian crashes were **Male**

The age cohort with the largest number of pedestrians involved in crashes in the Champaign-Urbana urban area between 2012 and 2016 was 20-24. In this age cohort, there were more females involved in crashes than males.

Overall, there was not much difference in the percentage of female and male pedestrians involved in crashes.



Four percent of pedestrian crashes were **fatal,** while **28 percent** and 41 percent were **A-injury** and B-injury, respectively.



Pedestrian crashes in the Champaign-Urbana urban area between 2012 and 2016 were relatively evenly distributed throughout the afternoon and evening while the fewest pedestrian crashes took place through the early morning.

Twenty-three pedestrian crashes occurred in October, the largest number of crashes per month during the 2012-2016 study period. Twenty-two pedestrian crashes occurred in January.

Table 12 *Strategies to reduce pedestrian crashes*

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
1. Reduce vehicle speed	**1.1** Implement more lane narrowing and road diet measures.		ILSHSP	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.2 Install traffic calming measures along road segments and at intersections.		ILSHSP	IDOT, Champaign County, local cities, villages and townships (Public Works)
	1.3 Increase enforcement for speeding and aggressive driving.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	1.4 Consider opportunities to reduce speeds through automated enforcement.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages and townships (Public Works and Police Departments)
2. Reduce pedestrian exposure to vehicular traffic	**2.1** Provide and upgrade sidewalks/walkways with curb ramps according to ADA standards.		ILSHSP	Champaign County, local cities, villages and townships (Public Works)
	2.2 Install or upgrade traffic and pedestrian signals, such as pedestrian countdown timers, pedestrian scrambles, and pedestrian detectors.		ILSHSP	IDOT, Champaign County, local cities, and villages (Public Works)
	2.3 Construct pedestrian corners and median refuge islands.		ILSHSP	IDOT, Champaign County, local cities, and villages (Public Works)
	2.4 Evaluate and consider opportunities for access management or diverting vehicular traffic to nearby routes to avoid high pedestrian travel areas.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, and villages (Public Works)
	2.5 Provide grade separated facilities where appropriate.		ILSHSP	IDOT, Champaign County, local cities, and villages (Public Works)
	2.6 Provide school route improvements.		ILSHSP	IDOT, Champaign County, local cities, and villages (Public Works)

Implementation Areas: Engineering Enforcement Education Emergency Services

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
3. Improve visibility between motor vehicles and pedestrians	**3.1** Enhance crosswalks and sight lines to improve visibility of pedestrians (e.g. bump-outs).		ILSHSP	IDOT, Champaign County, local cities, and villages (Public Works)
	3.2 Implement lighting/crosswalk illumination measures.		ILSHSP	IDOT, Champaign County, local cities, and villages (Public Works)
	3.3 Provide signs, signals and/or flashing beacons to alert motorists that pedestrians are crossing.		ILSHSP	IDOT, Champaign County, local cities, and villages (Public Works)
4. Improve pedestrian and motorist safety awareness and behavior	**4.1** Promote awareness and increase enforcement of existing laws regarding pedestrians' right-of-way.		ILSHSP	IDOT, ISP, Champaign County, local cities, villages and townships (Public Works and Police Departments)
	4.2 Increase equitable enforcement of existing laws that promote pedestrian safety for pedestrians and other roadway users.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	4.3 Implement pedestrian programs and include outreach to schools, churches, and senior centers.		ILSHSP	CUUATS Staff, C-U SRTS Program, schools, local cities and villages,
	4.4 Encourage increases in state and local contributions for pedestrian facilities.		ILSHSP	IDOT, Champaign County, local cities, and villages (Public Works)
	4.5 Continue to improve driver education by incorporating additional components into licensure, including for CDLs.		ILSHSP	Secretary of State (DMV)
5. Provide guidance to planners and designers to address pedestrian safety issues	**5.1** Provide guidance and criteria to assist state and local agencies in identifying effective countermeasures for application under specific roadway, traffic volume, and traffic speed conditions.		ILSHSP	CUUATS Staff, IDOT

Source:

ILSHSP (Link: ***http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/SHSP/SHSP_2017.pdf***)

Implementation Areas: Engineering Enforcement Education Emergency Services

EMPHASIS AREA: BICYCLISTS

As the Champaign-Urbana urban area is highly populated, there are many bicyclists, especially in the University of Illinois District. Bicyclists were selected as an emphasis area because they are one of the most vulnerable types of road users; unlike drivers, they are unprotected in a crash.

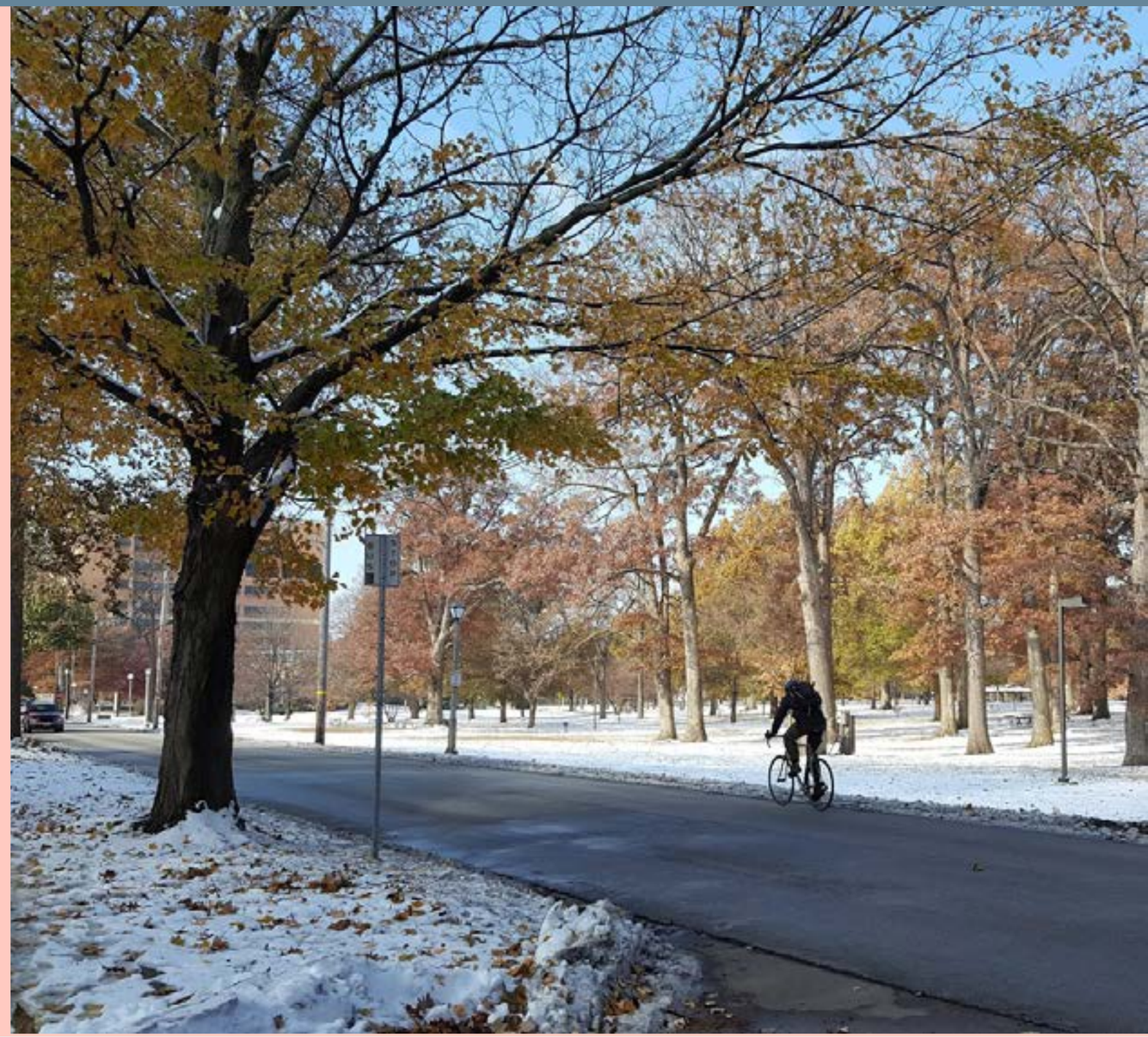
Between 2012 and 2016, there were 218 bicyclist crashes in the Champaign-Urbana urban area. The largest percentage, 51 percent, were B-injury crashes; 28 percent were C-injury crashes and 15 percent were A-injury crashes, while one percent of bicyclist crashes were fatal.

OBJECTIVE

- Reduce the five-year rolling average of number of bicyclist fatalities by 5 percent to 0 by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of number of bicyclist A-injuries by 5 percent (from 6 to 4) by 2025 based on 2017 in the Champaign-Urbana urban area.

Table 13 *Number of bicyclist crashes by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Number of Bicyclist Crashes by Severity Type in the Champaign-Urbana Urban Area							
Crash Severity	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**	**Percent**
Fatal	1	0	0	0	1	2	1%
A-Injury	7	6	6	6	7	32	15%
B-Injury	18	30	20	23	21	112	51%
C-Injury	10	15	9	13	14	61	28%
No Injury/ Property Damage Only	1	3	2	1	5	12	5%
Total	37	54	37	43	48	219	100%



Map 12 presents the location of bicyclist crashes in the study area. Bicyclist crashes in the Champaign-Urbana urban area between 2012 and 2016 were largely concentrated within the municipal boundaries of the City of Champaign, City of Urbana, and Village of Savoy.

