

## Chapter 7 – Safety Management

### Introduction

The Dixie MPO is committed to excellence in transportation planning. One area of planning which has, is, and will be given a lot of attention is ‘Safety Management’. On the pages to follow, data and information will be presented that illustrates issues related to ‘Safety and Security’ as well as ‘Traffic Safety’. Some ways those issues can be mitigated through objective identification and specific strategies or projects intended to lessen their impact are also presented.

The UDOT has put significant efforts into safety related data and campaigns. That information is used as a part of the Dixie MPO planning effort. For more information on the UDOT campaign, please refer to the UDOT web site at <http://www.udot.utah.gov/main/f?p=100:pg:0::::T,V:2956>,

### Safety Performance Measures

As of 2019, the Federal Highway Administration has released performance measures to aid MPOs in planning and goal setting activities as long-range plans are drafted. The performance measure for “Safety” involves a look at “Serious Injury and Fatal Crashes,” combined with the goal of reducing the number and rate of these crashes over time. The Dixie MPO agrees with this guidance and has set goals accordingly.

Consideration of projects that increase safety or that may lead to the reduction of serious injury and fatal crashes is integrated into the Dixie MPO project selection process. Furthermore, the MPO annually reviews the Utah Safety Index Map to identify potential projects for the Highway Safety Improvement Program.

### State Safety Leadership Team

UDOT’s Office of Traffic and Safety is facilitating an on-going safety plan and strategy in cooperation with many local, regional, state, and federal partners. Each MPO in Utah is a member of this leadership team. One of the most visible projects has been the “ZERO Fatalities: A Goal We Can All Live With” program. Receiving national attention, this icon is fast becoming known throughout the entire state.



The primary program goals and objectives endorsed by the team and MPO boards will rely on education, outreach, and multi-agency partnering to accomplish them. Current Emphasis Areas include increasing use of safety restraints, improving intersection safety, and reducing aggressive driving, distracted driving, drowsy driving, truck safety, pedestrian and bicycle safety, and impaired driving. Various safety groups and governmental agencies have partnered on this statewide media campaign.

Continuing Safety Areas include enhancement of child safety, railroad crossing safety, older driver safety and transit system safety. Ongoing planning to improve pedestrian safety, bicycle safety, motorcycle safety, younger driver safety, and rural road safety will be coincided with increasing work zone safety and promoting safer truck travel. Special areas that may be visited and promoted periodically include enhancement of safety management systems, crash data systems, and emergency services capabilities.

UDOT, in conjunction with several road safety partners has created initiatives to promote road safety in Utah. One of those initiatives is the Utah Comprehensive Safety Plan. As noted on UDOT's website: "The Utah Comprehensive Safety Plan was developed by the Utah Safety Leadership Team, which consists of approximately 20 different private and governmental groups (including UDOT) interested in promoting roadway safety. The plan outlines a number of different roadway safety emphasis areas and notes what needs to be done from an engineering, education, and enforcement standpoint to achieve a reduction in fatalities for each emphasis area. Implementation and evaluation of the plan are also discussed." This plan can be accessed from the UDOT link noted above. Additionally, the State Freight Plan, addressed in Chapter 15 focuses on the safe movement of freight through the state.

### Traffic Safety

The frequency and severity of traffic accidents is of major concern at transportation facilities are planned and developed. Crash data is now available to the MPO that identifies the location and contributing factors of traffic crashes throughout the area. Serious and fatal crash information is summarized on Map No. 6 - Traffic Crashes in Appendix B.

UDOT continues to provide crash data to the Dixie MPO for planning purposes. Map 6 in Appendix B and the chart below illustrate the incidence of severe injury and fatal crashes in Washington County between 2010 and 2014 categorized by severity and contributing factors.

Washington County – Serious Injury and Fatal Crashes by Contributing Factor, 2010-2014

