

# 6

## SAFETY

### INTRODUCTION

RPA 8 has identified improving safety by reducing transportation-related injuries and deaths as a key goal the Long-Range Transportation Plan. Chapter 6, the safety chapter, uses crash data to help identify locations with safety issues where transportation officials can implement specific countermeasures to reduce the number of crashes, injures, and deaths. The chapter also expands focus beyond specific locations to assess safety at a regional level. The chapter conducts a region-wide analysis of crashes that compares the RPA 8 area to state and national averages and studies the underlying causes of crashes. The chapter concludes with a collection of regional strategies that can be implemented to address the safety issues identified by the analysis.

### DATA AND ASSUMPTIONS

The analysis uses data gathered by the Iowa Department of Transportation (Iowa DOT) and the National Highway Traffic Safety Administration (NHTSA). The analysis covers the RPA 8 area that includes the portion of Dubuque County outside the DMATS planning area and all of Clinton, Delaware, Jackson, counties. The analysis does not contain information for each individual city as there are 56 in the RPA 8 region. RPA 8 has labeled all charts with their data source and the geographic area covered by the dataset.

### FATALITIES AND SERIOUS INJURIES TRENDS

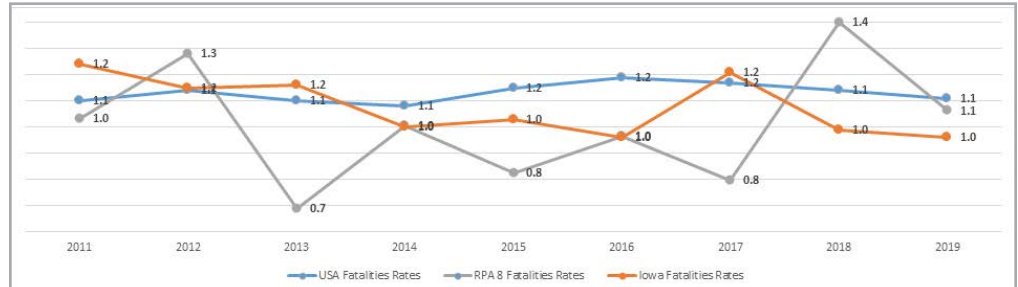
For the first level of safety analysis, RPA 8 compares fatality and serious injury rates with state and national averages. RPA 8 looks at three rates: fatalities per 100 million vehicle miles traveled (HVMVT), serious injuries per HVMVT and fatalities per 100,000 population. The rates allow RPA 8 to compare safety data from different geographic levels and across time while accounting for differences in population and miles driven. Tracking these rates over time allows RPA 8 to see if numbers trending in any particular direction. The result of the analysis shown in figures 6.1-6.3. Figure 6.1 charts fatalities per HVMVT. Figure 6.2 charts serious injuries per HVMVT, and Figure 6.3 charts fatalities per 100,000 population.

According to Figure 6.1, between 2011 and 2019 state and national fatality rates held steady at around 1.0 and 1.2 fatalities per HVMVT. Over the same time period, RPA 8 maintained a fatality rate below the state of Iowa and national rates, with the exception of 2012 and 2018 where the fatality rate went to 1.3 and 1.4 fatalities per HVMVT respectively.

In general, serious injury rates, shown in Figure 6.2 in Iowa have been trending downward over the previous decade, falling from 6.2 to 4.0 in 2019. As with the fatality rate, RPA 8's serious injury rate has been below the state rates with the exception of one year. In this case the exceedance occurred in 2012. The Safety analysts attribute this success to a number of factors, including increased seat-belt use and fewer alcohol related crashes. High fuel prices and poor economic conditions have also led to a downturn in the number of vehicle miles traveled. According to early projections, the fatality rate, which takes into account the number of miles traveled, reached the lowest level ever recorded.

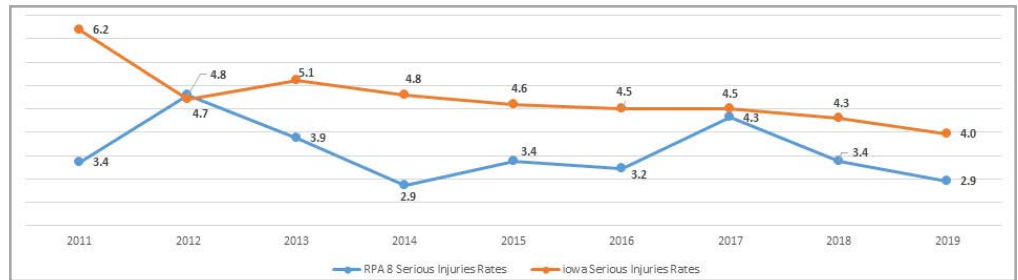
**Figure 6.1 Fatalities per 100 million vehicle miles traveled**

Source: National Highway Traffic Safety Administration. Dataset geography: RPA 8



**Figure 6.2 Serious injuries per 100 million vehicle miles traveled**

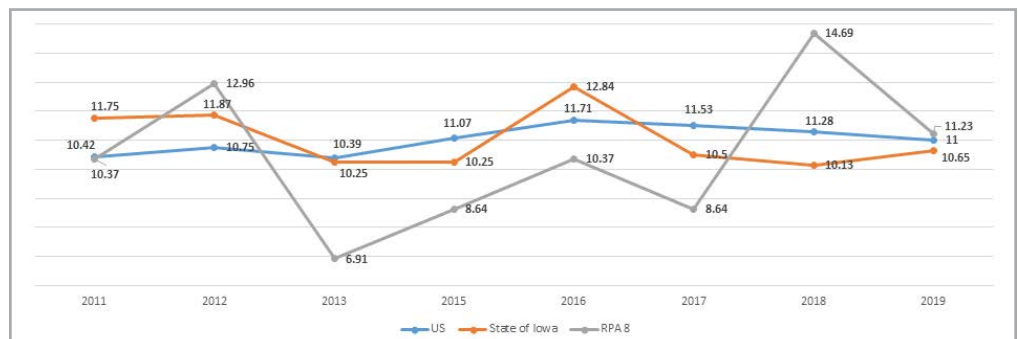
Source: Iowa DOT. Dataset geography: RPA 8