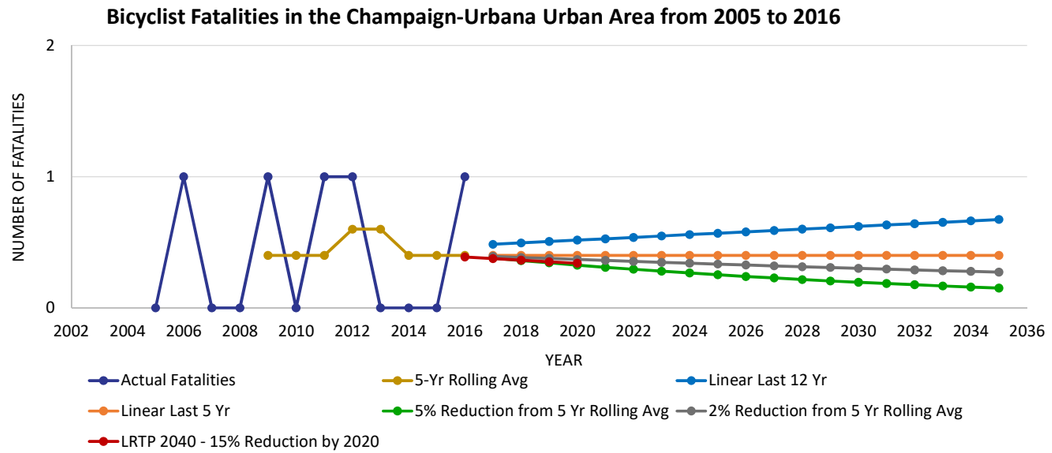


Figure 19 *Trend for the number of bicyclist fatalities in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035*

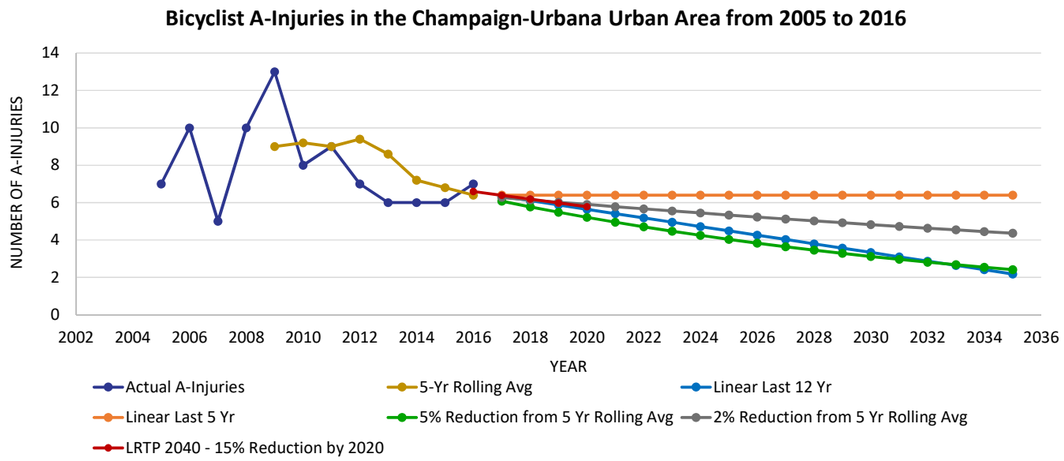
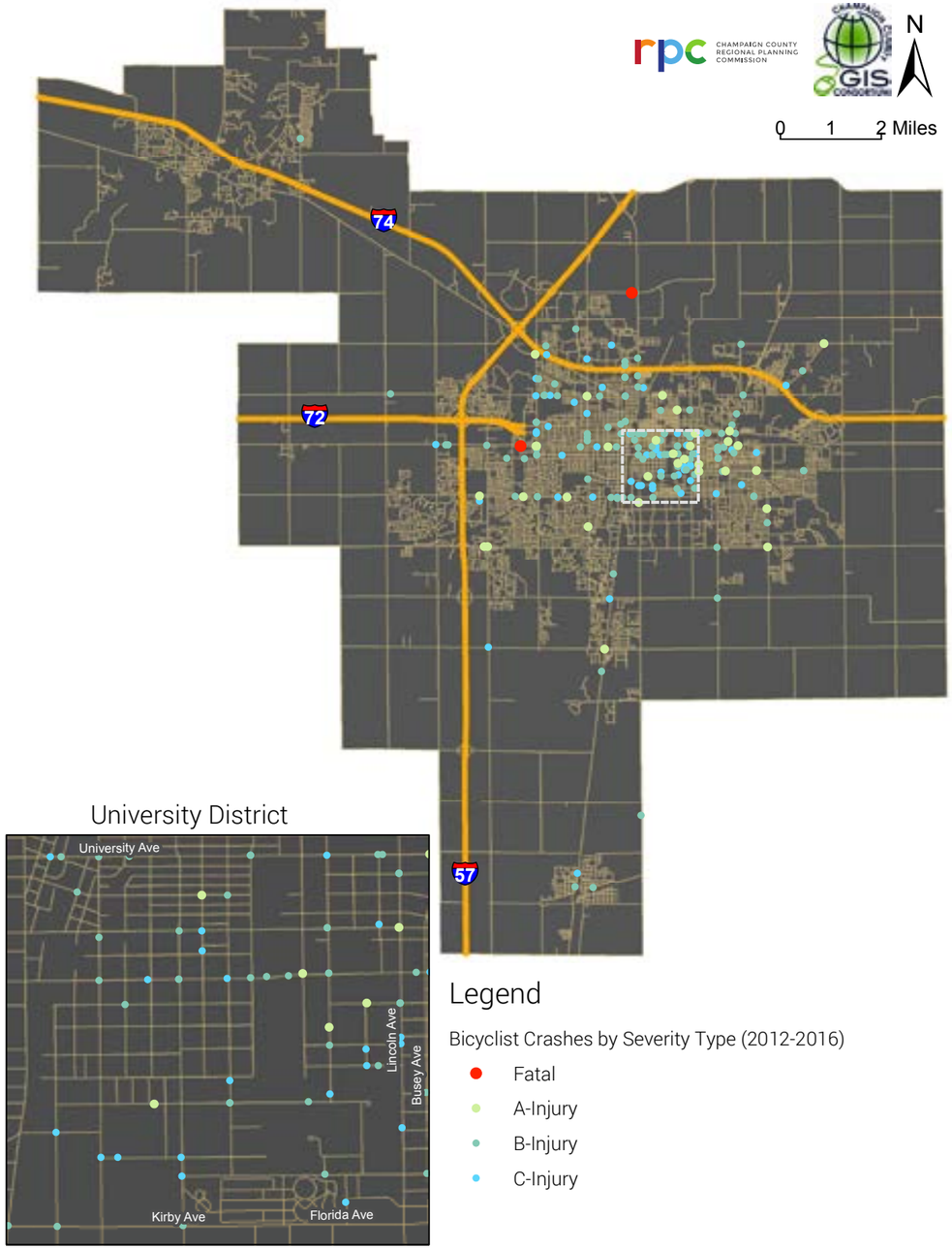


Figure 20 *Trend for the number of bicyclist A-injuries in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035*

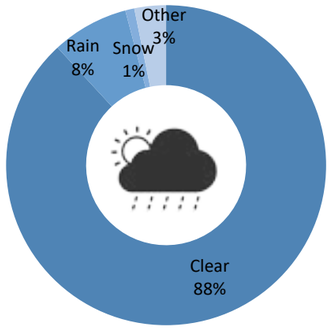


Map 12 *Location of bicyclist crashes by severity type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

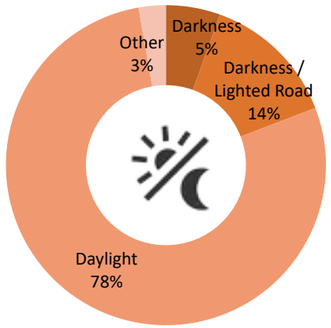
EMPHASIS AREA: BICYCLISTS

The 2012-2016 crash data in the Champaign-Urbana urban area was considered in this study.

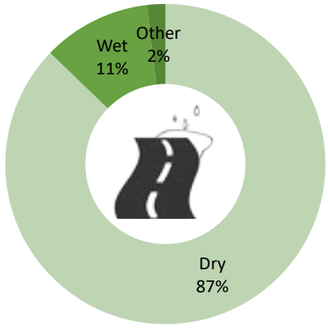
Bicyclists are some of most vulnerable road users. A crash involving at least one bicyclist is considered as bicyclist crash. There were 218 bicyclist crashes in Champaign-Urbana urban area between 2012-2016.



Weather Condition



Lighting Condition

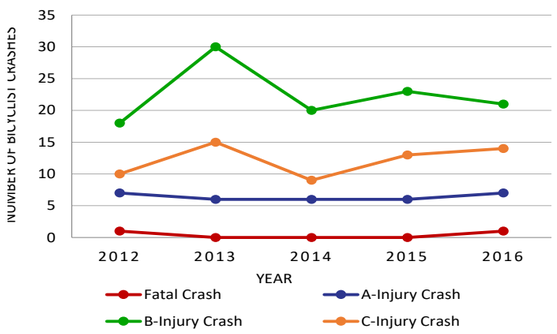


Road Surface Condition

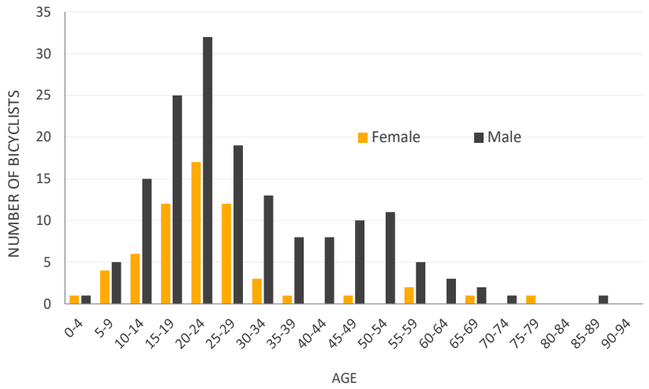
Eight percent of bicyclist crashes occurred in rainy conditions, and one percent occurred in snowy conditions

Five percent of bicyclist crashes occurred in dark conditions, while another 14 percent occurred in dark conditions with road lighting.

Eleven percent of bicyclist crashes took place on a wet road surface.



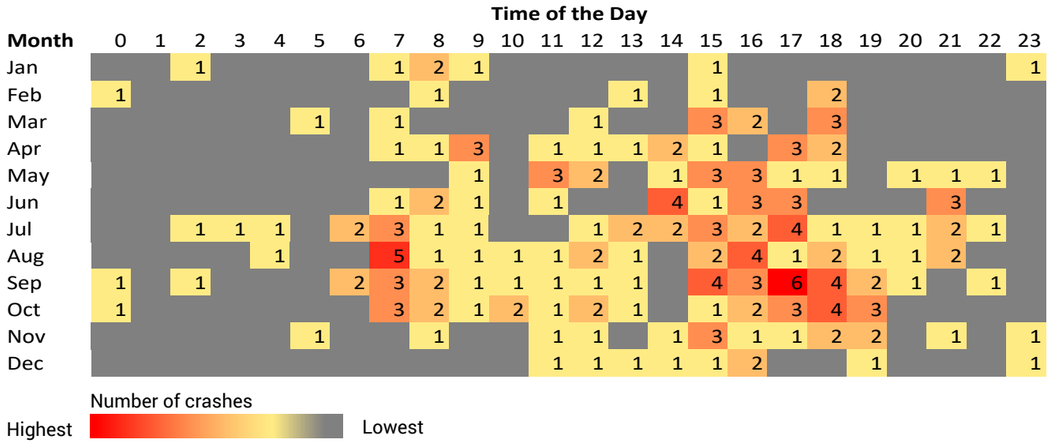
One percent of crashes involving bicyclists were **fatal,** while 15 percent and **51 percent** were A-injury and **B-injury**, respectively.



