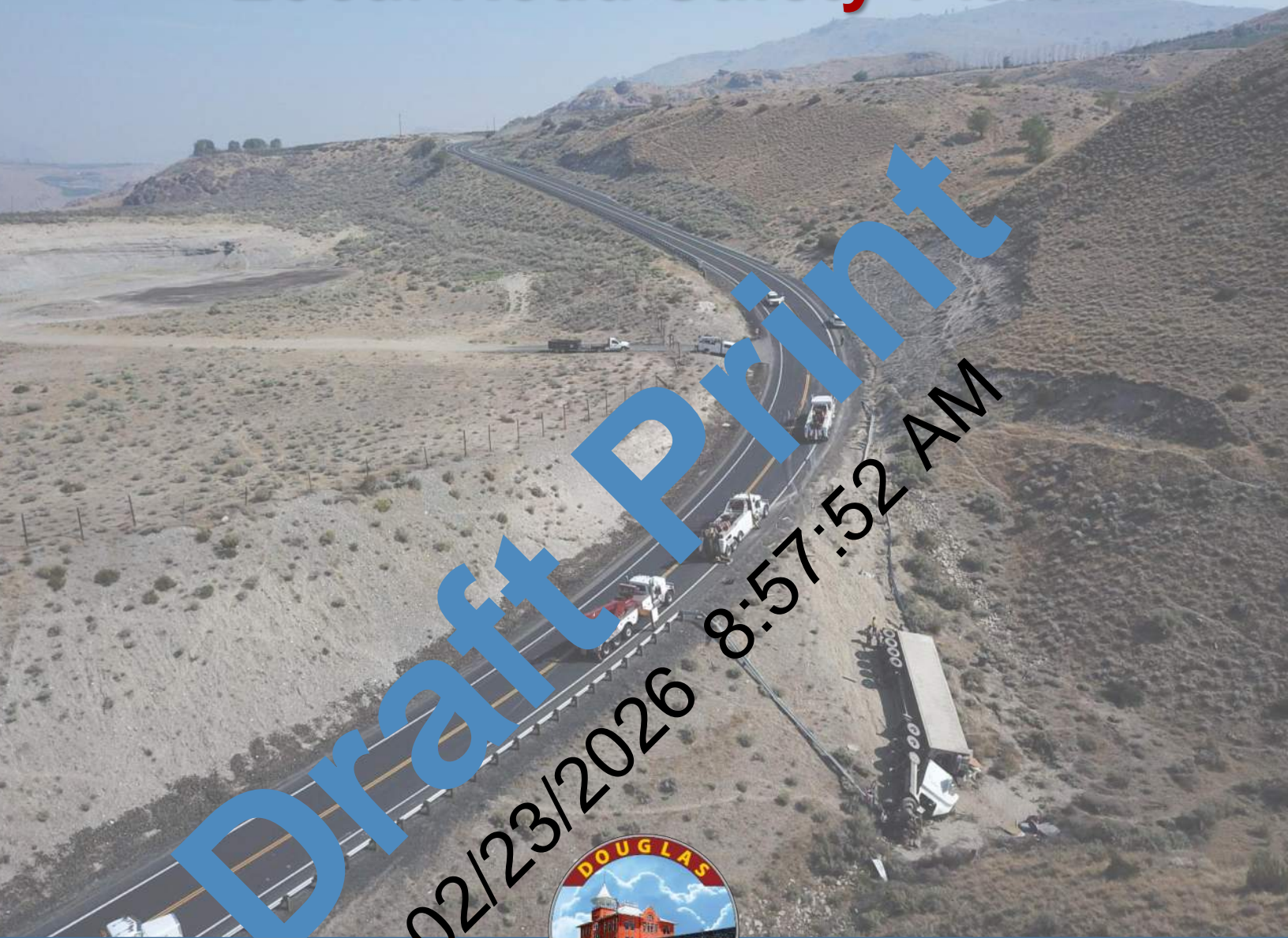


# Local Road Safety Plan



## DOUGLAS COUNTY Transportation & Land Services STATE OF WASHINGTON

Revision Date: 03/10/25

\*This is a draft plan, a final Safety Action Plan is planned for adoption in 2026

## Table of Contents

Introduction.....	3
Vision & Goals.....	3
Safety Partners.....	4
Process .....	4
Existing Efforts .....	5
Data Analysis and Summary .....	6
Evaluation and Implementation .....	25
Appendix A: Acronyms .....	31
Appendix B: Glossary .....	32

## Introduction

Douglas County is committed to improving the safety of its transportation system. Current Douglas County crash data<sup>1</sup> (2019-2023), indicates 1% of total crashes result in fatalities, 3% in serious injury, and 6% are caused by alcohol. While not a large percentage of the total, these crashes warrant a closer look. Through analysis of this data by specific category, high crash locations, and high crash corridors, Douglas County is committed to identifying countermeasures to improve the safety of our road network within this Local Road Safety Plan (LRSP).

This version of the LRSP is a minor update to the previous Draft LRSP, which incorporated crash data from 2017-2021. While new crash data was incorporated, countermeasures were not changed as a larger Comprehensive Safety Action Plan is in progress that will more thoroughly examine safety countermeasures. From 2017–2021 to 2019–2023, Douglas County saw an increase from 17 to 20 serious injury and fatal crashes. Many of the same trends seen in the 2017-2021 data are also present in the 2019-2023 data, although minor differences were seen throughout. Serious injury and fatality collisions continue to occur more often on curved roadway segments.

## Vision & Goals

Douglas County is committed to improving the safety of its transportation system and reducing serious injury and fatality crashes to the Washington State Department of Transportation (WSDOT) Target Zero goal by 2030. Target Zero is a goal set forth by WSDOT which aims to have zero driving-related deaths and serious injuries by 2030. To achieve this objective, a system-wide analysis must be carried out to reveal where fatal/serious crashes are prevalent and what industry-wide, recommended countermeasures can be implemented.

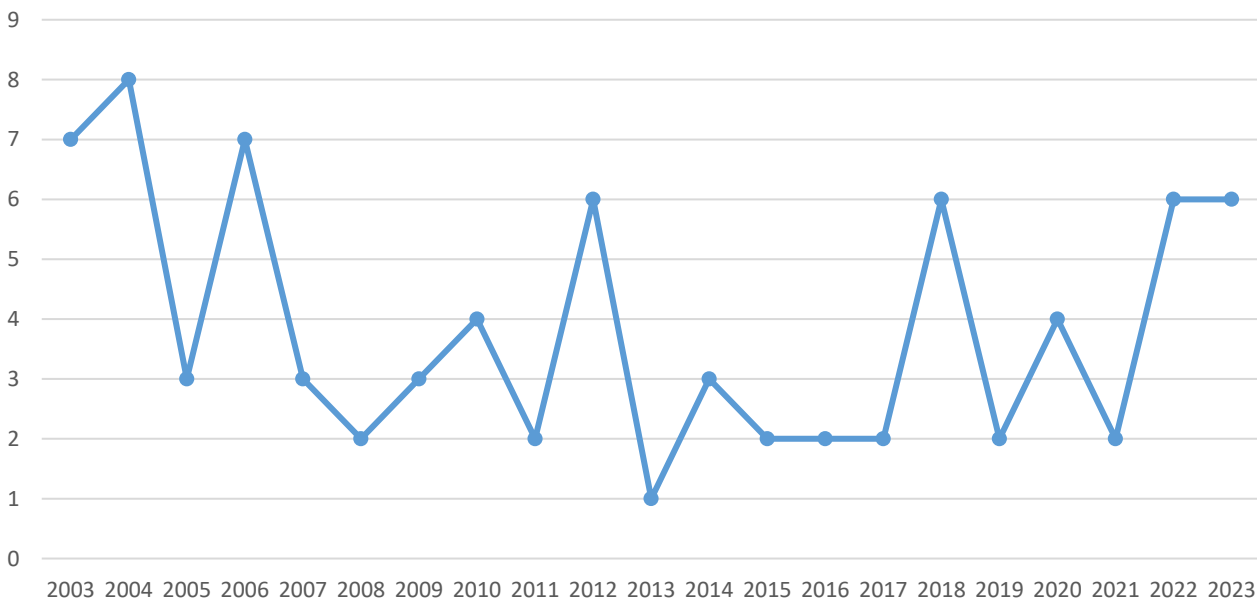


Figure 1 – Fatal and serious injury crashes on Douglas County owned roads, 2003-2023

<sup>1</sup> Received from WSDOT, Douglas County owned roads only, does not include state routes or roads within incorporated areas

## Safety Partners

While the Douglas County Transportation Department specializes in road design, construction, and maintenance, we recognize the need for outreach and input from other institutions, citizen groups, and emergency management agencies. This Local Road Safety Plan (LRSP) will be available to our safety partners for comment and use. Ultimately, our Safety Action Plan, which is currently under construction, will include input from our safety partners before it is complete. This is scheduled for completion in 2026.