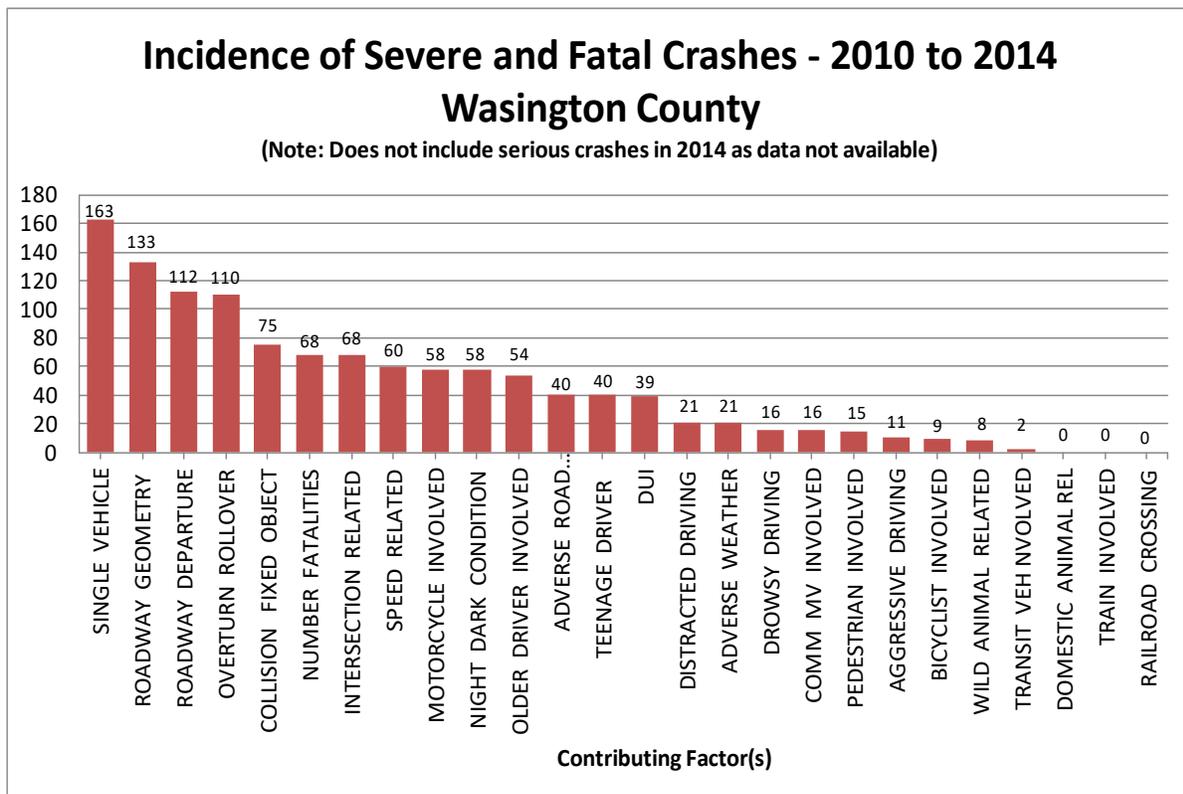


Figure 1 - Incidence of Severe and Fatal Crashes - 2010 - 2014 - Source: UDOT, protected under 23 USC 409

An analysis completed by Cambridge Systematics shows several contributing factors to crashes in Washington County. Common crash factors for our area include: multiple vehicles, intersection related crashes, aggressive driving/speeding, young drivers, single vehicle crashes, older drivers, roadway departure crashes, improper use of safety equipment, distracted driving, CMV involved crashes, overturn/rollover, crashes in work zones, and impaired driving.

From that analysis several possible focus areas were identified. The following are areas that will be given greater review:

#### Roadway Departures

The 2012 statistics from the Fatality Analysis Reporting System (FARS) show that nationally, there were 30,800 fatal crashes resulting in 33,561 fatalities. 54% of the fatalities were in rural areas while 46 % were in urban areas. The fatality rate per 100 million vehicle miles traveled was 2.4 times higher in rural areas than in urban areas (1.86 and 0.77, respectively).

Nearly 36 percent of the fatal crashes were single-vehicle Run-Off-the-Road (ROR) crashes on various road types.

For two-lane, undivided, non-interchange, non-junction roadways exclusively, there were 8,901 (24 percent) single-vehicle ROR crashes recorded. There are more than twice as many ROR fatal crashes on rural roads than on urban roads, partly due to the higher speeds on rural roads and the greater mileage and lack of additional lanes and median separation.

Some of the most prevalent contributing factors are listed below with a brief explanation of the problem. Objectives and strategies to address these factors also follow.

#### Restraint Use

More than half (52%) of the passenger vehicle occupants killed in traffic crashes in 2012 were unrestrained and 79% of passengers who were totally ejected were killed. NHTSA estimates that 12,174 lives were saved in 2012 by the use of seat belts.

#### Intersection Accidents

##### Un-signalized

Intersections constitute only a small part of the overall highway system, yet intersection-related crashes constitute more than 50 percent of all crashes within urban areas and over 30 percent in rural areas (Kuciamba and Cirillo, 1992). Fatal intersection crashes are a smaller portion of the total picture, suggesting that severity of crashes at intersections is lower than elsewhere.