7 out of **10**
bicyclists involved in bicyclist crashes were **Male**

The age cohort with the largest number of bicyclists involved in crashes in the Champaign-Urbana urban area between 2012 and 2016 was 20-24 . In this age cohort, there were more males than females involved in crashes.

Among all bicyclists involved in crashes, 28 percent were female and 72 percent were male.



Mid afternoon and evening was a peak period for bicyclist crashes in the Champaign-Urbana urban area between 2012 and 2016. The most crashes in any hour-long period occurred between 3 p.m. and 4 p.m.

Relatively few bicyclist crashes happened overnight during the study period.

Thirty-five bicyclist crashes occurred in September, the largest number of crashes per month during the 2012-2016 study period. Thirty bicyclist crashes occurred in July.

Table 14 *Strategies to reduce bicyclist crashes*

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
1. Partner with local, state, and federal agencies, and organizations on bicyclist safety	**1.1** Continue involvement with bicycle safety committees/groups.		ILSHSP	CUUATS Staff, C-U SRTS Program, schools, local ciities and villages
	1.2 More fully utilize existing funding and seek to support safety programs to improve bicycle safety.		ILSHSP	CUUATS Staff, C-U SRTS Program, schools, local ciities and villages
	1.3 Promote and fund state and local agencies and organizations to create projects with proper bicycle-motor vehicle interaction and bicyclist initiatives.		ILSHSP	IDOT
2. Improve education of roadway users to improve interactions in traffic	**2.1** Improve public awareness and enhance training to promote safer behavior by all roadway users relative to bicycle traffic.		ILSHSP	CUUATS Staff, C-U SRTS Program, Champaign County bikes, schools, local ciities and villages
	2.2 Increase and enhance training programs and events for state and local planners, engineers, safety practitioners, and officials, which focus on best practices in bicycle facility design.		ILSHSP	CUUATS Staff, IDOT
	2.3 Emphasize the presence and vulnerability of bicyclists to all roadway users.		ILSHSP	IDOT, ISP, Champaign County, local cities, villages and townships (Public Works and Police Departments)
3. Research , identify, and implement effective policies to improve bicyclist safety at the state, local, and government levels	**3.1** Pilot and conduct equitable enforcement programs for all roadway users relative to bicycle traffic.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	3.2 Increase driver and bicycle compliance with traffic laws.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	3.3 Promote research and identify effective policies to improve bicycle safety that can be implemented by state and local governments.		ILSHSP	CUUATS Staff, IDOT

Implementation Areas: Engineering Enforcement Education Emergency Services

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
4. Improve infrastructure features to help reduce the number and severity of pedalcyclist crashes using a context sensitive approach to design	**4.1** Evaluate and implement innovative best practices to improve bicycle accommodations and safety.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages (Public Works)
	4.2 Implement strategies and improvements that provide safer shared spaces along arterial and collector roadways, especially at intersections.		ILSHSP	IDOT, Champaign County, local cities, villages (Public Works)
	4.3 Consider diverse options for bicycle travel, including along through routes with lower traffic volumes, while seeking to fill network gaps.		ILSHSP	IDOT, Champaign County, local cities, villages (Public Works)
	4.4 Promote and conduct training for local agencies on innovative strategies and techniques for bicycle accommodation.		ILSHSP	FHWA, IDOT and CUUATS staff
	4.5 Use bicycle traffic signals and signal equipment that effectively detect and safely accommodates bicyclists.		ILSHSP	IDOT, Champaign County, local cities, villages (Public Works)

Sources:

ILSHSP (Link: ***http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/SHSP/SHSP_2017.pdf***)

Implementation Areas: Engineering Enforcement Education Emergency Services

EMPHASIS AREA: IMPAIRED DRIVING

Impaired driving crashes are crashes where one or more of the involved drivers is considered impaired by drug use or alcohol consumption. Impaired drivers make up a relatively small percentage of drivers involved in all crashes (4 percent); however, the crashes that they are involved in tend to be more severe.

OBJECTIVES

- Reduce the five-year rolling average of number of impaired driving fatalities by 5 percent (from 3 to less than 2) by 2025 based on 2017 in the Champaign-Urbana urban area.
- Reduce the five-year rolling average of number of impaired driving A-injuries by 2 percent (from 9 to less than 7) by 2025 based on 2017 in the Champaign-Urbana urban area.

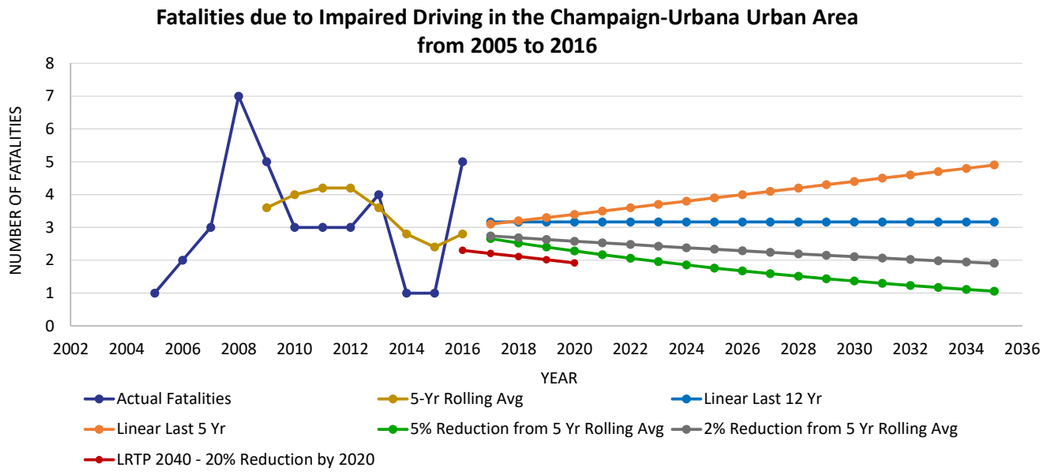


Figure 21 *Trend for the number of impaired driver fatalities in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035.*

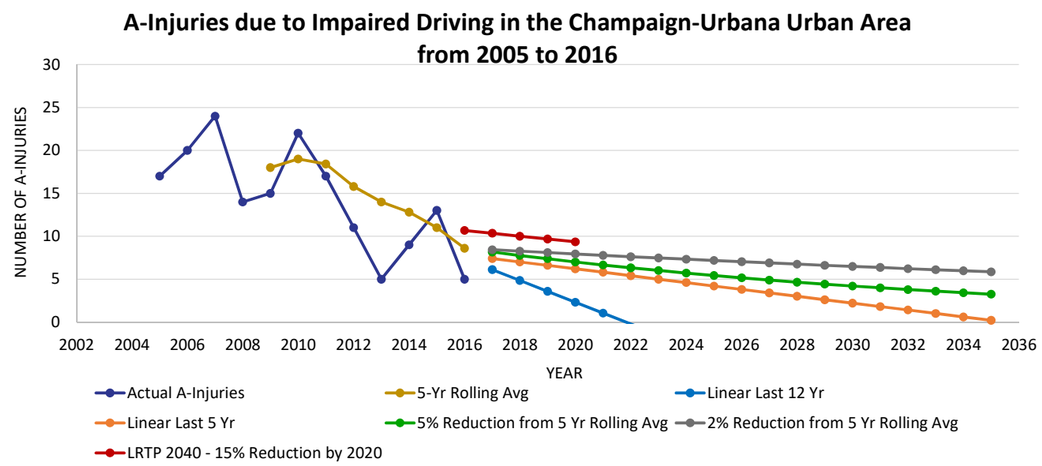
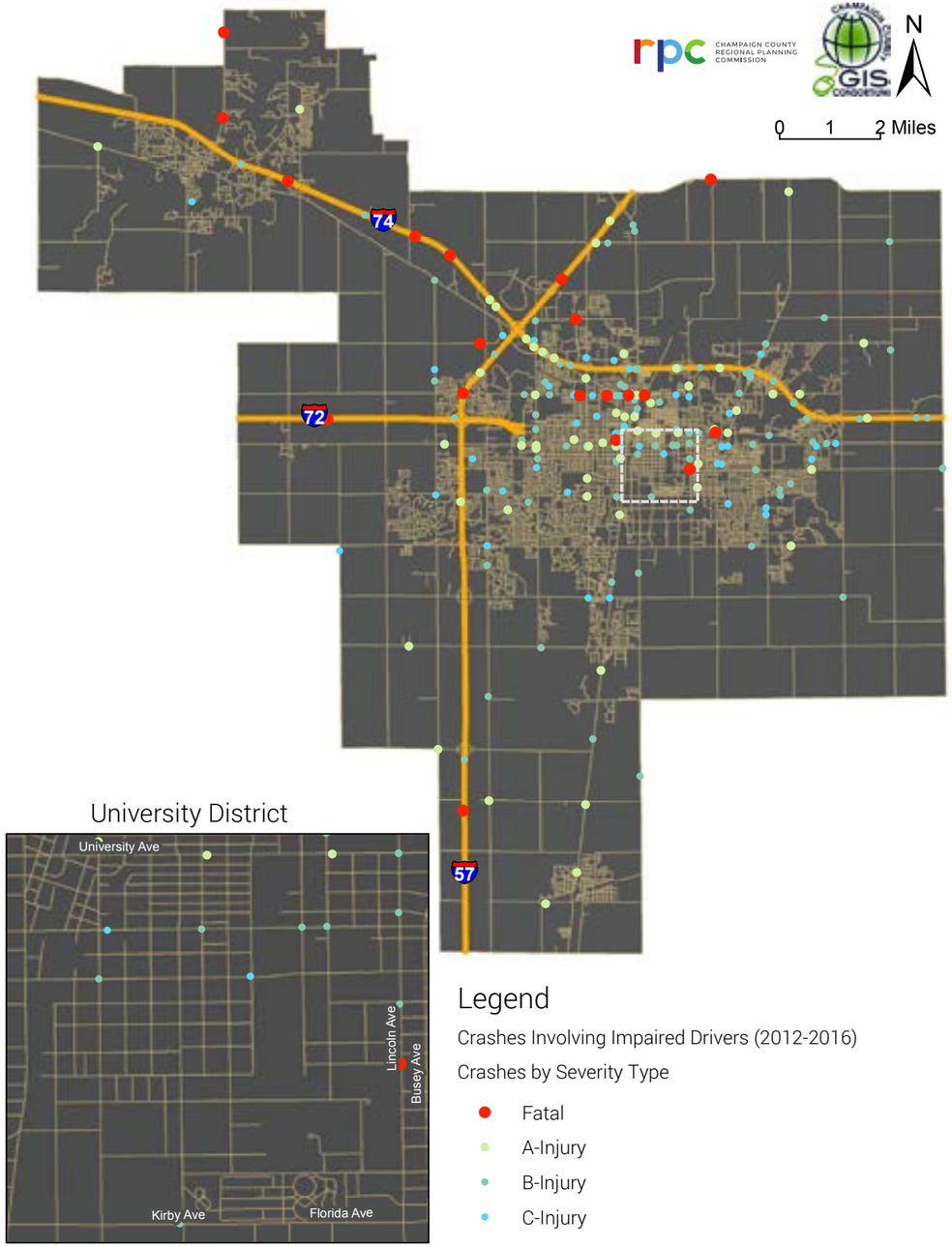