## Process

The process of data collection from an individual crash on a Douglas County road has several steps from beginning to end. Just how is crash data collected on Douglas County (County) roads? Typically, when a crash occurs on a County road, it is investigated by the Sheriff's Department where a detailed report is filed electronically and submitted to Washington State Department of Transportation (WSDOT). On a weekly/monthly basis, County staff will review this data via the WSDOT Online County Location Coding Form (CLCF) where the correct road number, milepost, and jurisdictional information are coded. Once the location information has been entered and submitted, the details of the crash are recorded completely by WSDOT staff and uploaded monthly to the roadlog system (GIS-Mo) which is administered by the County Road Administration Board (CRAB).

Analysis of crash data can be done at any time, on any road, and for any reason. Douglas County also receives an annual report of the most recent five-year crash data from WSDOT. This report includes trend lines, pie charts, and tabular data, summarizing crash data by injury/fatality and risk factors. The main categories of crash data include:

1. Collision Type (i.e. Fixed Object)
2. Roadway Surface/Weather (i.e. Ice)
3. Light Condition (i.e. Dark – Street Lights Absent/Off)
4. Junction Relationship (i.e. – Intersection-Related)
5. Roadway Curvature (i.e. – Horizontal Curve)
6. Fixed Objects/Clear Zone (i.e. – Utility Pole)
7. Functional Class (i.e. – Rural Major Collector)
8. Contributing Circumstances (i.e. Alcohol)
9. Vehicle Type (i.e. – Heavy Truck)
10. Speed Limit (i.e. – 50 mph)
11. Surface Type (i.e. – Gravel)

Because the focus within this LRSP is fatal and serious injury crashes, it is necessary to further investigate where risk factors within the road system occur. For example, Grant Road may have a large number of 'Fixed Object' crashes. Upon further analysis, we may find the majority of the vehicles are running off the road and colliding with utility poles. In a situation like this, the County may propose a project that improves the clear zone, reduces the speed limit, installs rumble strips, improves the shoulder, and/or installs guardrail. A combination of these or other similar countermeasures would be planned (as funds allow) to reduce the fatal/serious crash numbers in this location. Over time, as the

number of high-risk locations are reduced, it is anticipated that a reduction in fatal/serious crashes throughout the entire road network would decrease.

In the case of this LRSP, second priority locations are analyzed as an overall Target Zero strategy. Once countermeasures have been implemented at first priority locations, second priority crash locations will be addressed. Second priority crash locations are those where only property damage crashes have occurred or where current road geometry/conditions indicate a high risk for a future crash. Through continued crash data logging, curve analysis, clear zone analysis, sight distance analysis, and outreach, second priority crashes will be reduced.

Upon development of each edition of the LRSP, a draft will be sent to our safety partners for comment. Review is vital to creating a well-rounded plan that addresses countermeasures outside of road design and construction. In reviewing the LRSP, our partners are asked to comment on proposed projects and if justified, suggest additional areas where there may be an opportunity for **education, further evaluation, and/or enforcement**. Douglas County may conduct in-person, virtual meetings, or request suggestions via email. All review comments will be cataloged in the appendix of the LRSP.

The timeline for the LRSP is fairly constricted due to the date of receipt of crash data from WSDOT and the deadline for safety grant applications. This plan will be evaluated on a semi-annual basis and updated as crash data changes. If updated crash data does not indicate new patterns and only serves to reinforce current priorities, the plan will remain the same. Final plan adoption is planned for 2025.

Once the five-year crash data has been evaluated in the LRSP, a qualified team of engineers, road designers, data analysts, and grant specialists is assembled to design projects. Within the County, this team is made up of the entire Transportation Department. This team includes professionals with over 100 years of combined experience in transportation related capital improvement projects. Transportation safety projects are included in our Six-Year Transportation Improvement Program (STIP/TIP) as “Spot Safety Improvements”. As specific safety projects receive funding, they are given their own project number and listed more specifically in the STIP/TIP.

## Existing Efforts

The County’s current efforts to track and map corridors include the use of various tools. The tools below will continue to be used when evaluating crash data and future projects within the County:

- CLCF/Roadlog (GIS-MO) are the central databases within which all Douglas County crash data is stored. Please see the section above for the process of how a crash is entered into these databases.
- GIS (geographic information system) is used to graphically display and analyze crash data. Multiple risk factors can be shown on a single map which helps determine where to apply specific countermeasures. We can also analyze geometric risk factors and create an overall score to prioritize locations.
- Priority Arrays are a tool used by the County to rate STIP/TIP projects. Projects in the Priority Array are evaluated by using several criteria including but not limited to crash data, traffic volume/ADT, surface condition, etc.

- Rieker Curve Advisory Reporting Service (CARS) is a tool that was utilized in 2021 to inventory the geometry and speed of all curves on all Douglas County collector and arterial roads. A detailed report indicates recommended speed and signage on each curve. In some cases, curves may be addressed as part of a road improvement project.
- A clear zone analysis on all collector and arterial roads.
- Vertical curve analysis on all collector and arterial roads.

## Data Analysis and Summary

As stated in the *Process* section of this LRSP, crash data is categorized by various risk factors. This allows us analyze multiple locations by observing patterns and possibly grouping similar road segments into single projects. These categories have been broken into two separate tiers for analysis. Tier 1 categories be broken down into risk factors and countermeasures. Tier 2 are seen as a contributing circumstance or environmental factors outside of our control. In these instances, only an analysis of the data has been completed. The inclusion of our safety partners will help in addressing Tier 2 crashes.

### Risk Factor Criteria

Risk factors are those conditions most prevalent on a road or system of roads that may contribute to an increase in a certain category of fatal/serious crashes. Risk factors can be common or specific depending on the type of crash. In most Counties, an average of six risk factors are used to determine and implement appropriate countermeasures. The following risk factors are used by Douglas County when analyzing crashes:

1. Crashes/Severity/Rate – Roads that receive multiple fatal/serious crashes
2. ADT – Average Daily Traffic (ADT) volume contributes to fatal/serious crashes
3. Horizontal Curves – Inadequate horizontal curves present
4. Posted Speed – Posted speed does not fit current road geometry
5. Functional Classification – Current functional classification does not fit current road conditions
6. Shoulder Width – Inadequate shoulder width
7. Fixed Objects/Clear Zone – Multiple clear zone obstructions
8. Road/Lane Width – Inadequate lane width
9. Surface Type – Surface type contributes to fatal/serious crashes
10. Roadside Rating – Other roadside features contribute to fatal/serious crashes
11. Illumination Presence – Lack of illumination contributes to fatal/serious crashes
12. Advisory Speed Reduction – Speed reduction necessary
13. Grade – Road grade contributes to fatal/serious crashes
14. Lane Delineation/Striping – Lack of lane delineation contributes to fatal/serious crashes

### Countermeasure Criteria:

Countermeasures are the most common industry-wide solutions implemented to address specific risk factors and/or design deficiencies on a road or intersection. Douglas County has relied heavily on the *Washington State Strategic Highway Safety Plan* for many of the countermeasures suggested in this LRSP. Because there are a multitude of countermeasures suggested for each risk factor, we won't be

listing them all. Instead, we will be selecting those that best fit the Douglas County road network for implementation. Refer to each crash category below to review proposed countermeasures.