##### Signalized

Intersections constitute only a small part of the overall highway system, yet intersection related crashes constitute more than 20 percent of fatal crashes. It is not unusual that crashes are concentrated at intersections, because intersections are the point on the roadway system where traffic movements most frequently conflict with one another. Good geometric

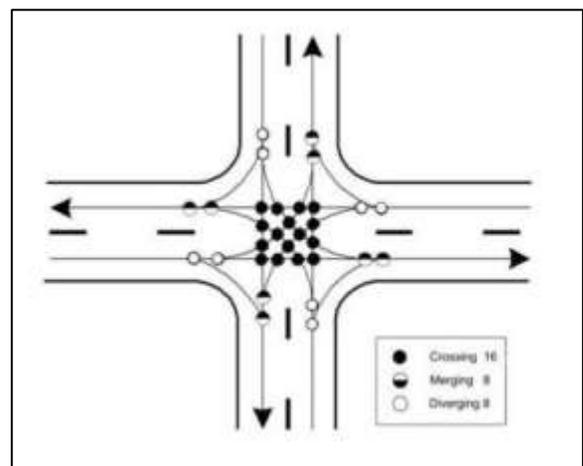
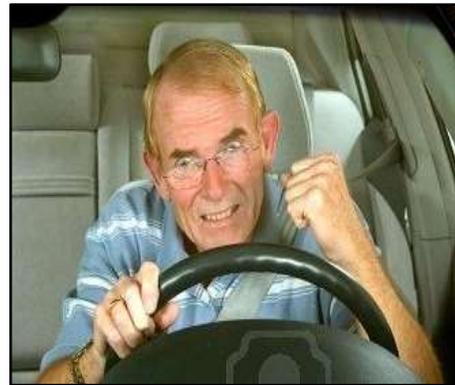


Figure 2 Intersection Conflict Point Diagram

design combined with good traffic control can result in an intersection that operates efficiently and safely.

### Aggressive Driving

While estimates of the problem vary, perceptions among both law enforcement and drivers are that aggressive driving is becoming more prevalent. According to a National Highway Transportation Safety Administration (NHTSA) survey about aggressive driving attitudes and behaviors, more than 60 percent of drivers see unsafe driving by others, including speeding, as a major personal threat to themselves and their families. More than half admitted to driving aggressively on occasion. The Surface Transportation Policy Project estimated that aggressive actions contributed to 56 percent of all fatal crashes. However, without a clear definition of aggressive driving, these broad assertions are difficult to support.



### Older Drivers

Between 2012 and 2050, the United States will experience considerable growth in its older population. In 2050, the population aged 65 and over is projected to be 83.7 million, almost double its estimate population of 43.1 million in 2012, according to the US Census Bureau.

By 2030, one in five Americans will be age 65 or older. In 2012, there were 5560 people 65 and older killed and 214,000 injured in motor vehicle crashes. These older people made up 17 percent of all traffic fatalities during the year. As people age, a decline in sensory, cognitive, or physical functioning can make them less-safe drivers, as well as more vulnerable to injury once in a crash. Yet older Americans depend on automobiles for meeting their transportation needs.

The real safety concern for the older driver arises when one also takes into consideration their increased likelihood of being injured or killed in a crash. The older population traffic fatality rate per 100,000 U.S. resident was 12.9 in 2012 as compared to 18.7 in 2003.

## Objectives & Strategies

The Dixie MPO is focusing on the above contributing factors because of the impacts they pose in our area. Although these factors pose significant concerns it is possible to help alleviate those concerns through the adoption and implementation of objectives and strategies addressing each area. The listing below includes strategies which if implemented will help the Dixie MPO to address each focus area:

### Roadway Departures (RD)

- RD1 Keep vehicles from encroaching on the roadside
- Install shoulder, edge-line, or mid-lane rumble strips where needed
  - Provide improved highway geometry for horizontal curves
  - Provide enhanced pavement markings
  - Provide skid-resistant pavement surfaces
  - Apply shoulder treatments
  - Eliminate shoulder drop-offs

- Widen and/or pave shoulders
  - Add medians or median separation where appropriate
- RD2 Minimize the likelihood of crashing into an object or overturning if the vehicle travels off the shoulder
- Design safer slopes and ditches to prevent rollovers
  - Provide appropriate clear zones
  - Remove/relocate objects in hazardous locations
  - Delineate trees or utility poles with retro-reflective tape
- RD3 Reduce the severity of the crash
- Improve design of roadside hardware
  - Improve design and application of barrier and attenuation