Looking at fatalities per 100,000 population in Figure 6.3, from 2011 to 2019 RPA 8 maintained a rate below the state and national averages except for three years. As with fatalities per HMVMT, RPA 8 recorded its highest fatalities per 100,000 population in the years 2012, 2018 and 2019. While these three years were above the state and national rates, the following years has a drastic drop in rates. In 2019, the most recent year where data was available, the RPA 8 dropped back to of 11.23 fatalities per 100,000 population which is drastic drop from 14.69 in 2018. To address the elevated fatality rates the RPA 8 policy board has elevated the importance of transportation safety within the regional transportation policy.

**Figure 6.3 Fatalities per 100,000 population**

Source: National Highway Traffic Safety Administration. Dataset geography: RPA 8



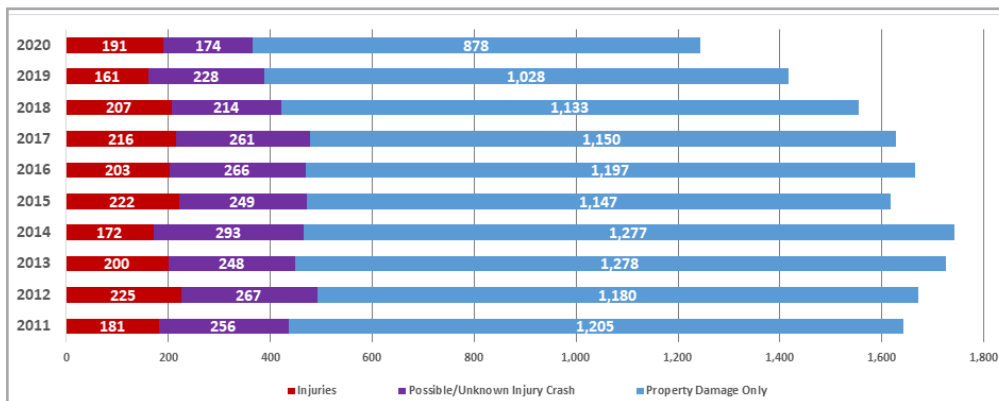
## CRASH DATA EVALUATION

For the next phase of the safety analysis, RPA 8 used crash report data to track the total number of crashes in the Iowa and Illinois portions of the RPA 8 area. The crash report filled out by a law enforcement officer at the scene of a crash is the primary source for transportation safety data. The crash report summarizes the details of a crash including contributing factors or driver behaviors that caused the crash, location of the incident, driver characteristics, vehicle characteristics, and other relevant information. RPA 8 uses this data to identify issues that may require public education and specific demographics prone to collisions.

The Iowa Traffic Safety Department collects and distributes crash data for use by local public safety agencies. Figure 6.4 provides the total crashes between 2011 and 2020 in the RPA 8 Area. The State of Iowa data includes three crash types: injury crashes, unknown injuries, and property damage only.

**Figure 6.4. Total Crashes 2010 - 2019 in the Iowa portion of the RPA 8 area**

Source: Iowa DOT.  
Dataset geography: RPA 8 Area



Over the last ten years, the Iowa portion of the RPA 8 region on has averaged approximately 1,590 crashes per year. In the RPA 8 area between 2011 and 2020, motor vehicle crashes resulted in 118 fatalities, 422 major injuries, and 1,438 minor injuries. Over the decade, the region averaged approximately 12 deaths, 42 major injuries, and 144 minor injuries per year.

## CRASHES BY SYSTEM

RPA 8 uses crash data to evaluate vehicle crashes by roadway system. This analysis helps RPA 8 identify needs and allocate safety improvement resources at based on where crashes are occurring. The RPA 8 roadway network includes 1,592 miles of roadway and 346 bridges. This network is composed of a broad range of facility types, from multi-lane divided highways to gravel roads. Table 1.1 summarizes RPA 8 public roadway system by milage, bridges and vehicle miles traveled (VMT).

**Table 1.1 RPA 8 Roadway System**

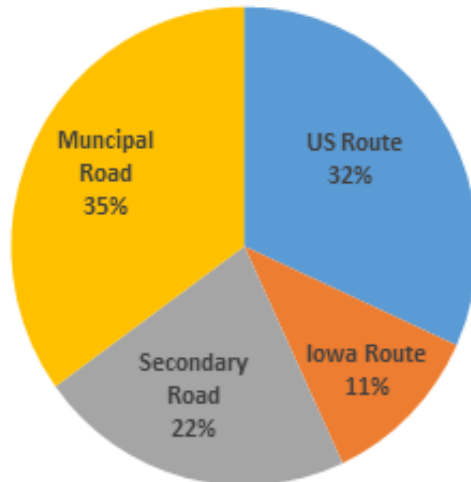
Source: Iowa DOT.  
Dataset geography: RPA 8 Area

System	Lane Miles	Percentage of total mileage	Number of bridges
Primary	1568.5	13.1	247
Secondary (County)	9013.1	75.1	883
Municipal (City)	1420.1	11.8	48
Total	12,001.7		1,178

Figure 6.6 charts the percentage of crashes by system and Figure 6.7 provides percentage of crashes by urban and rural areas . In the RPA 8 area 35% of all crashes occurred in urban streets (Cities), 32% of crashes occurred on US route and 22% on secondary roads. Similarly, 57% of all crashes occurred on either the county system or municipal system, while the remaining 43% occurred on the primary highway system.