## 1. Collision Type

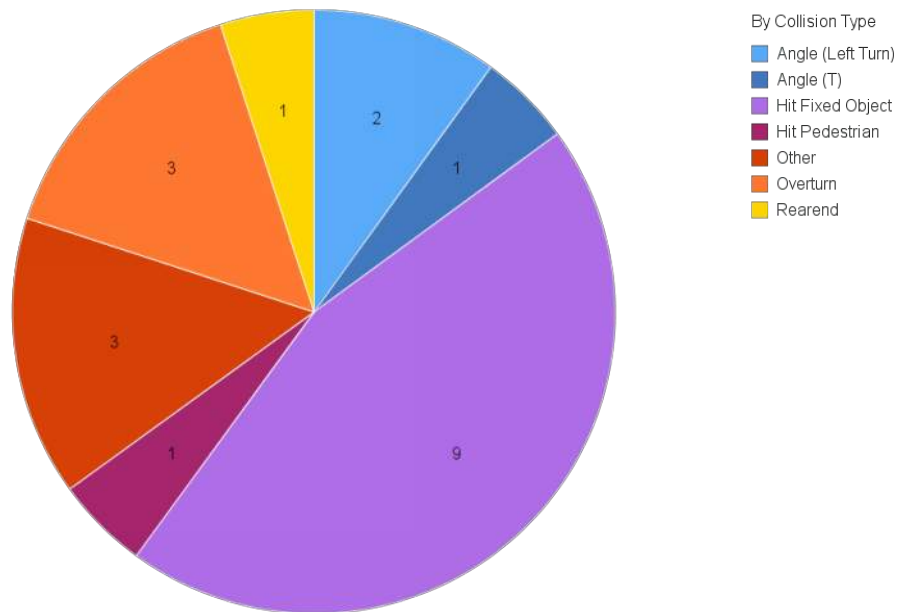


Figure 2 - Fatal/serious injury crashes from 2019-2023 by collision type. Fatal/serious injury crashes on Douglas County owned roads primarily resulted from hitting a fixed object.

### Analysis

Crash data for Douglas County owned roads can be broken up into seven distinct collision types: Hit Fixed Object, Overturn, Other, Angle (left turn), Angle (T), Hit Pedestrian, and Rearend. Hit Fixed Object crashes accounted for the highest number of serious injury or fatality crashes in Douglas County (45%). Fixed objects are defined as structures or natural features within the clear zone of a given roadway. The next highest percentage of fatal or serious injury crashes in Douglas County were Overturn (15%) and Other (15%). Overturn crashes are those where the vehicle has overturned before collision with a fixed object/vehicle, or because of colliding with a fixed object/vehicle. Other types of fatal/serious crashes were Angle<sup>2</sup> (left turn) (10%), Angle (T) (5%), Hit pedestrian(5%), and rear end(5%). Collision type is considered a *Tier 1* category by Douglas County.

### Risk Factors

1. Crashes/severity/rate
2. ADT
3. Horizontal Curves
4. Posted Speed

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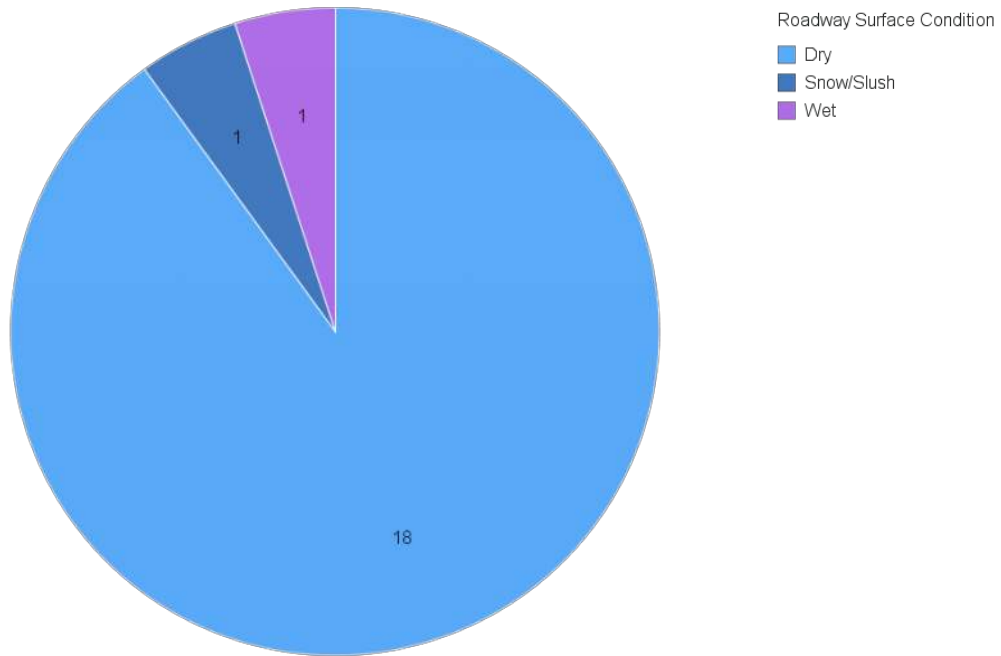
<sup>2</sup> Angle crashes are those where a vehicle is turning left at an intersection and turns into a vehicle or collides with another vehicle.

5. Functional Classification
6. Shoulder Width
7. Fixed Object/Clear Zone
8. Road/Lane Width
9. Advisory Speed Reduction
10. Lane Delineation/Striping

#### **Countermeasures**

1. Develop/Implement Road Safety Plan
2. Clear Zone Improvements
3. Site Distance
4. Reduced Speed
5. Increase Road Width
6. Curve Realignment
7. Rumble Strips
8. Guardrail
9. High Friction Surface
10. Chevron/Curve Warning Signs

## 2. Roadway Surface (Wet/Dry)



*Figure 3 - Fatal/serious injury crashes from 2019-2023 by surface condition. Fatal/serious injury crashes on Douglas County owned roads primarily occurred on dry roads.*

### Analysis

Douglas County crash data categorized by roadway surface condition reveals most fatal/serious injury crashes occur on dry surfaces (90%), followed by snow/slush (5%), and wet (5%). This is considered to be a *Tier 2* category by Douglas County.

### 3. Light Condition

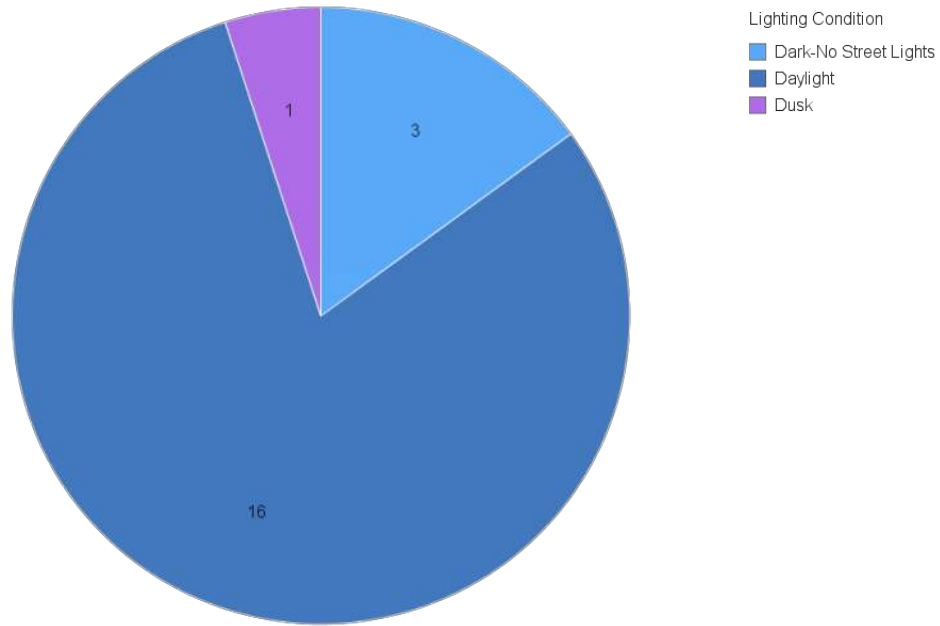


Figure 4 - Fatal/serious injury crashes from 2019-2023 by light condition. Fatal/serious injury crashes on Douglas County owned roads primarily occurred during daylight hours.

#### Analysis

Douglas County crash data categorized by light conditions reveals most fatal/serious crashes occur during Daylight (80%), followed by Dark – No Street Lights (15%), and Dusk (5%). This data indicates that the majority of fatal/serious crashes in Douglas County are occurring when visibility from natural light is highest. This is considered to be a *Tier 2* category by Douglas County.