Figure 22 *Trend for the number of impaired driver A-injuries in the Champaign-Urbana urban area between 2005 and 2016, as well as possible trend projections for 2017 to 2035*



Map 13 *Location of crashes involving impaired drivers by severity in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

Table 15 *Number of crashes by severity type due to impaired driving in the Champaign-Urbana urban area*

Number of Crashes due to Impaired Driving by Severity Type in the Champaign-Urbana Urban Area							
Crash Severity	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**	**Percent**
Fatal	4	6	1	2	6	19	4%
A-Injury	16	8	12	17	7	60	12%
B-Injury	13	23	18	21	21	96	19%
C-Injury	5	6	13	15	13	52	10%
No Injury	52	49	67	72	49	289	56%
Total	86	86	110	125	90	516	100%

Table 16 *Number of crashes by type of impaired drivers by year in the Champaign-Urbana urban area*

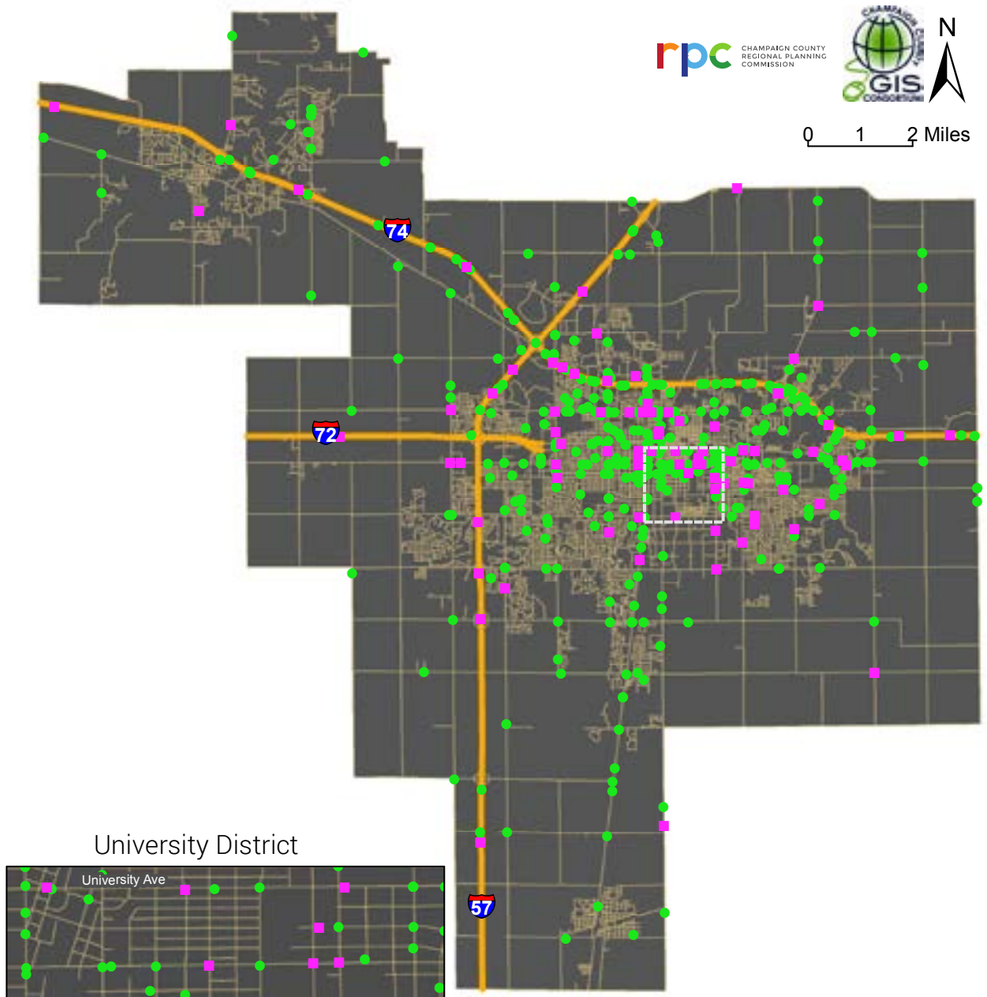
Number of Crashes by Type of Impaired Drivers by Year in the Champaign-Urbana Urban Area		
Year	**Alcohol**	**Drugs**
2012	81	9
2013	76	16
2014	93	18
2015	108	19
2016	72	24
Total	430	86

Table 17 *Number of people by severity type due to impaired driving in the Champaign-Urbana urban area*

Number of Crashes by Type of Impaired Drivers by Severity Type in the Champaign-Urbana Urban Area			
Severity Type	**Alcohol**	**Drugs**	**Total**
Fatalities	5	14	19
A-injuries	57	18	75
B-injuries	117	27	144
C-injuries	76	15	91
Total	255	74	329

- Between 2012 and 2016, there were 516 impaired driver crashes in the Champaign-Urbana urban area. Four percent of impaired driver-related crashes between 2012 and 2016 in the Champaign-Urbana urban area were fatal, while 12 percent, 19 percent, and 10 percent were A-injury, B-injury, and C-injury crashes, respectively.

- During the five-year study period, there were 430 impaired driver crashes in which one or more drivers were impaired due to alcohol consumption in the Champaign-Urbana urban area. There were 86 crashes in which one or more drivers were impaired due to drug consumption. The number of drug impaired driver crashes has increased each year. Three hundred and ten injuries and 19 fatalities were due to impaired driver crashes during the study period.

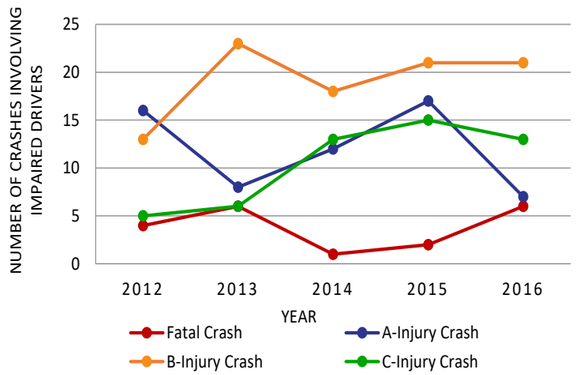


Map 14 *Location of crashes involving impaired drivers by type in the five-year study period (2012-2016) in the Champaign-Urbana urban area*

EMPHASIS AREA: IMPAIRED DRIVING

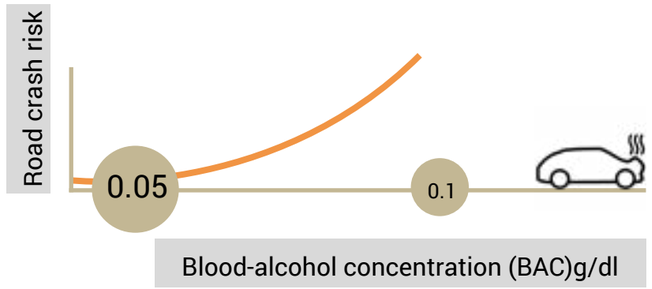
The 2012-2016 crash data in the Champaign-Urbana urban area was considered in this study.

Impaired driving crashes are crashes where one or more involved driver is considered impaired by drug use or alcohol consumption.

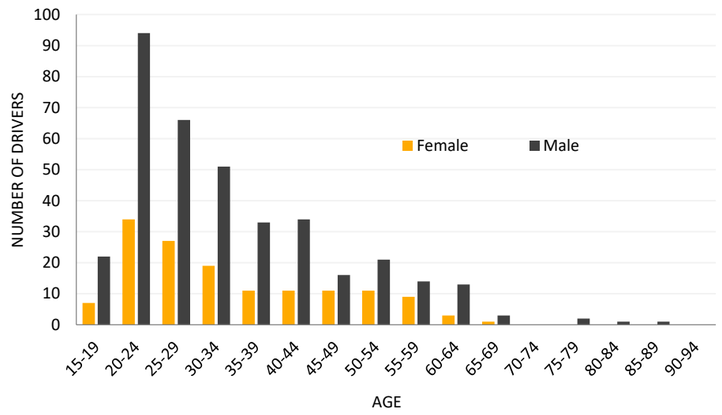


Four percent of the crashes involving impaired drivers were **fatal,** while **12 percent** and 19 percent were **A-injury** and B-injury, respectively.