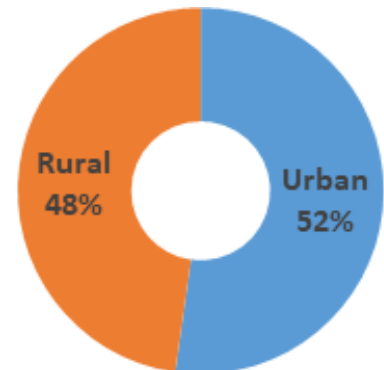
**Figure 6.6 2011-2020 Crashes by System**

Source: Iowa DOT.  
Dataset geography: RPA 8 Area



**Figure 6.7 2011-2020 Urban/Rural Crashes**

Source: Iowa DOT.  
Dataset geography: RPA 8 Area



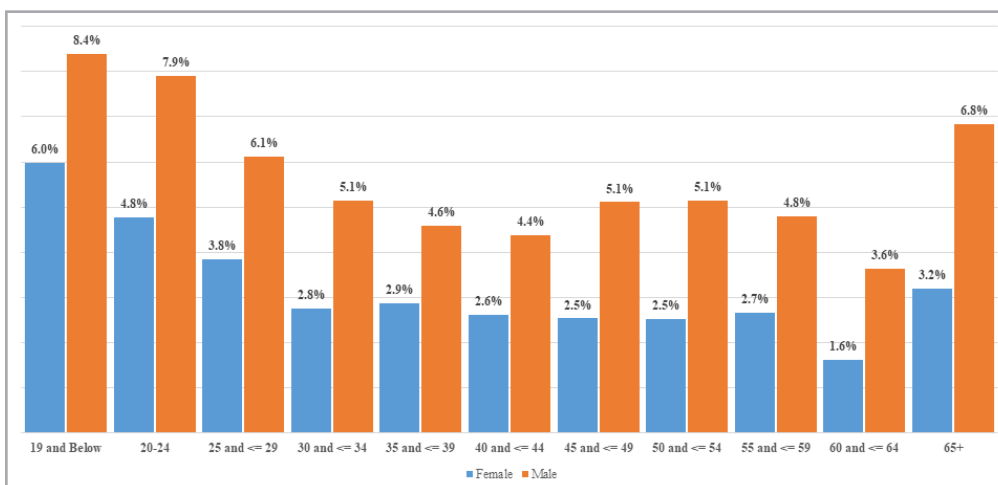
This data demonstrates that urban and rural areas within the RPA 8 region have equal amount of crashes. Far more crashes occur on the area’s primary and municipal networks. RPA 8 has set a goal to improve safety across the region and on all systems. However, based on this information, RPA 8 should continue to place special emphasis on reducing crashes on the area’s primary and municipal systems.

## CRASHES BY AGE AND GENDER

RPA 8 uses demographic data gleaned from crash reports to help its members effectively allocate their traffic safety education resources. Nationwide crash statistics show that older and younger drivers tend to be responsible for a higher proportion of crashes than other age groups. For younger drivers lack of driving experience likely leads to higher crash numbers. For older drivers, higher crash prevalence has been linked to the physical and mental changes associated with aging. Figures 6.8 and 6.9 chart crash data by age and gender. The figures show higher proportions of crashes in the under 25 and over 65 age groups. The data also indicates that male drivers in every age group represent a disproportionately large percentage of crashes. The data in both figures indicates that educational resources are needed for all age groups, but they are especially important for drivers under 25 years old and drivers over 65 years old.

**Figure 6.8**  
Percentage of crashes by driver age and gender 2011-2020

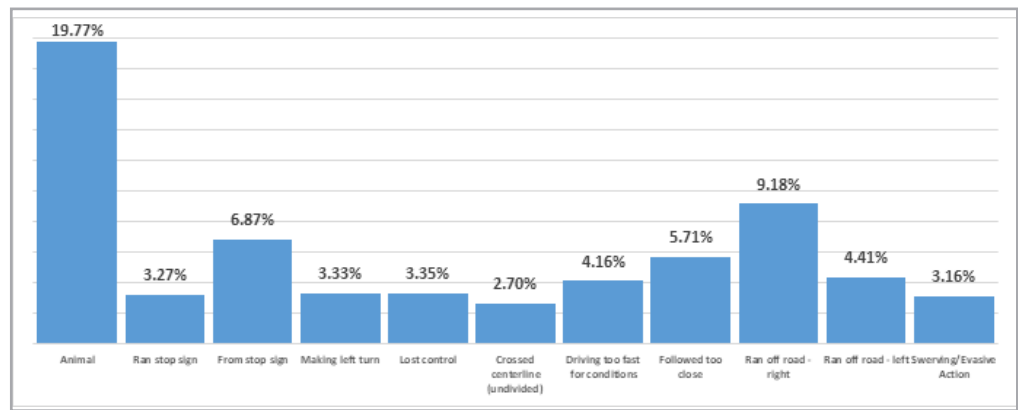
Source: Iowa DOT.  
Dataset geography: RPA 8 Area



## MAJOR CAUSE OF CRASH

Crash reports identify a major cause of a collision, and RPA 8 uses the major cause data to identify areas of emphasis in its traffic safety efforts. Figure 6.9 illustrates major crash causes for RPA 8 from 2011 to 2020. The figure shows that animals, running off the road, following too close, running stop signs, and fast driving were the most frequent causes of crashes. These causes represented in over 50% of crashes in the RPA 8 area. The ranking of the crash causes has remained relatively consistent since the previous plan period. The safety emphasis areas of losing control, making left turns, and crossing the centerline (undivided) have risen in ranking.