#### 4. Junction Relationship

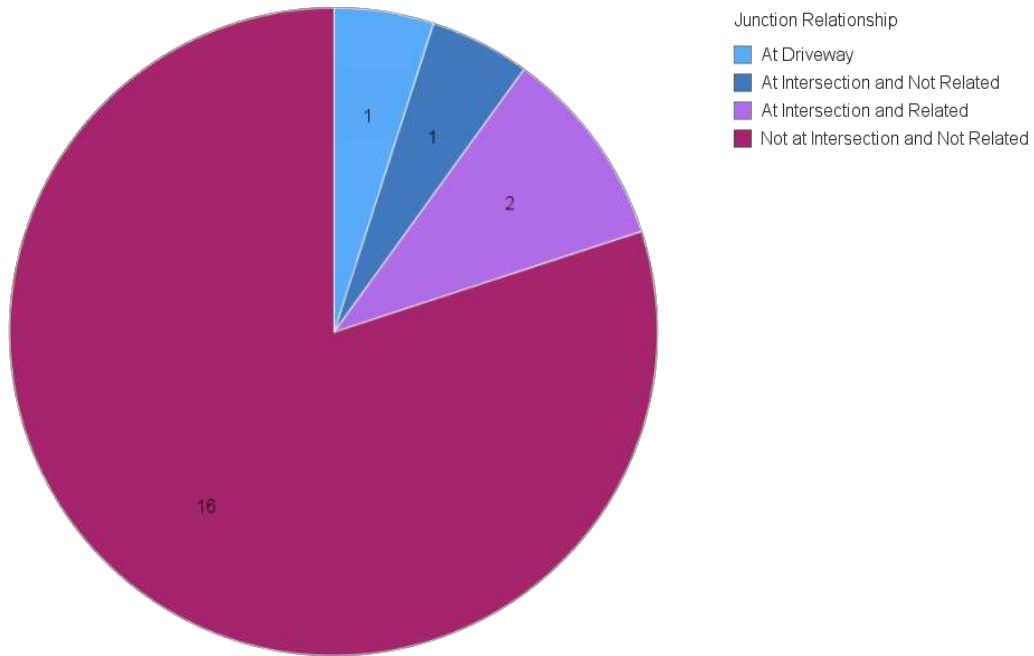


Figure 5 - Fatal/serious injury crashes from 2019-2023 by junction relationship. Fatal/serious injury crashes on Douglas County owned roads primarily occurred on sections of roadway where there were no intersections or intersections were not the cause.

#### Analysis

Douglas County crash data categorized by Junction Relationship indicates that nearly all fatal/serious crashes occur on non-Intersection, segments of roads (80%). Intersections account for 15% of fatal and serious injury collisions, while 5% occur at driveways This is considered a *Tier 1* category by Douglas County.

#### Risk Factors

1. Crashes/Severity/Rate
2. ADT
3. Posted Speed
4. Functional Classification
5. Fixed Objects/Clear Zone
6. Surface Type
7. Illumination Presence
8. Advisory Speed Reduction
9. Lane Delineation/Striping

#### Countermeasures

1. Develop/Implement Road Safety Plan
2. Roundabout

3. Convert to protected left turns
4. Intersection conflict warning signs
5. High friction surface treatment
6. Remove unwarranted signals
7. Optimize signals
8. Restrict/eliminate turning
9. Restrict access to properties
10. Enforcement
11. Speed feedback signage

## 5. Roadway Curvature

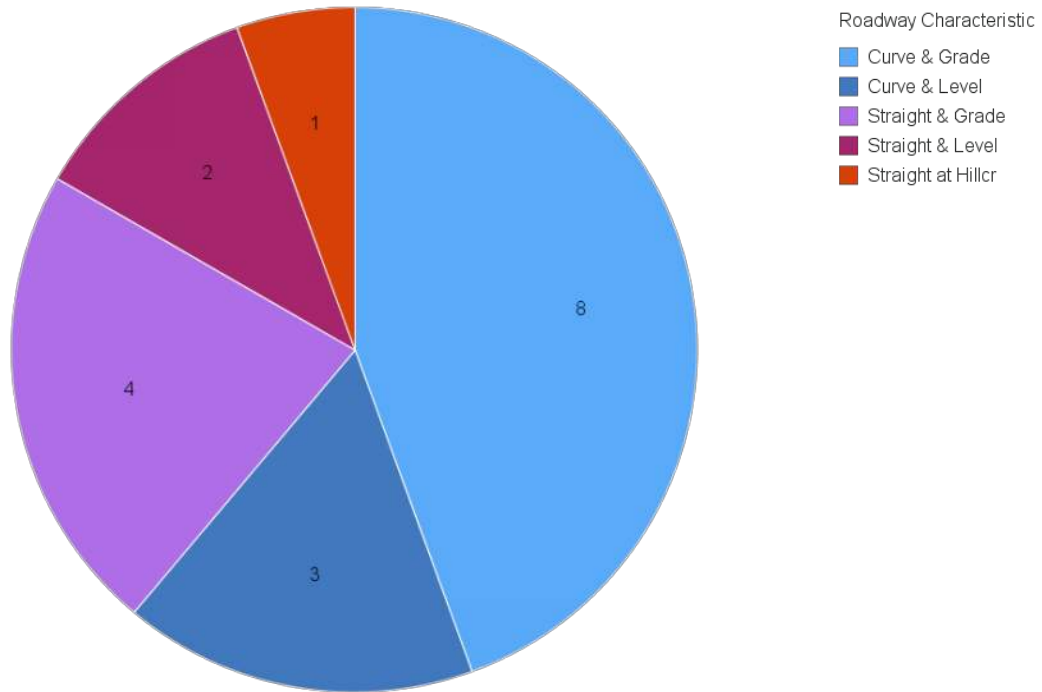


Figure 6 - Fatal/serious injury crashes from 2019-2023 by roadway curvature. Fatal/serious injury crashes on Douglas County owned roads were predominantly on horizontal curves.

### Analysis

Douglas County crash data categorized by roadway curvature indicates a majority of fatal/serious injury crashes occur on horizontal curves (61%), followed by straight vertical curves (22%), then straight and Level (11%) and straight at a hillcrest (5%). Two fatal or serious injury collisions did not have roadway curvature data recorded. Curves play a major role in the overall safety of County roads.

### Risk Factors

1. Crashes/Severity/Rate
2. Horizontal Curves
3. Posted Speed
4. Functional Classification
5. Shoulder Width
6. Fixed Objects/Clear Zone
7. Grade

### Countermeasures

1. Develop/Implement Road Safety Plan
2. Inventory horizontal curves

1. install centerline/edge line rumble strips
2. install raised medians/median barriers
3. install raised pavement markers or profiled centerlines
4. install chevron signs/curve warning signs
5. improve pavement friction
6. install wider edge lines
7. Install interactive truck rollover/curve warning signage
8. Increase/strengthen commercial vehicle inspections
9. Establish commercial vehicle patrols on high risk corridors