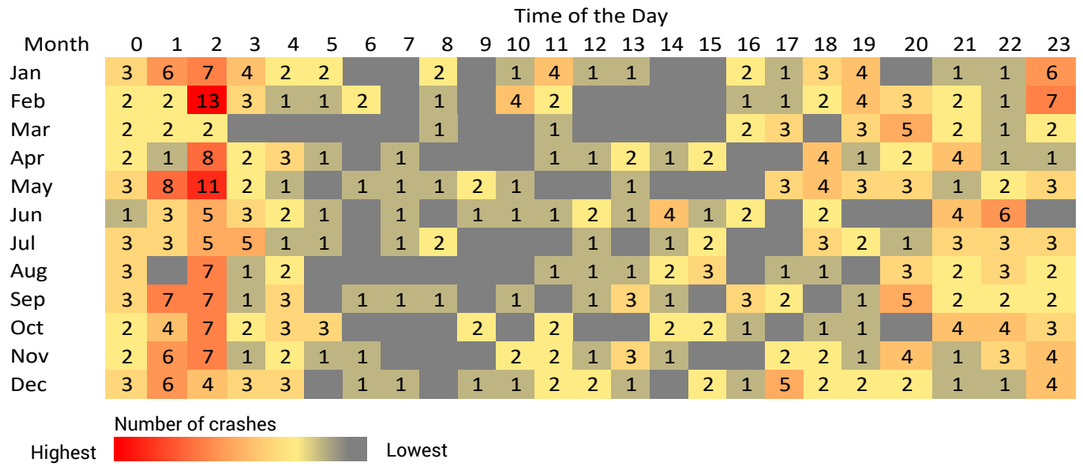
Drinking alcohol and driving increases the risk of a road traffic crash. Above a blood-alcohol concentration (BAC) of 0.05g/dl, the risk of road traffic crashes increases dramatically (WHO).[10]



Source: WHO, Global status report on road safety 2013



7 out of **10** drivers involved in impaired driving crashes were **Male**



In Illinois, drivers are legally considered to be under the influence if they have a blood-alcohol content (BAC) of .08 or greater, have a tetrahydrocannabinol (cannabis) concentration (THC) of either 5 nomograms or more per milliliter of whole blood or 10 nomograms or more per milliliter of other bodily substance, have used any other controlled substance, or are impaired by medication.[9]

The age cohort with the largest number of drivers involved in impaired driver crashes in the Champaign-Urbana urban area between 2012 and 2016 was ages 20-24 (25 percent), followed by ages 25-29 (18 percent).

More driver impairment crashes occurred on Saturdays than on any other day of the week, followed closely by Sundays. Both days saw over 100 driver impairment crashes between 2012 and 2016

Fifty-two impaired driver crashes occurred in February, the largest number of crashes per month during the study period. Fifty-one impaired driver crashes occurred in January.

Table 18 Strategies

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
1. Prevent excessive and underage drinking and driving	**1.1** Enforce responsible beverage service policies and check compliance for alcohol servers and retailers.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	1.2 Conduct public outreach on the mandatory use of ignition interlock for all DUI offenders to deter drinking and driving.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments) and schools
	1.3 Employ screening and brief interventions in health care settings.		ILSHSP	Local EMS and hospitals
	1.4 Control hours, locations, and promotion of alcohol sales.		ILSHSP	Local police departments
	1.5 Provide a variety of initiatives to reduce excessive alcohol use and impaired driving within high school and collegiate settings.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments) and schools
	1.6 Expand or improve education on the consequences of underage drinking.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments) and schools
	1.7 Consider emerging technologies that will continue to reduce impaired driving.		ILSHSP	CUUATS staff, IDOT, Champaign County, local cities, villages and townships (Public Works)

Implementation Areas: Engineering Enforcement Education Emergency Services

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
2. Enforce DUI laws	**2.1** Expand high-visibility DUI enforcement saturations including roadside safety checks.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	2.2 Strengthen and expand law enforcement training to promote effective alcohol and/or drug impairment driving detection and arrest.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	2.3 Expand training and technical assistance for law enforcement and prosecutors to implement DUI No-Refusal search warrant programs and processes in their communities.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments) and Judiciary system
	2.4 Expand night time seat belt enforcement to detect unbelted drinking drivers.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	2.5 Publicize and enforce zero tolerance laws for drivers under age 25 (in ILSHSP, age 21 was provided).		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
3. Prosecute, impose sanctions on, and treat DUI offenders	**3.1** Continue to suspend driver's license administratively upon arrest or refusal of blood-alcohol concentration (BAC) test.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)
	3.2 Expand judicial education and outreach to promote the use of alcohol ignition interlock as well as highly supervised DUI and Drug Courts to monitor offenders.		ILSHSP	Judiciary system
	3.3 Provide training, technical assistance, and support to those who prosecute DUI offenses.		ILSHSP	Judiciary system

Source: ILSHSP (Link: ***http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/SHSP/SHSP_2017.pdf***)

Implementation Areas: Engineering Enforcement Education Emergency Services

Objectives	Strategies	Implementation Area(s)	Sources	Responsible Agencies
3. Prosecute, impose sanctions on, and treat DUI offenders (continued)	**3.4** Explore ways to reduce the total number of Statutory Summary Suspension rescissions.		ILSHSP	Judiciary system
	3.5 Eliminate diversion programs and plea bargains to nonalcoholic offenses.		ILSHSP	Judiciary system
	3.6 Continue to screen all convicted DUI offenders for alcohol problems and require treatment when appropriate.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments) and Judiciary System
4. Control high-BAC (0.16 or greater) and repeat offenders	**4.1** Seize vehicles or vehicle license plates administratively upon arrest.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments) and Judiciary System
5. Increase educational efforts and policies and expand/ continue paid media exposure for public outreach regarding the consequences of and alternatives to impaired driving	**5.1** Partner with other agencies and employers to suggest policies and procedures aimed at reducing impaired driving by their employees.		ILSHSP	IDOT, CUUATS staff, ISP
	5.2 Improve public awareness of and access to alternate forms of transportation.		ILSHSP	IDOT, Schools,ISP, Champaign County Sheriff and local cities (Police Departments)
	5.3 Continue and expand comprehensive paid and earned media efforts in support of law enforcement.		ILSHSP	ISP, Champaign County Sheriff and local cities (Police Departments)

Source: ILSHSP (Link: ***http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/SHSP/SHSP_2017.pdf***)

Implementation Areas: Engineering Enforcement Education Emergency Services

REFERENCES

Endnotes

1 Illinois Strategic Highway Safety Plan 2017 (ILSHSP)
Link: ***http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/SHSP/SHSP_2017.pdf***

2 Federal Highway Administration (FHWA), Metropolitan Planning Organization Safety Performance Measure Fact Sheet
Link: ***https://safety.fhwa.dot.gov/hsip/spm/mpo_factsheet.cfm***

3 Long Range Transportation Plan 2040: Sustainable Choices 2040
Link: ***https://lrtp.cuuats.org/documents/***

4 Systemic Safety Project Selection Tool
Link: ***https://safety.fhwa.dot.gov/systemic/fhwasa13019/sspst.pdf***

5 Center for Disease Control and Prevention (CDC). National Vital and Statistics Reports – Deaths: Leading Causes for 2016
Link: ***https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_06.pdf***

6 National Safety Council. Road to Zero Presents Plan to Eliminate Roadway Deaths.
Link: ***https://www.nsc.org/road-safety/get-involved/road-to-zero***

7 KABCO scale
Link: ***https://safety.fhwa.dot.gov/hsip/spm/conversion_tbl/pdfs/kabco_ctable_by_state.pdf***

8 Ilinois Traffic Crash Report SR 1050 for 2019
Link: ***http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Manuals-Guides-&-Handbooks/Safety/Illinois%20Traffic%20Crash%20Report%20SR%201050%20Instruction%20Manual%202019.pdf***

9 Illinois DUI Fact Book
Link: ***https://www.cyberdriveillinois.com/publications/pdf_publications/dsd_a118.pdf***

10 World Health Organization
Link: ***https://www.who.int/violence_injury_prevention/road_safety_status/2013/facts/drinkdriving_web.jpg?ua=1***

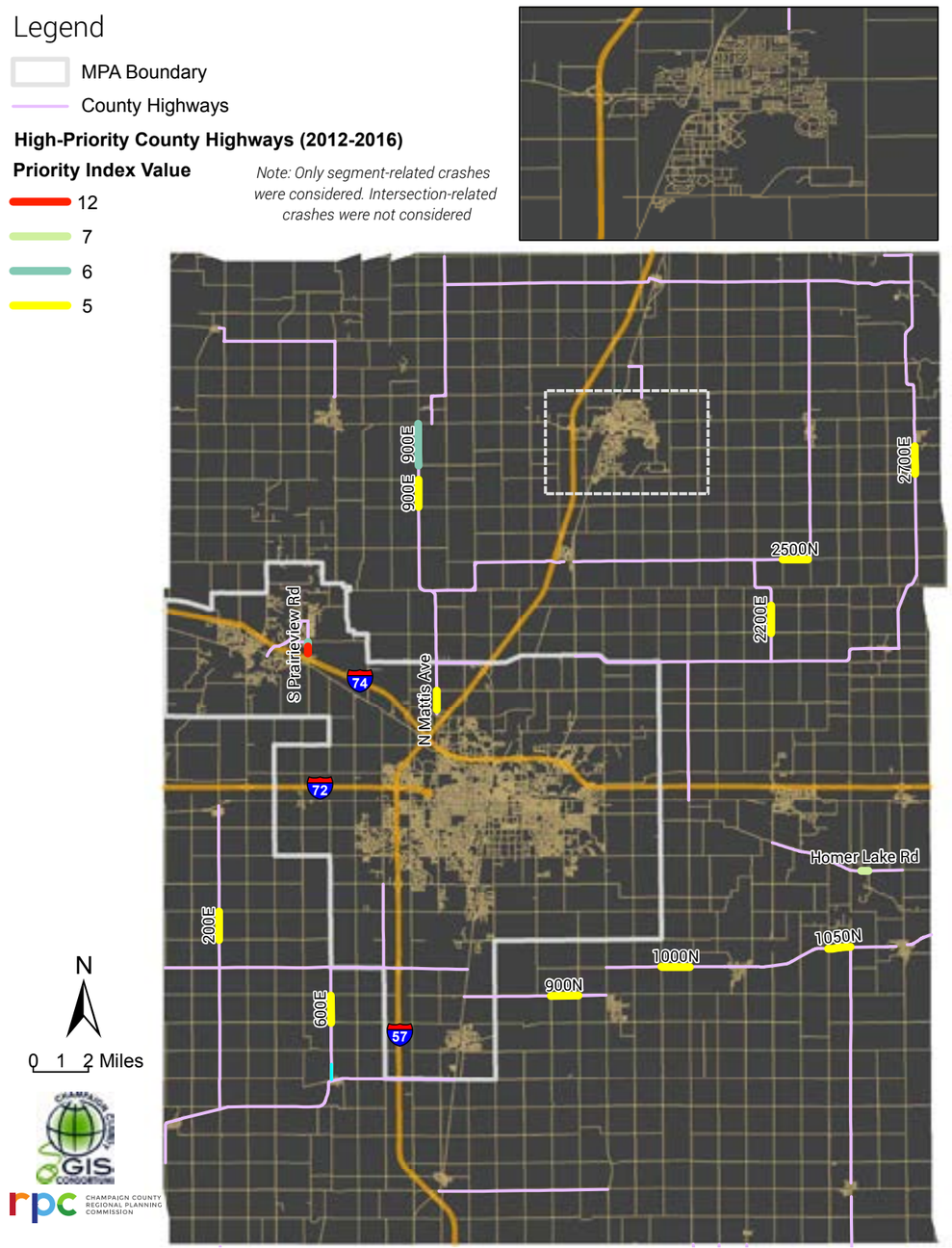
APPENDIX A

A.1 County Highways

Map 15 presents the high-priority county highway segments identified using the methodology outlined in section 10.1. These segments are identified by comparing only the crashes that occurred on county highways. In this analysis, only segment-related crashes were considered; intersection-related crashes were not considered. Table 19 presents the list of high-priority county highway segments.