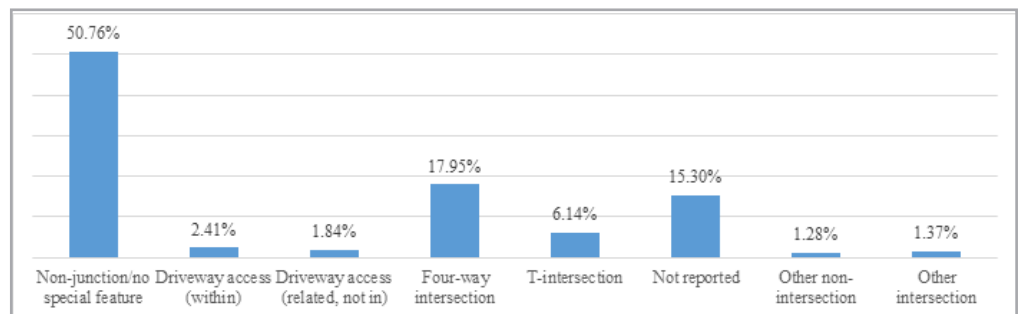
**Figure 6.9 Major Cause of Crash**  
 Source: Iowa DOT.  
 Dataset geography: RPA 8 Area



## MAJOR INCIDENT LOCATIONS

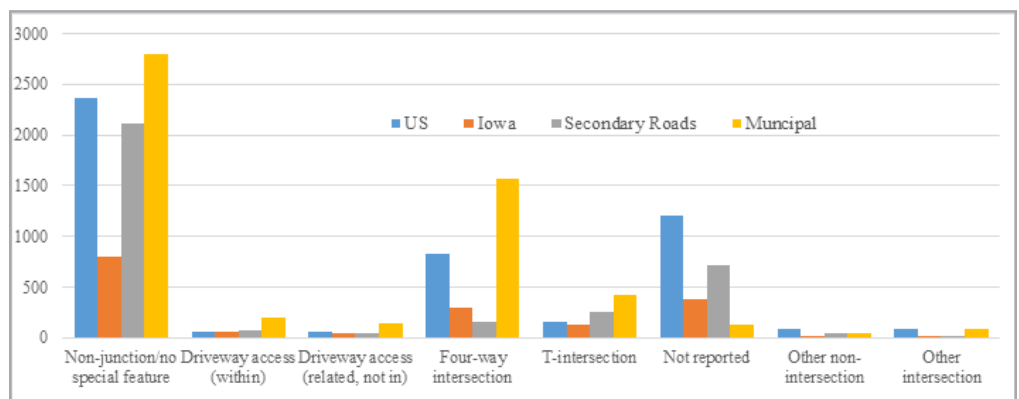
Crash reports identify a major incident location where the accidents took place, and RPA 8 uses the major incident location data to identify locations of emphasis in its traffic safety efforts. Figure 6.10 illustrates major crash incident locations for RPA 8 from 2011 to 2020. The figure shows that Non-junction/no special feature locations contributed to 51% of the accidents followed by four-way intersections at 18%, and T-intersections at 6.14%.

**Figure 6.10 Major Crash Incident Locations**  
 Source: Iowa DOT.  
 Dataset geography: RPA 8 Area



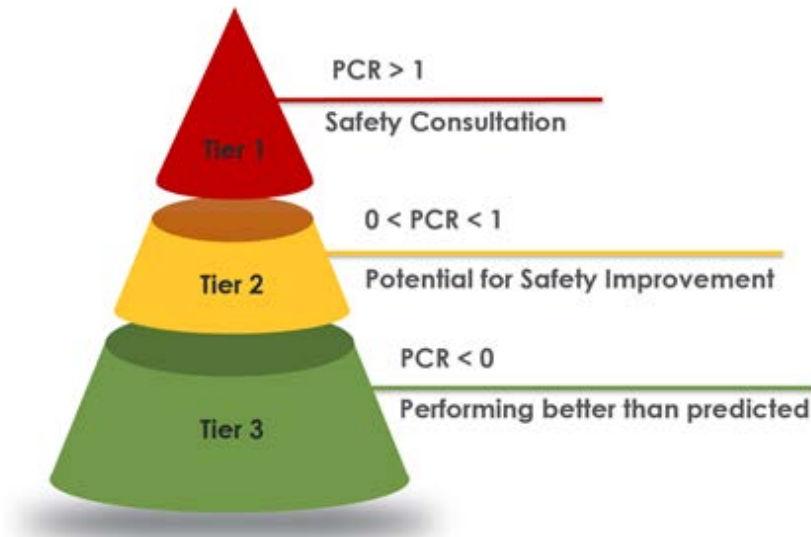
**Figure 6.11 Major Crash Incident Locations by Jurisdiction**  
 Source: Iowa DOT.  
 Dataset geography: RPA 8 Area

Majority of non-junction/no special feature and intersection related accidents occurred on municipal streets followed by US highways, county roads, and state highways. Figure 6.11 illustrates major crash incident locations by jurisdiction within RPA 8 from 2011 to 2020



## INTERSECTIONS THAT NEED IMPROVEMENT

RPA 8 developed a list of intersections that are in critical need of improvements to increase safety. These locations are determined by using data generated from Potential for Crash Reduction (PCR) of Intersections. The PCR divides intersections into three tiers following the FHWA's KABCO Injury Classification Scale. Tier I are intersections that need safety improvement and are eligible for safety funds. Tier II intersections have room for improvement but may not qualify for safety funds and Tier III intersections are performing better than predicted. Figure 6.12 provides the range of PCR scores for each Tier.