## Intersections

### Un-signalized

- I.1 Management of access points near un-signalized intersections
- Implement driveway closures/relocations
  - Implement driveway turn restrictions
- I.2 Reduce the frequency and severity of intersection conflicts through geometric design improvements
- Provide left-turn lanes at intersections
  - Provide bypass lanes at T-intersections (Hi-T designs)
  - Provide deceleration lanes and right-turn lanes at intersections
  - Provide right-turn acceleration lanes at intersections
  - Provide full-width paved shoulders in intersection areas
  - Restrict or eliminate turning maneuvers by use of medians
  - Restrict or eliminate turning maneuvers by providing channelization or closing median openings
  - Close or relocate “high-risk” intersections
  - Reduce lane off-sets through intersections
  - Improve pedestrian and bicycle facilities to reduce conflicts between motorists and non-motorists
- I.2 Improve sight distance at un-signalized intersections
- Clear sight triangles on stop- or yield-controlled approaches to intersections
  - Clear sight triangles in the medians of divided highways near intersections
  - Eliminate parking that restricts sight distance
- I.3 Improve driver awareness of intersections as viewed from the intersection approach for both daytime and night time driving
- Improve visibility of intersections by providing enhanced signing and delineation
  - Improve visibility of the intersection by providing lighting
  - Provide a stop bars on minor road approaches
  - Install larger regulatory and warning signs at intersections
- I.4 Choose appropriate intersection traffic control to minimize crash frequency and severity
- Provide all-way stop-control at appropriate intersections
  - Eliminate all-way stop control where not warranted
  - Provide roundabouts at appropriate locations
- I.5 Improve driver compliance with traffic control devices and traffic laws at intersections

- Provide targeted public information and education on safety problems at specific intersections
- I.6 Reduce operating speeds on specific intersection approaches
- Post appropriate speed limit on intersection approaches
- I.7 Guide motorists more effectively through complex intersections
- Provide turn path markings
  - Provide lane assignment signing or marking at complex intersections
  - Meet or exceed MUTCD signing and striping requirements

### Signalized intersection

- I.8 Reduce frequency and severity of intersection conflicts through traffic control and operational improvements
- Restrict or eliminate turning maneuvers
  - Employ signal coordination
  - Improve operation of pedestrian and bicycle facilities at signalized intersections
  - Remove unwarranted signals
  - Provide advance intersection warnings where needed on higher speed road
- I.9 Reduce frequency and severity of intersection conflicts through geometric improvements
- Provide/improve left-turn channelization
  - Provide/improve right-turn channelization
  - Improve geometry of pedestrian and bicycle facilities
  - Reduce un-necessary delays
  - Reduce lane off-sets through the intersection
  - Improve night-time signing and visibility
- I.10 Improve sight distance at signalized intersections
- Clear sight triangles
  - Avoid curved approach roads
  - Adjust median landscaping to allow for proper sight distance
  - Add back plates to enhance contrast between signals and their surroundings
  - Add supplemental signal heads to enhance signal visibility



### Aggressive Driving

- AD.1 Deter aggressive driving in specific populations, including those with a history of such behavior, and at specific locations
- Conduct educational and public information campaigns
- AD.2 Improve the driving environment to eliminate or minimize the external triggers of aggressive drivers
- Change or mitigate the effects of identified elements in the environment
  - Reduce nonrecurring delays and provide better information about these delays

### Older Drivers

- OD.1 Plan for an aging population
- Establish a broad-based coalition to plan to address older adults' transportation needs
- OD.2 Improve the roadway and driving environment to better accommodate the special needs of older drivers
- Provide advance warning signs
  - Provide advance-guide and street name signs
  - Provide all-red clearance intervals at signalized intersections
  - Provide more protected left turn signal phases at high-volume intersections
  - Provide offset left-turn lanes at intersections
  - Improve lighting at intersections, horizontal curves, and railroad grade crossings
  - Increase overall sign size (letters and numbers)
  - Use higher reflective sign sheeting to provide improved recognition
  - Encourage compliance with new retro-reflectivity standards
  - Improve roadway delineation
  - Replace painted channelization with raised channelization
  - Reduce intersection skew angle
  - Improve traffic control at work zones
- OD.3 Reduce the risk of injury and death to older drivers and passengers involved in crashes
- Increase seatbelt use by older drivers and passengers through public education campaigns
  - Provide "mature driver" stickers for all drivers over 65