## 6. Hit Fixed Object

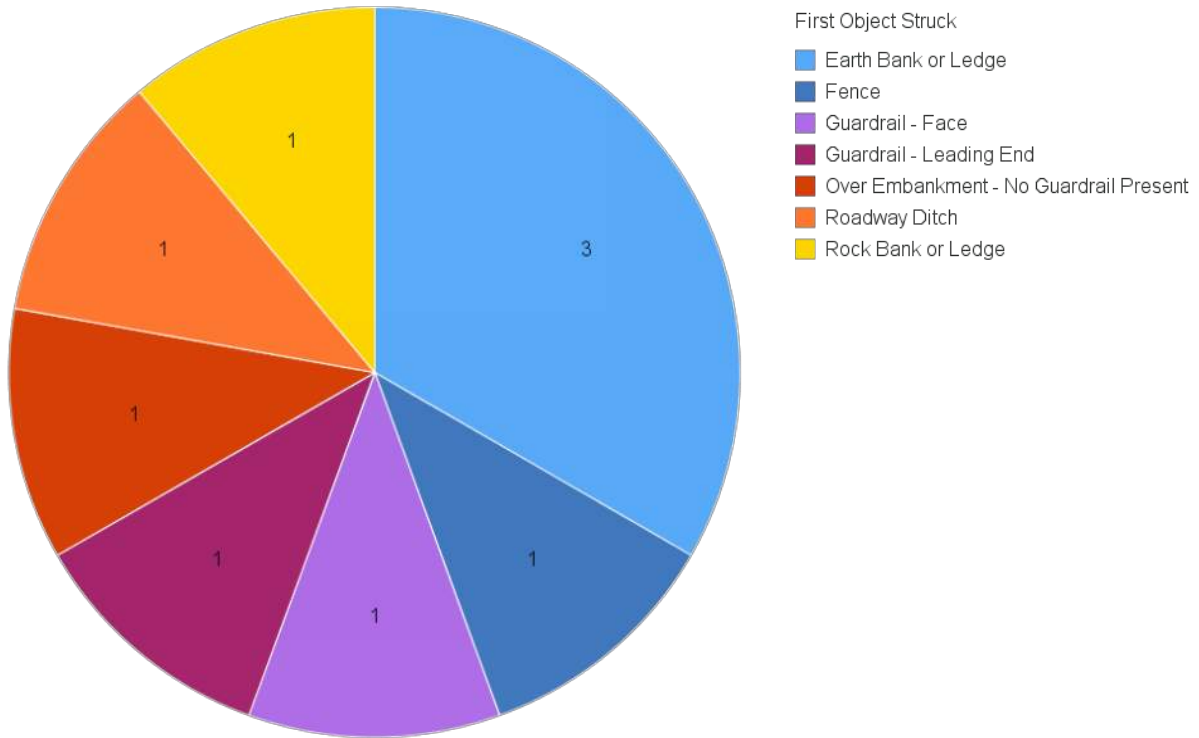


Figure 7 - Fatal/serious injury crashes from 2019-2023 by object hit. Fatal/serious injury crashes on Douglas County owned roads where a fixed object was hit were distributed across many types .

### Analysis

As discussed in the “Collision Type” category above, Hit Fixed Object crashes account for 45% of all fatal/serious crashes in Douglas County. Of fixed objects hit during a fatal/serious crashes, they can be broken down by Earth Bank or Ledge (33%), Fence (11%), Guardrail – Face (11%), Guardrail – Leading End (11%), Roadway Ditch (11%), Over Embankment - No Guardrail present (11%), and Rock Bank or Ledge (11%). Due to the small sample size and spread across many types of fixed object collisions, the County will use total crash data to determine a priority.

### Risk Factors

1. Crashes/Severity/Rate
2. Horizontal Curves
3. Posted Speed
4. Functional Classification
5. Shoulder Width
6. Fixed Object/Clear Zone
7. Grade
8. Lane Delineation/Striping

## Countermeasures

1. Develop/Implement Road Safety Plan
2. inventory fixed objects within clear zone
3. install centerline/edge line rumble strips
4. install raised medians/median barriers
5. install raised pavement markers or profiled centerlines
6. improve pavement friction
7. install wider edge lines
8. install guardrails/concrete barrier/delineation where clear zone objects cannot be removed
9. removed fixed objects within clear zones
10. flatten side slopes
11. remove/replace damaged or non-functional barriers.

## 7. Function Class

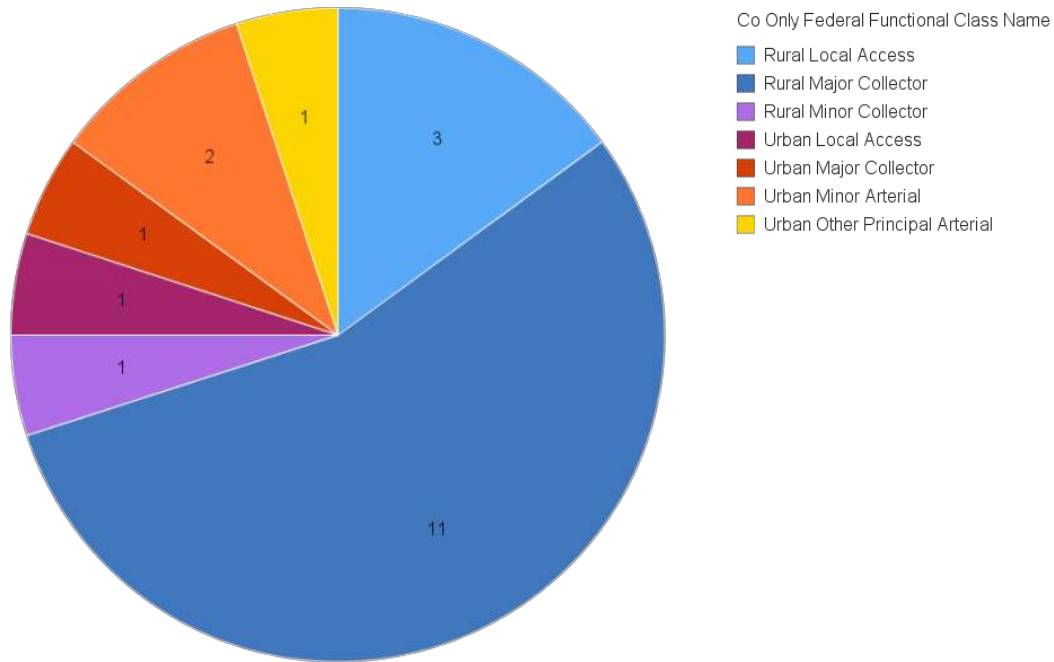


Figure 8 - Fatal/serious injury crashes from 2019-2023 by functional class. Fatal/serious injury crashes on Douglas County owned roads primarily occurred on Rural Major Collectors.

### Analysis

Douglas County crash data categorized by Functional Class reveals most fatal/serious crashes occur on Rural Major Collector roads (55%), followed by Rural Local Access (15%), Urban Minor Arterial (10%), Urban Major Collector (5%), Rural Minor Collector (5%), Urban Local Access (5%), and Urban Other Principal Arterial (5%). Rural Major Collectors are the most common routes for travel between towns and urban centers and hauling freight and goods. This is considered to be a *Tier 2* category by Douglas County.

## 8. Contributing Circumstances

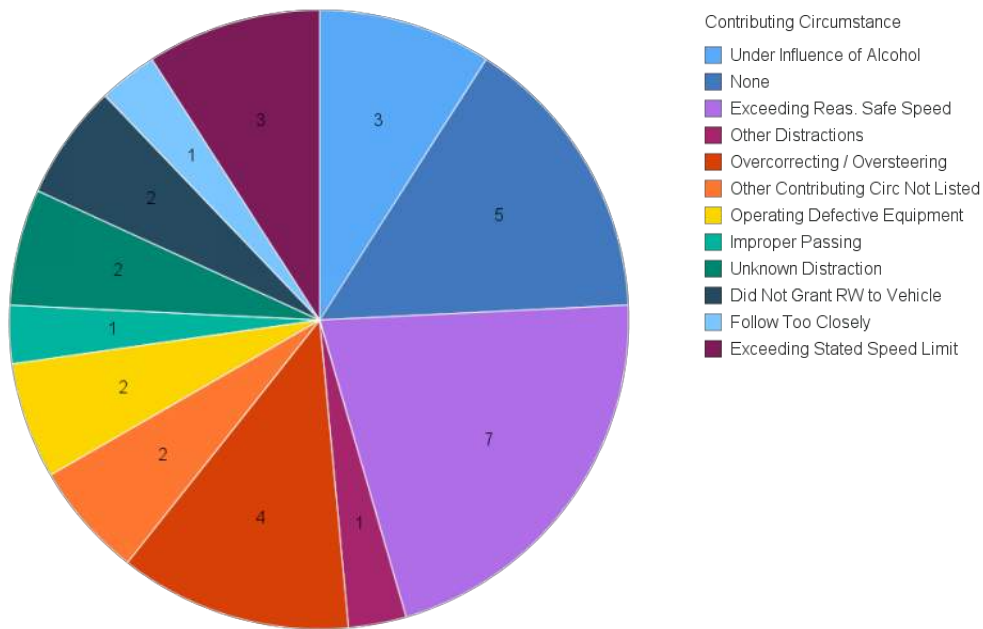


Figure 9 – Fatal/Serious injury crashes from 2019-2023 by contributing circumstances. Fatal/serious injury crashes on Douglas County owned roads included speeding and/or overcrowding/oversteering as the main contributing circumstances.