**Figure 6.12**  
**Breakdown of Tiers**  
**for all crashes**

*Source: Iowa DOT*

The RPA 8 has 2,000 intersections of which 10 qualify as Tier I inspections, 295 qualify as Tier II and 1,695 as Tier III interactions.

Figure 6.13 provides locations of Tier I intersections. Most of these intersections fall on the primary system and a majority of these intersections are in the City of Clinton.

**Figure 6.13 Tier I Intersections**

Source: Iowa DOT

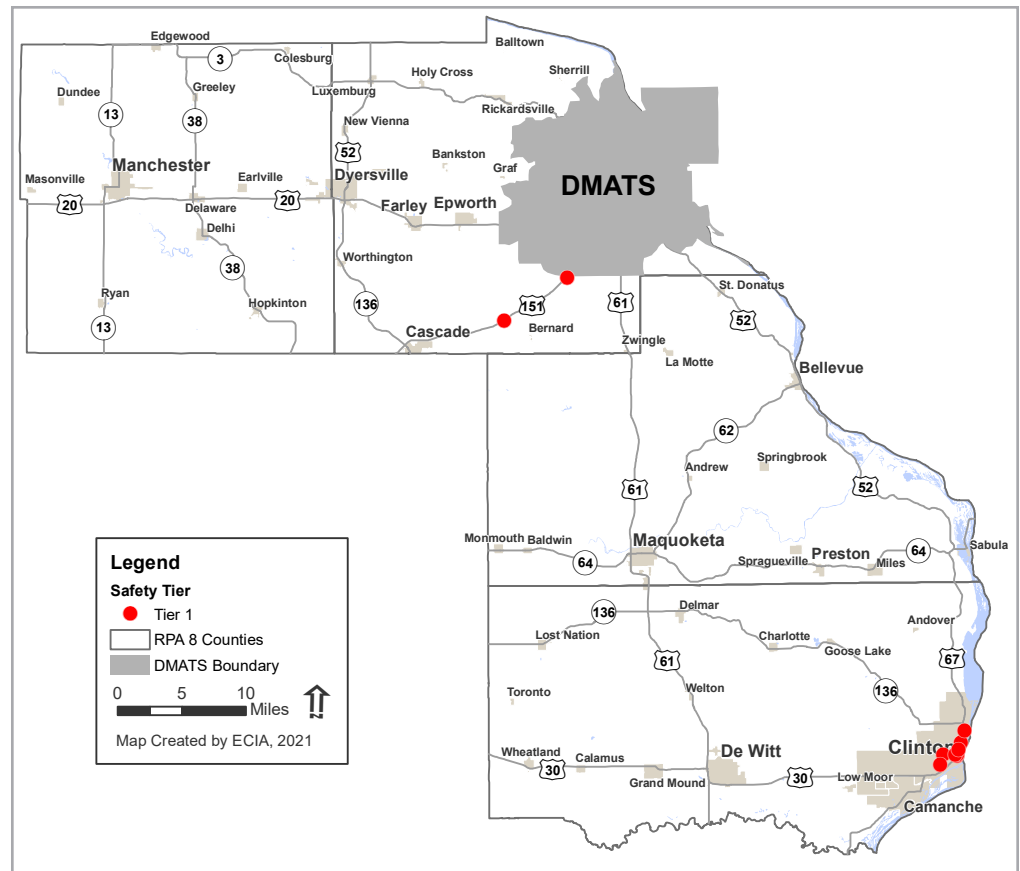


Table 1.2 provides the ten intersections that have a PCR score greater than 1.