Table 19 *List of high-priority county highway segments in Champaign County*

Segment Name	Number of Crashes						Index Values			Priority Index
	Total	Fatal	A-injury	B-injury	C-injury	No injury	Crash Index	EPDO Index	Crash per Mile Index	
S Prairieview Rd	9	0	2	3	0	4	4	4	4	12
Homer Lake Rd	2	1	0	0	0	1	1	4	2	7
900E	5	0	1	2	0	2	3	2	1	6
S Prairieview Rd	4	0	0	1	1	2	2	0	4	6
900E	2	1	0	0	0	1	1	4	0	5
600E	3	0	1	0	0	2	2	2	1	5
200E	3	0	1	2	0	0	2	2	1	5
900N	3	0	1	1	1	0	2	2	1	5
1000N	2	1	0	1	0	0	1	4	0	5
1050N	4	0	1	2	0	1	2	2	1	5
2700E	2	1	0	0	0	1	1	4	0	5
2500N	3	0	1	0	0	2	2	2	1	5
2200E	3	0	1	1	0	1	2	2	1	5
N Mattis Ave	4	0	1	0	0	3	2	2	1	5



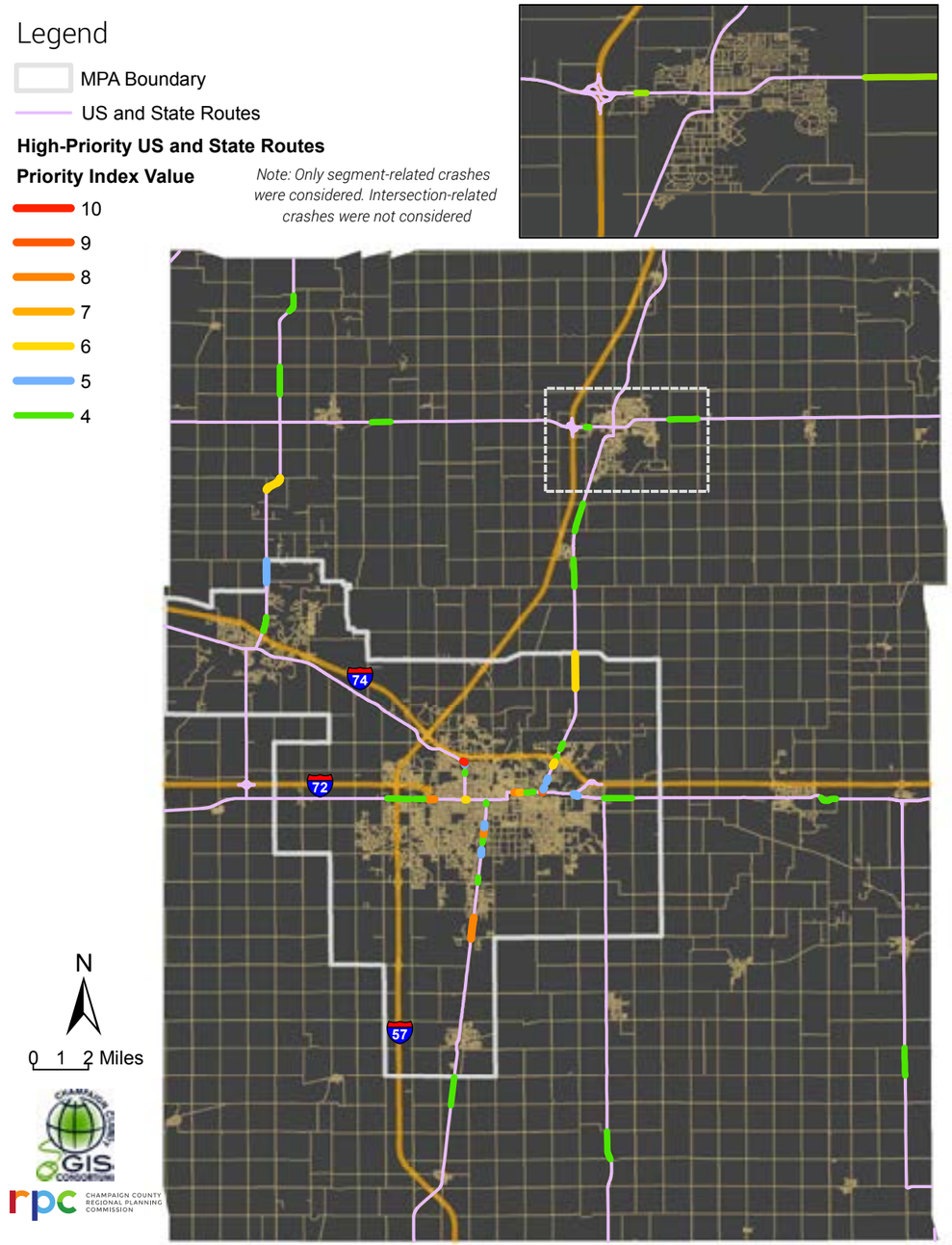
Map 15 *Location of the high-priority county highways in the five-year study period (2012-2016) in Champaign County*

A.2 U.S. and State Routes

Map 16 presents the high-priority U.S. and state route segments using the methodology outlined in section 10.1. These segments are identified by comparing only the crashes that occurred on U.S. and state routes. In this analysis, only segment-related crashes were considered; intersection-related crashes were not considered. Table 20 presents the list of high-priority U.S. and state route segments.

Table 20 *List of high-priority U.S. and state route segments in Champaign County*

Segment Name	Number of Crashes						Index Values			Priority Index
	Total	Fatal	A-injury	B-injury	C-injury	No injury	Crash Index	EPDO Index	Crash per Mile Index	
Bloomington Rd	19	0	1	1	1	16	4	2	4	10
Cunningham Ave	10	0	1	0	1	8	3	2	4	9
W University Ave	7	0	2	0	0	5	2	3	3	8
W Springfield Ave	11	0	2	1	0	8	3	3	2	8
S Dunlap Ave	24	0	1	2	4	17	4	3	1	8
S Neil St	17	0	0	0	2	15	4	0	4	8
IL 47	8	0	3	2	0	3	2	4	0	6
W University Ave	10	0	0	0	0	10	3	0	4	7
Cunningham Ave	10	0	2	1	1	6	3	3	0	6
W Springfield Ave	5	0	1	1	0	3	1	2	3	6
Cunningham Ave	11	0	0	1	1	9	3	0	3	6



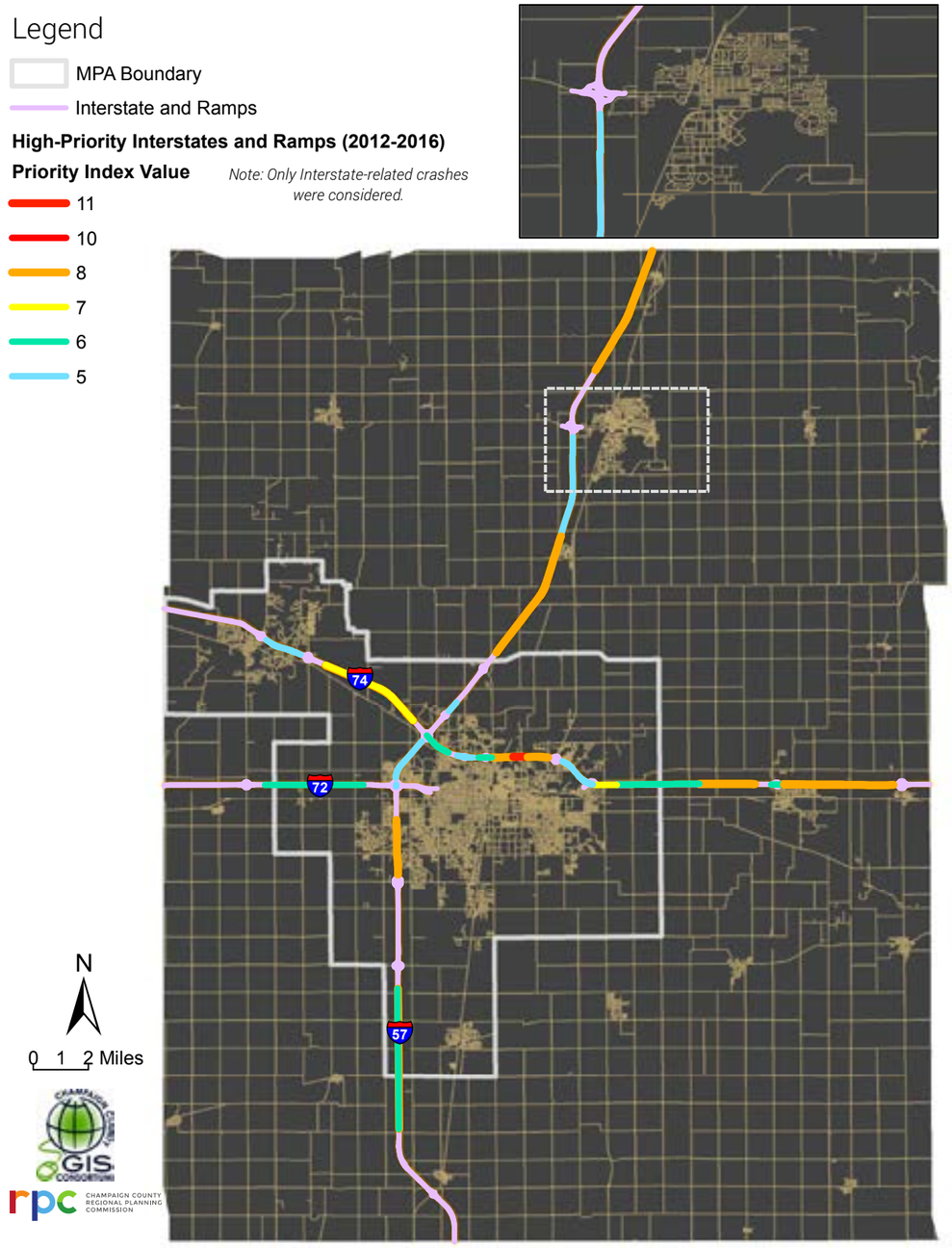
Map 16 *Location of the high-priority US and state routes in the five-year study period (2012-2016) in Champaign County*

A.3 Interstates

Map 17 presents the high-priority interstate segments identified using the methodology outlined in section 10.1. These segments are identified by comparing only the crashes that occurred on interstates. In this analysis, only interstate-related crashes were considered. Table 21 presents the list of high-priority interstate segments.