### Analysis

Contributing Circumstances are those conditions of a crash that can either be the main cause or a secondary factor. In Douglas County the major contributing circumstance to fatal/serious injury crashes is Exceeding Reasonable Safe Speed (21%) followed by Overcorrecting/Oversteering (12%), Exceeding Stated Speed Limit (9%) and Under the Influence of Alcohol/Drugs (9%). This is considered to be a Tier 1 category by Douglas County.

### Risk Factors

Because Contributing Circumstances are involved in other categories of crashes, they become risk factors themselves. Refer to those other categories listed above for a complete list of risk factors and countermeasures.

### Countermeasures

#### Exceeding Safe/Stated Speed

Countermeasures supported by Douglas County include:

1. automated speed enforcement
2. high visibility enforcement
3. equipment support for enforcement
4. audit/reset of speed limits per current road design
5. traffic calming strategies
6. evaluate/increase signage to appropriate intervals

7. variable speed limit signage on weather affected roads
8. speed feedback signs
9. traffic signal coordination to improve traffic flow
10. educate public
11. enforcement in low speed areas/neighborhoods
12. improve data sharing between engineering, enforcement, and education
13. educate prosecutors on speeding violations
14. work with local business/agriculture on safe trucking speeds.

#### Under Influence of Alcohol/Drugs

Countermeasures supported by Douglas County include:

1. parental guidance
2. bartender education
3. well-publicized compliance checks
4. support designated driver/public transportation
5. cannabis training (salesperson/bartender)
6. media campaigns
7. high visibility enforcement campaigns
8. enforce/publicize zero tolerance laws
9. enhance law enforcement training
10. enhance treatment
11. support prosecutors
12. monitoring of DUI offenders
13. expand enforcement along known routes.

#### Inattention/Distracted

Countermeasures supported by Douglas County include:

1. High visibility enforcement
2. education/outreach to driving schools/schools
3. educate enforcement on high crash locations regarding distracted driving
4. educate employers with fleets
5. support parent led groups to working with students.

#### Operating Defective Equipment

Countermeasures supported by Douglas County include:

1. outreach and education of fleet managers and businesses
2. enforcement
3. high visibility enforcement on haul routes and during harvest seasons.

Of the remaining fatal/serious injury crashes by contributing circumstances, most can be remedied with strategies like those employed for lane departure, distracted driving, and impairment.

## 9. Vehicle Type

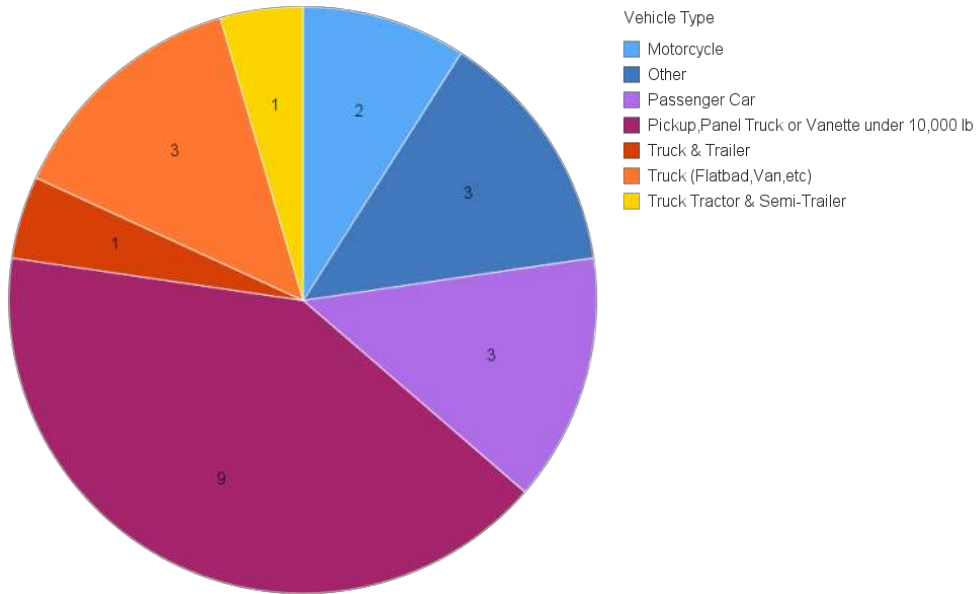


Figure 10 - Fatal/serious injury crashes from 2019-2023 by roadway surface condition. Fatal/serious injury crashes on Douglas County owned roads often involved a Pickup, Panel Truck or Vanette under 10,000 lb.

### Analysis

Douglas County crash data categorized by Vehicle Type reveals many fatal/serious crashes involve Pickup, Panel Truck or Vanette under 10,000 lb (41%), followed by Other, Passenger Car, and Truck (Flatbed, Van, etc.) (all 14%), Motorcycle (10%), Truck & Trailer and Truck Tractor & Semi-Trailer (both 5%). This is considered to be a Tier 2 category by Douglas County.

## 10. Speed Limit

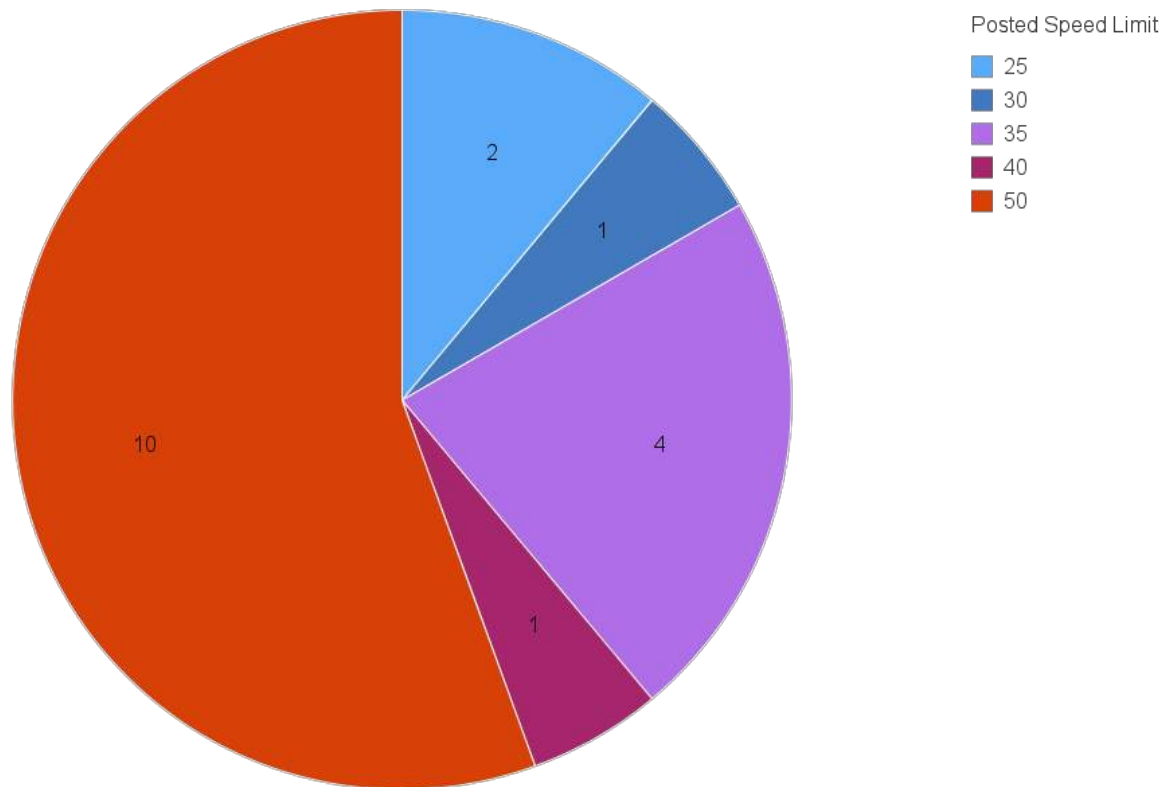


Figure 11 - Fatal/serious injury crashes from 2019-2023 by posted speed limit. Fatal/serious injury crashes on Douglas County owned roads primarily occurred on 50 mph and 35 mph roads.