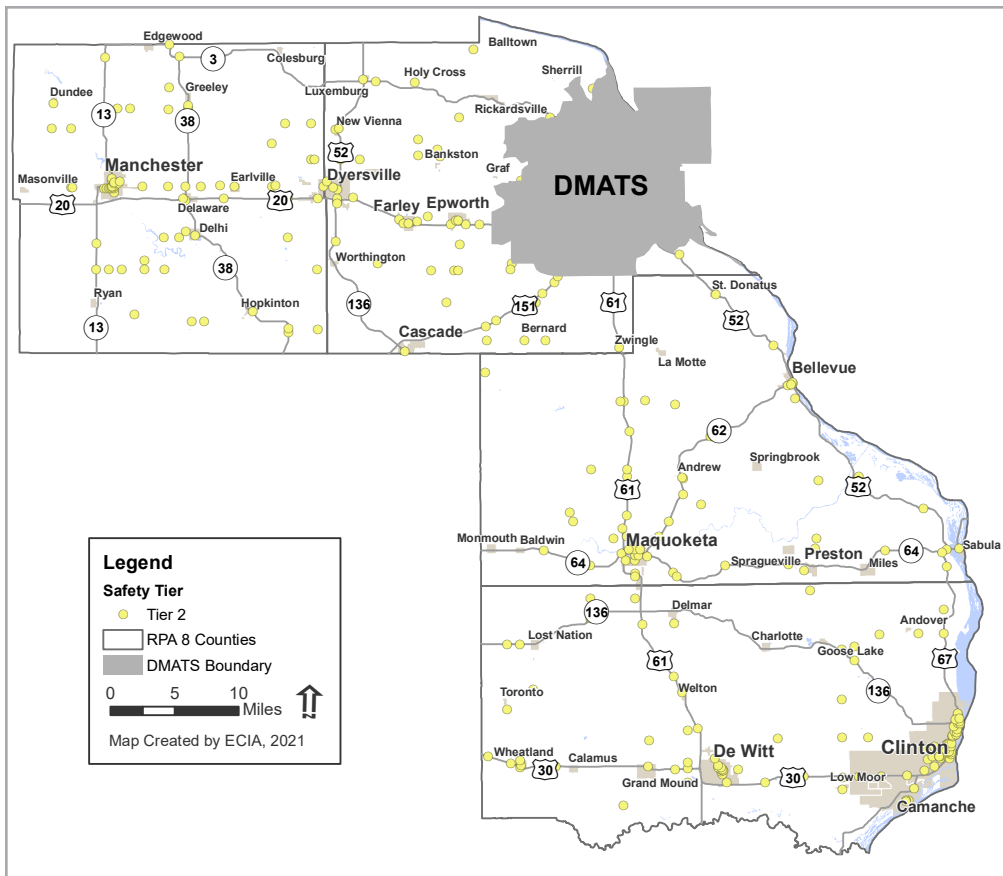
**Table 1.2 Tier I Intersections**

Source: Iowa DOT.

Intersection ID	Basic Road Description 1st Road	Basic Road Description 2nd Road	County	City
2017019301	US 30/8th Ave S/S 4th ST	US 67	Clinton	Clinton
2017019321	US 67	7th Ave/South 4th	Clinton	Clinton
2017019323	US 67	8th Ave N	Clinton	Clinton
2017019344	US 136	Roosevelt St	Clinton	Clinton
2017019791	S Bluff Blvd	7th Ave S & S 12th St	Clinton	Clinton
2017019799	Harrison Dr	S 14th St	Clinton	Clinton
2017019835	7th Ave S	S 5th St	Clinton	Clinton
2017019855	2nd Ave S	S 3rd St	Clinton	Clinton
2017026064	US 151	Y21/Sundown Rd/ Driscoll Rd	Dubuque	
2017026070	US 151	D41/Monastery Rd/ Skyline Rd	Dubuque	

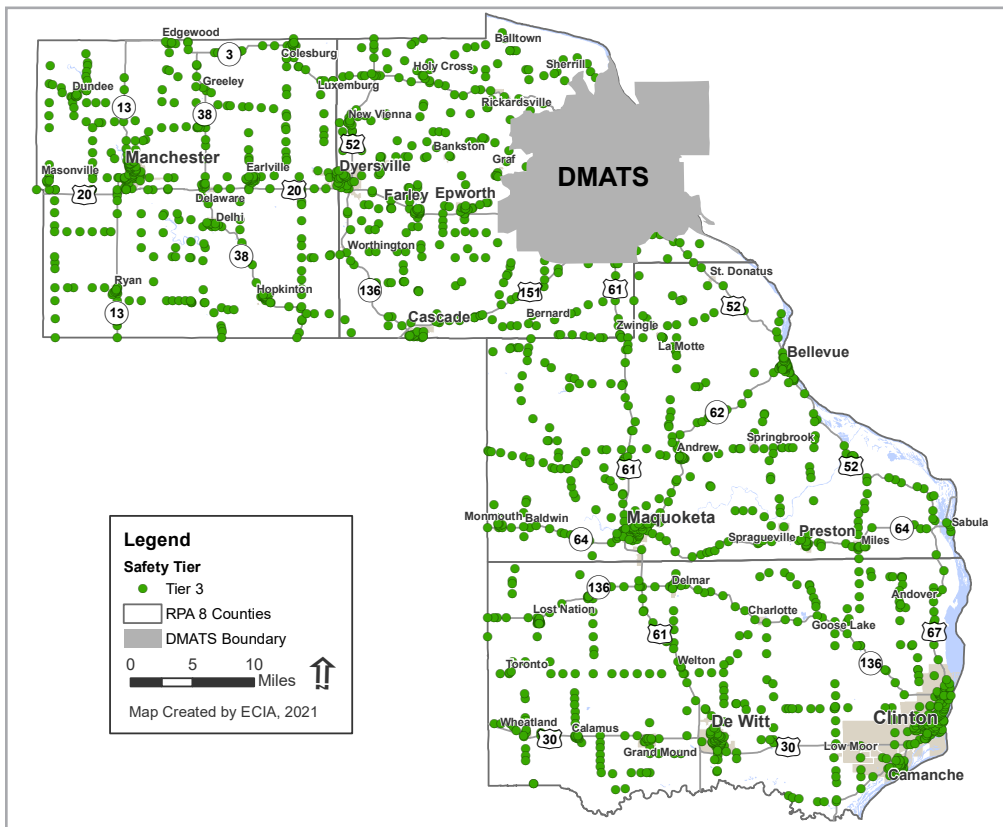
Figure 6.14 provides locations for Tier II intersections. Most of these intersections fall on primary system with a majority of these intersections located within city limits.