Table 21 *List of high-priority interstate segments in Champaign County*

Segment Name	Number of Crashes						Index Values			Priority Index
	Total	Fatal	A-injury	B-injury	C-injury	No injury	Crash Index	EPDO Index	Crash per Mile Index	
I-74 W	42	0	4	4	1	33	4	4	3	11
I-74 E	40	0	2	6	4	28	4	3	3	10
I-57 N	48	1	3	9	2	33	4	4	0	8
I-74 E	31	1	2	7	0	21	3	4	1	8
I-74 W	51	0	3	1	5	42	4	3	1	8
I-74 E	49	1	1	4	2	41	4	3	1	8
I-74 W	48	0	3	4	2	39	4	3	1	8
I-74 E	36	1	2	1	0	32	3	4	1	8
I-57 S	47	2	5	6	2	32	4	4	0	8
I-57 N	42	1	1	6	1	33	4	4	0	8
I-74 E	48	1	5	6	2	34	4	4	0	8
I-57 N	42	0	3	1	2	36	4	3	1	8
I-74 E	30	0	3	3	6	18	3	3	2	8
I-74 E	36	0	3	6	2	25	3	3	2	8



Map 17 *Location of the high-priority interstates in the five-year study period (2012-2016) in Champaign County*

APPENDIX B

Agency Project Updates

Champaign Police Department

The police department gives top priority to school zones. The speed enforcement is also given higher priority at school zones followed by major thoroughfares and neighborhoods. Emphasis is placed on traffic enforcement at city intersections with high crash rates and injuries. Manpower and resources are deployed to address DUIs. Enforcement is provided to impact the safety of pedestrians in the campus area. Additional traffic enforcement details are provided during holiday seasons throughout the year focusing on occupant safety like cell phone usage, car seat and impaired driver enforcement. The department works with AMTRAK to increase safety at rail road crossings.

City of Champaign

The most recent roadway improvements done in Mahomet in four years are:

— At the intersection of Boardwalk Drive and Interstate Drive:
  - Advance intersection warning signs were installed on Interstate Drive
  - Cross Traffic Does Not Stop signs were installed on Boardwalk Drive
  - Speed limit signs were added on Interstate Drive
  - Police speed trailer was set up on Interstate Drive

— At the intersection of McKinley Avenue and Paula Drive, a speed trailer is occasionally set up at the intersection.

City of Urbana

— The intersection of Orchard Street and Pennsylvania Avenue is considered a watch and monitor location.

— The intersection of Smith Road and Main Street became a multi-way stop in September 2017. Currently, it is considered a watch and monitor location.

IDOT

The recent improvements completed by the Illinois Department of Transportation (IDOT) includes updating the guardrails at various locations in the Champaign-Urbana urban area. Table 22 presents recent improvements done by IDOT in four years.

Table 22 *List of IDOT improvements in the Champaign-Urbana urban area from 2015 to 2019*

Year	Route	Location	Improvement Type
2019	US 150	Wright Street to Cunningham Avenue in Urbana	Lighting, ADA Improvements, Traffic Signal Modernization
2019	US 150	Mattis Avenue to Prospect Avenue in Champaign	Standard Overlay, ADA Improvements
2019	I-57	Bradley Avenue overpass	Bridge Replacement Includes Bike Lanes and Sidewalk
2018	US 45	North of I-74 to University Avenue in Urbana	Standard Overlay, ADA Improvements
2018	I-74	East of IL 47 in Mahomet	Skid Proofing
2018	US 150	Near the rail road track in St Joseph	Skid Proofing
2018	I-74	East of Neil Street	Skid Proofing
2018	I-74 and US 45	Ramps of the Interchange	Skid Proofing
2017	US 45	Saline Branch Ditch S or Thomasboro to N of I-74 at Urbana	Standard Overlay, ADA Improvements
2017	US 45 & US 136 / IL 47 & US 150	Various Locations in Rantoul and Mahomet	Surveillance
2016	I-74	0.5 mile West of IL 47 in Mahomet to 0.5 mile West of I-57	Surveillance, Resurfacing, Safety Improvements
2016	US 150	Water Street to Fifth Street in Champaign & Sycamore St to Beringer Circle in Urbana	ADA Improvements
2015	IL 47	Mahomet to IL 10	Milled Rumble Strips
2015	US 150	Sangamon River in Mahomet to Mattis Avenue in Champaign	Resurfacing (Smart) Guardrail

Mahomet

The most recent roadway improvements done in Mahomet in four years are:

— Sunny Acres road replacement from US 150 to South Mahomet Road. The shoulders on Sunny Acres Road was seal coated with 4' aggregate shoulders from 2' earth shoulders.
— Converted two-way stop controlled intersections of Sunny Acres Road at Oak Creek Road and Deer Run drive at Country Ridge drive to four-way stop control intersections.
— Paving was done at Walnut Street from IL-47 to railroad track, Washington Street from IL-47 to Walnut Street, Jackson Street from IL-47 to Walnut Street and Braicliff drive.
— Installed sidewalk on east side of IL-47 from South Mahomet road to the river bridge.

University of Illinois

The most recent roadway improvements done in the University of Illinois jurisdiction in four years are:

— Road diet and on-street bike lanes were provided for (1) First Street from Kirby Avenue to Armory Avenue; (2) Fourth Street from St. Mary's Road to Armory Avenue.
— Sharrows were added to Pennsylvania Avenue from Fourth Street to the city limit (east of Sixth Street).
— Semi-annual "lighting walks" was conducted to monitor campus areas for sufficient lighting.
— Evaluate high multi-modal conflict areas for safety features such as a "pedestrian scramble", advance walk signals, curb bump-outs, etc. when improvements are being done to a street, sidewalk or other pavement section.
— Worked with other local bike agencies & advocacy groups to improve safety materials for bicyclist and drivers that interact.
— Lane striping, crosswalk striping and signage were added to the segment of Stoughton just north of University High School between Mathews Avenue and Goodwin Avenue for better traffic control during student drop-off and pick-up.

APPENDIX C

Public Comments Received on Champaign-Urbana Urban Area Safety Plan

— I like the risk approach based on high-risk roadway features (page 3). It always bothered me that you need to have serious accidents to justify something when those accidents could have been prevented. I don't see much in the rest of the plan, and nothing in the strategies for bicycle and pedestrian areas, about how to do that though.

When describing the goal of reducing 5-year rolling average by 2%, shouldn't you say "by 2% per year"?

It's really hard to understand what the percent scale in the graphs on page 6 refer to - why not just use numbers? Not percent of all crashes that resulted in X - surely 25% of crashes don't result in fatalities! Captions on those seem redundant, just describing the chart. I think it is percent of the 5-year total that was in each year, but it would look the same if you just used numbers and be a whole lot less confusing.

On page 7 the chart adds in "No Injury" to the "Total Injuries"

The graphs on page 10, 13, 26 and 35 do not show the "trend... between 2005 and 2016" as described in the caption. They show actual numbers, not trends. A trend would be a straight line through the blue dots (like on page 11). Also, the projection (grey line) seems to only be based on the last 5 years (at least for the fatalities) - that should at least be documented, and preferably there would be a standard deviation cone drawn in.

The middle row on page 36 talks about pedestrian numbers in the caption, but in the chart it says drivers - which is it, drivers involved or pedestrians involved?
The headline at the bottom-left on page 36 "Twenty-eight percent of pedestrian crashes were fatal, while 41 percent and 26 percent were A-injury and B-injury, respectively." is NOT correct!! The line graph is wrong too.

The middle row on page 41 talks about cyclist numbers in the caption, but in the chart and stick-model it says drivers - which is it, drivers involved or cyclists involved?

I'm curious why lower speed isn't an objective under Cyclists, though I suppose they will benefit from it being a pedestrian objective. Does the data show speed isn't significant in cyclist injuries? Speed limits aren't specifically mentioned, though presumably some of the road diet and narrowing should occur in areas where speed limits are probably too high. Is that an intentional way to say speed limits don't help without infrastructure changes?

I would have liked to see figures broken out for impaired driving by pedestrian and bicyclist - both as victim and as the one impaired. Also the type of drug impairment would be useful, especially with cannabis legalization pending.

In Appendix B "agency updates", does Urbana have something about Lincoln & Main or other Lincoln avenue locations, like the lower speed limit? Also maybe Vine & Washington and Vine & Florida. They also have a new multiuse sidepath on north Cunningham and along Broadway by the park.

— Under the Executive Summary, the middle column, second paragraph states that “two percent of drivers involved in fatal or A-injury crashes were impaired at the time of the crash. Even though this number is relatively small, impaired driver related crashes tended to be more severe than crashes not related to driver impairment. There were two percent each of pedestrian and bicyclist crashes. Even though these numbers are small, more than 98 percent of these crashes are of a high severity type, making pedestrians and bicyclists the most vulnerable road users.”

This paragraph fails to put the importance of pedestrian, bicyclist, and impaired drivers in the context of the overall crash injuries. The same figures should be given and discussed for the two categories in parallel, given that you have set them up in a parallel construction. The figure that “98 percent of these crashes are of a high severity type” does not agree with the figures presented on pages 36 and 39, which indicate that K+A crashes are 31% of pedestrian crashes and 16% of bicycle crashes. Even adding in B-injuries does not arrive at 98%.

You should add the information that impaired driver crashes have a 16% serious or fatal injury rate because you discussed the 98% serious or fatality injury rate [sic] for pedestrians and cyclists. [I compute 23% of pedestrian and bicyclist crashes result serious (K+A) injuries.]

Who is injured in impaired driver crashes? What percent of crashes result in injury to the driver only? What percent of impaired driver crashes are of the fixed object collision type? This information is needed to compare with the fact that the pedestrian/cyclist is virtually always the injured victim in a crash. I compute that 42% (19/45) of fatal crashes involve impaired drivers. This does not agree with p. 18, which states that 52% of fatal crashes involve impaired drivers. Who did the impaired drivers kill—themselves, their passengers, or others? This information could be shown on page 47 instead of the generic graph (missing y-axis) from the World Health Organization (2013).