### Analysis

Douglas County crash data categorized by Speed Limit reveals most fatal/serious injury crashes involve roads where the speed limit is 50 mph (56%), followed by 35 mph (23%), and 25 mph (12%). The speed limit for two fatal/serious injury collisions was not recorded.

### Risk Factors

1. Crashes/Severity/Rate
2. Horizontal Curves
3. Posted Speed
4. Functional Classification
5. Shoulder Width
6. Fixed Object/Clear Zone
7. Road/Lane Width
8. Surface Type
9. Roadside Rating
10. Advisory Speed Reduction
11. Grade

## 12. Lane Delineation/Striping

### **Countermeasures**

1. Automated speed enforcement
2. Enforcement (tools, penalties)
3. Set speed limit for road conditions
4. Increase signage intervals and visibility
5. Electronic variable signage for weather
6. Speed feedback signage
7. Timed/coordinated signals

### 13. Surface Type (Paved/Gravel)

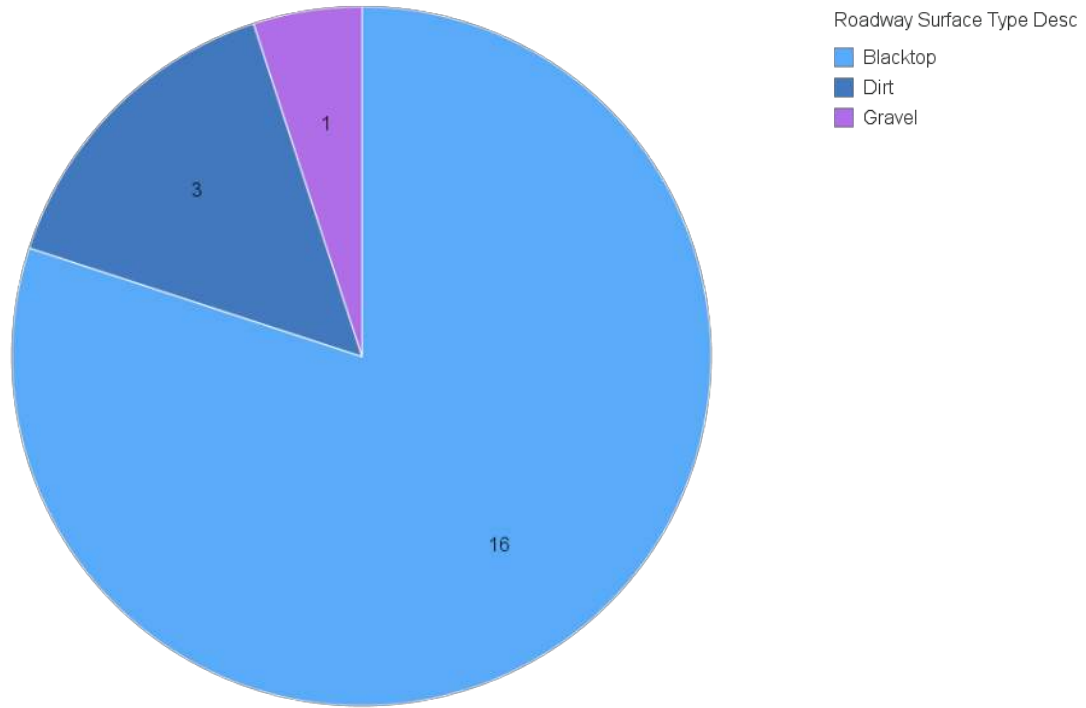


Figure 12 - Fatal/serious injury crashes from 2019-2023 by surface type. Fatal/serious injury crashes on Douglas County owned roads primarily occurred on paved roads.

#### Analysis

Douglas County crash data categorized by roadway surface reveals most fatal/serious crashes occur on Blacktop (80%), followed by Dirt (15%), and Gravel (5%). This is considered to be a *Tier 2* category by Douglas County.

## Evaluation and Implementation

Severe crash location maps (Appendix A) show Injury/Fatality crash routes within Douglas County (based on 2017-2021 data). Although other crashes occur on other roads, these locations have been selected as the highest priority based on their severity. Major roads have been labeled to aid with route location. Each map will be discussed briefly under the Evaluation and Implementation section.

The flow chart below (Figure 14) shows the process by which risk factors are analyzed and used to prioritize potential future projects. Priority is given to Injury/Fatality crashes first, followed by Property Damage crashes, and lastly, low or no crash locations with future crash potential.

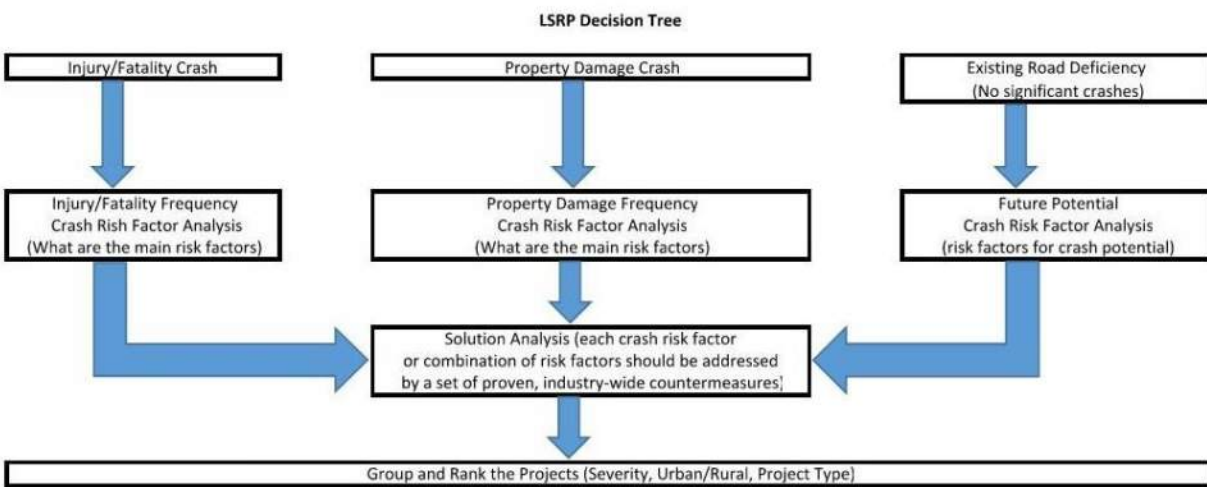


Figure 14 – LRSP Decision Tree

A comprehensive analysis was conducted to determine each crash route within Douglas County. Crash type frequency and location were used to determine the location, beginning, and ending of each route. After reviewing the route description, crash type, and accompanying map, please refer to the *Data Analysis and Summary* section of this LRSP for risk factor and countermeasure options. These are only recommendations and should not be construed as the final plan for each route.

High Injury/Fatality crash routes found in Douglas County consist of the following crash types (based on 2017-2021 data):

1. Crash at Angle (turn)
2. Under Influence of Alcohol/Drugs
3. Operating Defective Equipment
4. Inattention/Distracted
5. Exceeding Safe Stated Speed

6. Crash with Bridge
7. Crash with Earth Bank
8. Crash with Guardrail
9. Crash with Embankment
10. Crash with Roadway Ditch
11. Crash with Utility Pole
12. Crash with Various Fixed Object
13. Overturn Crash
14. Rear-end Crash
15. Sideswipe Crash (opposite direction)
16. Sideswipe Crash (same direction)
17. Crash with Wildlife

The following section looks at crash zones where serious injury or fatality crashes are concentrated.

### **2019-2023 Crash Locations**

The 2019-2023 collision data analysis identified Badger Mountain Road and McNeil Canyon Road as key locations with multiple serious injury or fatality crashes, with three collisions on Badger Mountain Road and four collisions on McNeil Canyon Road. One collision occurred at each of these locations: N Baker Ave, Grant Rd, Rock Island Rd, Coulee Meadows, Browns Canyon Rd, Bridgeport Rd, Crane Orchard Rd, 10th St NE, Rock Island Grade, Road 27 NE, S Douglas Rd, Road 8 NW, and Barry Rex Rd.