**Figure 6.14 Tier II Intersections**  
 Source: Iowa DOT

Figure 6.15 provides locations for Tier II intersections. These intersections are located throughout the RPA 8 region.



**Figure 6.15 Tier III Intersections**  
 Source: Iowa DOT

## SAFETY ANALYSIS - KEY FINDINGS

The RPA 8 safety analysis yielded a several findings related to transportation safety in the RPA 8 area. Key findings of the analysis are summarized in the list below. RPA 8 has used these findings to target its future safety efforts.

- People under the age of 25 and over the age of 65 represented over 35% of the drivers involved in crashes. However, these two demographics have drastically different driving behaviors and transportation safety needs.
- Even though more travel occurs on the primary system, more fatalities and serious injuries occur on county and municipal systems.
- Even though area has more \miles of rural road miles, it has less vehicles miles traveled and fewer crashes when compared to the urban system.
- The male drivers are over-represented in crashes when compared to their female counterparts in RPA 8 area.
- Most of the accidents happened due to loss of control, animal, ran stop signs, FTYROW: from stop sign, making left turn, ran off road – right, made improper turns etc.
- Most of the accidents happened at bon-junction/no special feature locations followed by the intersections.

## RPA 8 TRANSPORTATION SAFETY EFFORTS

RPA 8 implemented a number of safety efforts intended to address the key findings listed above. These efforts include establishing a Multi-Disciplinary Safety Team (MDST) to take the lead on the area's safety efforts, adopting safety goals and supporting strategies to guide regional safety efforts, and installing roundabouts to reduce crashes at unsignalized intersections. The following section describes these safety efforts.

### MULTI-DISCIPLINARY SAFETY TEAMS

Collaboration is critical to the implementation of a safe and efficient transportation system. Time, money and personnel are limited, and public safety agencies need to work together to eliminate duplication of services, and ensure that response efforts have the greatest impact on the region's transportation safety problems. In 2002 Dubuque County public safety agencies came together to form a Multi –Disciplinary Safety Teams (MDST) Clinton County formed an MDST in 2005. Both MDSTs have undertaken a variety of strategies to improve RPA 8 transportation safety.

It is the goal of the regions MDSTs to collaborate and cooperate with other agencies to improve safety in the region. The five areas the group focus on to improve safety are Education, Engineering, Enforcement, and Emergency Services.

## EDUCATION



Education involves informing users about unsafe behaviors and suggesting ways to improve safety when they use the transportation system. Police, fire, and engineering departments across the region use education as a transportation safety tool.

## ENGINEERING



Local public works departments or state departments of transportation often implement engineering strategies to improve roadway safety. In most cases, infrastructure solutions are low cost, reactionary improvements that focus on crash hot spots or corridors. However, engineers and planners are beginning to use a proactive approach to improve transportation safety. Under this approach, small safety improvements are implemented in the planning stages of a project. This proactive method takes a system wide approach to addressing transportation safety issues that will prevent accidents through incremental changes on a corridor level. A good safety plan will include a balance of reactionary and proactive improvements.

## ENFORCEMENT



Law enforcement officers play a valuable role in maintaining the region's transportation safety and security. Their presence can encourage appropriate driving behaviors, prevent motor vehicle collisions, and deter criminal acts. Enforcement officers also are the source of most transportation safety data — typically crash data. In addition, these individuals must coordinate traffic flow around incidents that may create congestion and motorist delays along the region's roadways.

## EMERGENCY SERVICES



Emergency services personnel help prevent additional deaths and injuries from occurring after an initial incident. This professional sector includes emergency medical services paramedics, first responders, trauma room nurses, and doctors. Other services such as motorist assist, which helps drivers with vehicle problems contribute to transportation safety by limiting the length of time vehicles are stopped on the highway. Their efforts, in coordination with regional transportation management systems, help prevent traffic delays and secondary crashes.

## EVERYONE



The significant challenge of reaching Zero Fatalities requires not only the dedication of committed professionals who represent the four E's of roadway safety, but also those who use Iowa's roadways. The National Highway Traffic Safety Administration (NHTSA) reports that for 94% of crashes nationwide the critical reason for the vehicle crash can be attributed to driver error. This finding suggests the important role that everyone plays in ensuring not only their safety but the safety of others traveling on the roadway. Further, this statistic also points to a broader need for Iowa to develop a culture of traffic safety.





## POLICY FRAMEWORK GOALS AND SUPPORTING STRATEGIES

RPA 8 will examine, evaluate, and implement the regional strategies contained in the Iowa Strategic Highway Safety Plan (SHSP). The SHSP addresses highway safety priorities and issues monitored by the State Safety Committee. In addition, appropriate actions will be taken to support the transportation system goals identified in SHSP. The Iowa, instructed RPA 8 staff to use the Iowa SHSP for the LRTP, because the majority of the area’s population lives in Iowa. RPA 8 staff used SHSP to address key findings within the region.






The Safety Strategies focuses on strategies that have the greatest potential to reduce fatalities, major injuries, minor injuries and unknown injuries on public roadways. These strategies will be implemented in locations chosen using criteria such as crash history, system characteristics, and population demographics.

### 1. People under the age of 25 and over the age of 65 represented over 35% of the drivers involved in crashes









- People under Age of 25

	Improve content and delivery of driver education curriculum
	Continue educating young drivers in school-based settings using various training techniques, including those that simulate impairment.
	Support a broad-based coalition to plan for addressing age-based transportation needs.
	Support young drivers to avoid distractions and impairment.