Why are the characteristics (age, gender) of only the bicyclist/pedestrian discussed in the bicycle/pedestrian crash discussions? Why are the drivers characteristics in this type of crash covered nowhere in this report? The exclusive coverage of pedestrian or cyclist characteristics appears to indicate that the pedestrian/bicyclist is responsible for the crash.

On page 5, Analysis by Collision Type, “the five most significant collision types” lists rear-end, turning, angle, fixed object, and parked motor vehicles. Pedestrian crashes are not considered “significant” despite accounting for nearly 22% of fatalities and 16% of serious injuries. I suggest a different word such as “most frequent” be used rather than “significant.” The section goes on to describe the “significant causes” (failure to yield, speeding etc.) of these identified significant crashes but again pedestrian crashes have been left out of consideration. The causes are not discussed under the pedestrian emphasis area (p. 34), in fact, nowhere in the Plan. How can pedestrian deaths be reduced without knowing anything about the driver characteristics and driving behaviors? We also know that vehicle type is very significant for pedestrian injuries and fatalities.

In the Emphasis Area: Pedestrians (p. 34) why is the type of crash (turning/rear end/angle etc.) and causes (failure to yield, speeding etc.) not discussed for pedestrian crashes? The fact that cyclists/pedestrians (almost all pedestrians) make up 22% of all fatalities in this report is not highlighted. This number is even more shocking considering that large and significant parts of the region (rural areas, interstates) have little or no pedestrian/cyclist traffic. The Champaign and Urbana rates of pedestrian fatalities need to be computed and discussed in comparison with state and national figures. This is because these types of injuries depend largely on local city responses. The text on page 35 should be more specific by city.

What percent of the total fatal and serious injuries are impaired driver or pedestrian/bicyclist respectively? As it turns out, 12.4 % of all serious or fatal crashes for your period are impaired driver [p. 18 has “almost 10%”]. 16% of all serious injury or fatal crashes are pedestrian/cyclist. Wouldn’t studying the type of collision and driver characteristics be just as important for pedestrian/cyclists injuries as for parked car crashes (p. 15)? Yet this is missing from this report. There are detailed recommendations aimed at changing impaired driving behavior. Deterrence of pedestrian injury and death needs increased emphasis, starting with analyses of driver

characteristics and behavior.

Why does the Plan cover only absolute crash numbers and crashes per 100 million VMT, but not per 100,000? For example, the statement that “In Champaign County, the number of fatal and injury crashes occurring in the Champaign-Urbana urban area is approximately five times greater than fatal and injury crashes occurring in rural areas” is meaningless without providing relative populations or a per capita rate. (p. 3)

Similarly, it is not meaningful to state that 18% of drivers involved in crashes are between 20 and 24 without percent of either licensed drivers or population in that age group. (Executive Summary)

On page 42, Champaign County Bikes should be included as a responsible agency to “improve public awareness and enhance training to promote safer behavior by all roadway users relative to bicycle traffic” (in addition to C-U SRTS).

Online Comments

— I am so happy to see that Rt. 47 made your list of high-priority segments. As a cyclist that lives in Thornewood Subdivision I fear for my safety as I try to reach Lake of the Woods and downtown Mahomet by bicycle. In the winter or when visibility is otherwise low I won’t even try. I look forward to having safe access by bike and on foot!!!

— The area on Route 47 in Mahomet north of Lake of the Woods is unsafe. Children walk and ride bikes from the Thornewood Subdivision to the Lake of the Woods Preserve and this two-lane highway has trucks and other vehicles coming in at 55 miles per hour down to 45 miles per hour over this stretch. there is no sidewalk, no shoulder, and no safe place to walk or ride a bicycle into the park. A sidewalk that continues north from the BriarCliff subdivision would make this much safer. Such a sidewalk would enable children in Thornewood to ride their bicycles to school, by crossing through the park to the high school.

— The portion of Illinois Rt. 47 north of Mahomet, Between Briarcliff subdivision and Thornwood subdivision, needs to be addressed for walkers and bike riders. There are many children and adults whom ride their bikes to Lake of the Woods on this route, not to mention some desire to ride to school etc. There is a sidewalk out of the thornwood subdivision and then it stops and doesn’t begin again until briarcliff subdivision. With Rt 47 becoming an increased traffic area, especially in this stretch of it, this is a large safety concern for everyone involved.

— I am soon moving to Thornwood subdivision in Mahomet and as an avid runner I really need a way to get safely from Thornwood down to Briarcliff along 47 to reach the Lake of the Woods trail. My family would also use this to reach LOTW park as well for hiking and playing. As it is there isn’t a safe way to get there except by car.

— A trail or bike path along Route 47North of Mahomet, IL would benefit not only the Village of Mahomet, IL but all bike riders, walkers, and runners in the area. It would also alleviate additional traffic on Route47, and would connect

several neighbors throughout Mahomet, IL. As a parent of a cross country runner, this trail would permit the runners to fully utilize the park without having to run along 47 and in the ditches along 47. Please consider revisiting this project.

— Having lived in Mahomet for many years, I believe you will find numerous accidents near the Briarcliff subdivision and 47 even prior to the establishment of the Thornewood subdivision. There have been 3 fatalities that come to mind over the years. So the issue is not really not only about a walking path from one subdivision to the Lake of the woods park but about the speed of traffic coming into the community. Another traffic light or stop sign to slow traffic from North 47 would add some safety.

— I would like for there to be a sidewalk along 47 to connect Thornewood to Briarcliff and then Lake of the Woods. I feel this would make it much safer for walkers, runners and bicyclists to connect to Lake of the Woods and the rest of Mahomet. I feel this sidewalk would be utilized frequently, and it would cut down on additional road traffic. I know as a driver on 47, I have been concerned about the pedestrians (sometimes high school kids) who use the roadside to get to Lake of the Woods. As a runner and walker, I personally would use the sidewalk several times a week. Please consider a sidewalk along 47. Thanks so much for considering this project.

— The stretch of road between the Briarcliff and Thornewood subdivisions is currently not safe. Young children and families ride their bikes from the Thornewood subdivision to the Lake of the Woods park. While I think drivers try to be careful, it often creates a very unsafe situation where cars have to come to near stops to avoid hitting the families or oncoming traffic. The gravel shoulder of the road is extremely narrow for even walkers and joggers. It places walkers within just a few feet of oncoming traffic and semi trucks. I strongly believe it is in the best interest of walkers, joggers, bikers, and drivers to build a sidewalk from the Briarcliff subdivision to the Thornewood subdivision.

— Please, look at the safety of RT 47 just north of Mahomet and Lake of the Woods as traffic continues to increase each year it seems. As more and more drivers are distracted, I'm concern about turning into our subdivision, Thronewood. We had moved into this neighbor with high hopes living within a small rural community, that we would have safe options to enjoy The trails of The Lake of the Woods and the local businesses, by riding our bikes. Unfortunately, RT 47 is not safe for walkers or bikers for us to enjoy this opportunity. Having access along RT 47, would increase access to recreation, local organizations, businesses, increase community involvement, and health and wellness for the 150 plus homes that are within the village limits, but not connected to the village at all. I'm hopeful there are resources to make a change and I'm hopeful there is not an accident in the future along this route that calls for this change. Let's do it now, so there is an opportunity for a safe place for our kids and families to ride to make memories for generations to come.

— No design is complete with funded staff to implement especially during high volume times. From class change at the UI to emerging impromptu concert venues like Luke Wilson in Pesotum. The latter of which had an estimated public cost of six figures, when OT and other compensation is factured in.

We need traffic directors, registrators and instructors for bike/scooter drivers. Pedestrian / bike swag that is neon & reflective. And phone free zones for traffic labeled. Yes an entire generation thinks looking at their phone wearing earbuds is acceptable. We need to expand the UI "Safewalks" program and create dozens like it, to the give the appearance of cross walk guards. We need to expand parking enforcement another branch to be able to direct trained volunteers, and work with our never ending construction project sites, currently without site supervision in regards to safe traffic practices.

All of this will create low level partime temporay jobs. How is that a bad or expensive thing?

— I'm disappointed that Green Street isn't included in the high priority areas. The data collected and analyzed is from 2012 to 2015 in part during closures for the MCORE project. Even with those closures, Green Street stands out as a high incident corridor. There's also little evidence that the MCORE changes on Green street have created a safe corridor for cycling due to the lack of connection through campustown and the lack of connection to downtown

Urbana and downtown Champaign. Until Green street is redesigned in a manner that prevents pedestrians and cyclist injuries it should be included in every single high priority list due to the immense volume of traffic along the corridor.

— In both reports, I do not see much info about current or future efforts to reduce the need for some car trips, or even the ownership of cars at all! More emphasis needs to be placed on ALL transport modes, in particular expanding Zipcar; expanding frequencies on rural transit routes (ie, at least hourly memory schedules for Rantoul-Urbana/Hospitals/Univ/Champaign; and as others have noted, that IL-47 N of Lake of the Woods.

No word was mentioned at all about how raising the prices of parking can reduce demand to drive. The book “The High Cost of Free Parking” is an excellent resource that should be looked at.

Way too much of the impaired driving is focused on liquor, and the restrictions in sales. The 21 drinking age and bar restrictions have not one single whit of impact on driving while impaired on illegal (or soon to be legal) drugs, nor especially legal pharmaceuticals!

Particularly in a college town where so many people do not even own a car, they will never ever drive drunk. Let them drink or smoke as much as they want, I don,t care as long as they are walking or riding a bus, taking a taxi, having food delivered to their home or couch, pass out at a friend, or even pass out in someone’s yard!

The penalties and the emphasis should be on the DRIVING part, not the usage of the substance part.

DUI enforcement must be increased…but the laws must be increasing the penalties as well for the driving part. I mean, mandatory jail time for driving under ANY impairment no matter the substance or device (phone). Do anything if you are walking, but throw the book at the driving the car part of the equation.

Everyone – especially pedestrians – but bicyclists as well — take those damn earbuds/headphones off your ears, y’all can’t hear!!! Transport planning needs to emphasize that more people need to pay attention, no matter whether they are using feet or wheels to move about.

Continue making infrastructure improvements! A lot of “misbehavior” is actually due to poor engineering or maintenance of all types of pavements, signage, and lighting. But as we see in MCORE, infrastructure is expensive!

— Please choose to aim for zero fatalities instead of merely aiming to reduce crashes. Choices to prioritize car travel over cyclist and pedestrian safety are choices to sacrifice family members, friends, and neighbors. Unless drivers can point to someone and say “I’m willing to sacrifice them,” they almost certainly do not understand the massive recklessness of the current status quo. Please up-end the status quo and adopt Vision Zero.