- People over Age of 65

	Support a broad-based coalition to plan for addressing age-based transportation needs.
	Provide educational and training opportunities for mature drivers that address driver safety, road engineering and signage, vehicle technology, driver licensing, health and vision concerns, and alternative transportation options.
	Update publications and web resources for older drivers and their families to include safety strategies, warning signs, and planning for driving retirement.
	Update procedures for assessing medical fitness to drive.
	Know when to put the keys down, or when to have a conversation with family members who may pose a hazard to others on the road.




**2. Reducing fatalities and serious injuries on county and municipal system**

	Increase safety at intersection by implementing roundabouts (see roundabouts section of this chapter more details) at heavily travelled intersection on municipal and county system.
	Provide education on using roundabouts.
	Develop educational resources informing the public of alternative intersection types, traffic signals, and laws.
	Conduct enforcement campaigns related to bicycle and pedestrian awareness at targeted intersections.
	Use systemic approaches to improve visibility and awareness of intersections.
	Implement alternative intersection designs that reduce conflict points and enhance safety and mobility.
	Develop an intersection configuration/evaluation tool to aid planners and designers in selecting appropriate intersection types.
	Approach intersections with caution and get familiar with new designs in your community.







**3. Reduce accidents due to loss of control, ran traffic signals and ran stop signs.**

	Educate drivers on the importance of controlling and managing vehicle speed.
	Identify corridors with a high frequency of speed related crashes and implement high-visibility enforcement campaigns.
	Evaluate and implement signing and geometric design strategies to moderate speeds and enhance safety
	Implement speed feedback signs at targeted locations.
	Give yourself enough time to reach your destination. Be patient, slow down, and do not engage with aggressive drivers

**4. Reduce accidents for ran off road – right, made improper turns**

	Evaluate high-friction surface treatments (HFST) at targeted locations on local systems.
	Evaluate high-friction surface treatments (HFST) at targeted locations on local systems.
	Place centerline and/or shoulder rumble strips on and local systems. Where necessary, install or widen paved shoulders.

## 5. Reduce accidents at Intersections

	Develop educational resources information the public of alternative intersection types, traffic signals, and laws.
	Conduct enforcement campaigns related to bicycle and pedestrian awareness at targeted intersection.
	Use systemic approaches to improve visibility and awareness of intersections.
	Implement alternative intersection designs that reduce conflict points and enhance safety and mobility.
	Develop an intersection configuration/evaluation tool to aid planners and designed in selecting appropriate intersection types.
	Approach intersections with caution and get familiar with new designs in your community.

## RPA 8 SAFETY PROJECTS

The following section lists key safety projects that areas that RPA 8 staff are working from the previous LRTP:

### ROADS AND BRIDGES

- Ensure that roads and bridges remain passable during an emergency. (Ongoing)
- Reduce the number of fatalities and decrease the economic impact from highway-related accidents (Ongoing)

### BICYCLE AND PEDESTRIAN

- Encourage cities and counties to implement bicycle and pedestrian improvements, services, and programs. (Ongoing)
- Encourage local government participation in safety outreach activities, and continue bicycle and pedestrian safety education.
- Encourage cities and counties to continue to implement bicycle parking and encourage its installation by developers, business owners, schools, and other institutions.
- Improve safety for children who walk and bike to school. (Ongoing)

### TRANSIT

- Review security measures against checklists developed by FTA and IPTA.
- Create an action plan with County Sheriff and City Police Department to request random patrols of transit systems headquarters, the bus depot, and “hot spots” on Friday and Saturday evenings.

- Work with MDST and County EMS regarding security and emergency preparedness plans, and ensure that all are familiar with the basic operation of a bus, and are aware of the bus depot’s layout.
- Define transit systems role in non-transit emergencies.
- Conduct at least one emergency exercise annually.
- Install cameras on buses that are equipped with a “panic button” that will capture a higher quality of video footage. (Done)
- Purchase newer buses to be equipped with full time cameras (Done)
- Equip buses with mobile data terminals and GPS systems. (Done)
- Install security cameras at transit offices and bus depots. (Done)
- Transit offices secured with passcard swipe locks. (Done)
- Encourage transit systems to secure funding for full-time cameras on all buses. (Done)
- Encourage transit systems to secure funding for automated vehicle locator system. (Done)
- Encourage transit systems to contact the fire department and county emergency management regarding security and emergency preparedness plans, and ensure that all are familiar with the basic operations of a bus and are aware of the bus depot’s layout.
- Encourage transit systems to develop and execute at least one emergency exercise annually.

## **RAIL**

- Work closely with the IADOT Rail Division on planning studies and project development activities for rail safety projects, including rail grade separations at targeted locations. (Ongoing)

## **REGION-WIDE SAFETY PROJECTS**

- Coordinate transportation and operational agencies with the county emergency and hazard mitigation plans.
- Ensure continued cooperation between transportation agencies and transit systems. (Ongoing)
- Train all personnel in emergency response procedures and protocols, and conduct annual refresher training. (Ongoing)
- Establish an ongoing means of communication with fire, sheriff, and police departments and the County EMS to ensure sharing of crime and security information among all concerned. (Ongoing)
- Work with safety teams and County EMS regarding security and emergency preparedness plans. (Ongoing)
- Continue use of incident management patrols, coordination with law en-

forcement agencies, and implementation of safety and mobility projects by the members to respond to safety and security trends and issues.

- Review evacuation plans in the region, focusing on transit security plans. Plan review will ensure compatibility and clarification regarding responsibility and procedures in the event of an incident. (Ongoing)