#### Badger Mtn Rd

Three serious injury or fatality collisions occurred on the Badger Mountain Road. None of these collisions occurred at intersections. The collisions involved multiple vehicle types, including pickup trucks, motorcycles, and larger trucks. The contributing factors include speeding, alcohol influence, equipment failure, and hazardous maneuvers.

#### McNeil Canyon Rd

Four serious injury or fatality collisions occurred on McNeil Canyon Road, all involving trucks under clear weather conditions during daylight hours on a dry roadway surface. None of these serious injury or fatality crashes occurred at intersections. The collision types varied, including vehicle overturning, fire starting within the vehicle, and colliding with an earth bank or ledge. Key contributing factors were operating defective equipment and exceeding the speed limit.

### **2017-2021 Crash Locations**

*East Wenatchee – North (Figure 15)*

#### Badger Mtn Rd – Urban

A review of Badger Mtn Rd from Eastmont Ave to the Urban Area Boundary indicates crashes at the intersection with Eastmont Ave, at the curve east of Daniels Dr, and at the intersections the major developments in Fancher Heights. Crash routes along this road are primarily Crash at Angle, Under Influence of Alcohol/Drugs, Exceeding Safe Stated Speed, and Rear-end.

### Eastmont Ave

A review of Eastmont Ave indicates crashes at the intersection with Badger Mtn Rd, at the intersection with Fancher Field Rd/N Baker Ave, at Canyon B Bridge, and at the curve east of the intersection with US Hwy 2/97. Crash routes along this road are primarily Crash with Bridge Rail, Overturn Crash, and Rear-end.

### Fancher Field Rd

A review of Fancher Field Rd indicates Injury/Fatality crashes within the Fancher Heights residential area and at the bottom of the grade at the curve and near the intersection with Eastmont Ave. Crash routes along this road are primarily Exceeding Safe Stated Speed, Crash with Earth Bank, and Rear-end.

### N Baker Ave

A review of North Baker Ave indicates Injury/Fatality crashes west of the intersection with Eastmont Ave. Crash routes along this road are primarily Crash with Guardrail.

### NW Cascade Ave

A review of NW Cascade Ave indicates Injury/Fatality crashes from 29<sup>th</sup> St NW to US Hwy 2. Crash routes along this road include Inattention/Distraction, Crash with Utility Pole, and Crash with Various Fixed Object.

### *East Wenatchee – South (Figure 16)*

### N Lyle Ave

A review of N Lyle Ave indicates Injury/Fatality crashes at the intersections with 5<sup>th</sup> St NE and 8<sup>th</sup> St NE. Crash routes along this road include Crash at Angle (turn) only.

### Grant Rd

A review of Grant Rd indicates Injury/Fatality crashes at multiple sections. Crash routes along this road include Crash at Angle (turn), Exceeding Safe Stated Speed, Crash with Earth Bank, Crash with Guardrail, Crash with Various Fixed Object, Rear-end Crash, and Crash with Wildlife.

### S Nile Ave

A review of S Nile Ave indicates Injury/Fatality crashes at the lower section between 8<sup>th</sup> St SE and Rock Island Rd through the “S” turns. Crash routes along this road are primarily Crash with Guardrail.

### Rock Island Rd

A review of S Kentucky Ave indicates Injury/Fatality crashes at the intersection with 8<sup>th</sup> St SE. The crash routes along this road are primarily Crash at Angle (turn).

### S Kentucky Ave

A review of Rock Island Rd indicates Injury/Fatality crashes at the intersection with 8<sup>th</sup> St SE (East Wenatchee) and near Riverside Dr (Rock Island). The crash routes along this road are primarily Crash at Angle (turn) and Crash with Utility Pole.

*Badger Mountain Rd Corridor (Figure 17)*

Road S SW

A review of Road S SW indicates Injury/Fatality crashes south of Badger Mtn Rd. The crash routes along this road are primarily Inattention/distraction.

*Palisades/Rimrock Meadows (Figure 18)*

Palisades Rd

A review of Palisades Rd indicates Injury/Fatality crashes east of SR-28. The crash routes along this road are primarily Under Influence of Alcohol/Drugs.

Coulee Meadows/Moses Coulee Rd

A review of Coulee Meadows/Moses Coulee Rd indicates Injury/Fatality crashes along the mid-section and end of the corridor. The crash routes along this road are Inattention/Distracted in the mid-section and Overturn at the curve just south of US Hwy 2.

Road H SW

A review of Road H SW indicates Injury/Fatality crashes along the mid-section, north of Slack Canyon Rd. The crash routes along this road are primarily Exceeding Safe Stated Speed.

*Browns Cyn/McNeil Cyn Rd (Figure 19)*

Waterville N Rd/Road 8 NW

A review of Waterville N Rd/Road 8 NW indicates Injury/Fatality crashes along the northern end of Waterville N Rd and along the western and mid-section of Road 8 NW. The crash routes along this road include Overturn, Crash with Wildlife, and Exceeding Safe Speed.

Browns Canyon Rd

A review of Browns Canyon Rd indicates Injury/Fatality crashes west of Waterville North Rd and along the mid-sections. The crash routes along this road include Crash with Earth Bank and Crash with Roadway Ditch.

Road P NW

A review of Road P NW indicates Injury/Fatality crashes south of Browns Canyon Rd. The crash routes along this road include Overturn only.

Brays Landing Rd

A review of Brays Landing Rd indicates Injury/Fatality crashes along the northern section, south of US Hwy 97. The crash routes along this road include Operating Deficient Equipment and Crash with Various Fixed Object.

### Bauers Landing

A review of Bauers Landing and the roads found within indicates Injury/Fatality crashes found throughout the development. The crash routes found within this road include Crash with Various Fixed Object only.

### Sun Cove

A review of Sun Cove and the roads found within indicates Injury/Fatality crashes found throughout the development. The crash routes found within this road include Sideswipe Crash Same Direction only.

### Logan Rd

A review of Logan Rd indicates Injury/Fatality crashes found along the mid-section and northern end of the road. The crash routes found within this road include Crash with Wildlife only.

### McNeil Canyon Rd/Road 15 NW

A review of McNeil Canyon Rd/Road 15 NW indicates Injury/Fatality crashes found along the entire road. The crash routes found within this road include Crash with Guardrail, Crash with Wildlife, Crash with Earth bank, Crash with Roadway Ditch, Inattention/Distracted, Crash with Various Fixed Object, and Exceeding Safe Stated Speed.

### Road D NW

A review of Road D NW indicates Injury/Fatality crashes found north Road 15 NW. The crash routes found within this section of road include Inattention/Distracted.

### *Bridgeport (Figure 20)*

#### Bridgeport Hill Rd

A review of Bridgeport Hill Rd indicates Injury/Fatality crashes found along the mid-section and north end of the road. The crash routes found within these sections of road include Crash with Roadway Ditch, Overturn, and Crash with Wildlife.

#### Mansfield N Rd

A review of Mansfield N Rd indicates Injury/Fatality crashes found along the northern end of the road. The crash routes found within this section of road include Exceeding Safe Stated Speed.

#### Moe Rd NE/Grange Rd

A review of Moe Rd NE/Grange Rd indicates Injury/Fatality crashes found along the mid-section of the road. The crash routes found within this section of road include Inattention/Distracted and Sideswipe Crash Same Direction.

#### Crane Orchard Rd

A review of Crane Orchard Rd indicates Injury/Fatality crashes from SR 173 to Central Ferry Canyon Rd. The crash routes found within this section of road include Crash with Various Fixed Object.

### Central Ferry Canyon Rd

A review of Central Ferry Canyon Rd indicates Injury/Fatality crashes at the mid-section, east of Crane Orchard Rd. The crash routes found within this section of road include Inattention/Distraction only.

### *Smith Lake Rd/Rex (Figure 21)*

### Road 31 Rex

A review of Road 31 Rex indicates Injury/Fatality crashes at the western section, east of Smith Lake Rd. The crash routes found within this section of road includes Exceeding Safe Stated Speed and Crash with Embankment.

## Appendix A: Acronyms

ADT – Average Daily Traffic

CLCF – Collision Location & Coding Form

CRAB – County Road Administration Board

DCTLS – Douglas County Transportation & Land Services

GIS – Geographic Information Systems

GISMO – GIS Mobility/Roadlog Program

HAL – High Accident Location

LRSP – Local Road Safety Plan

STIP – Six Year Transportation Improvement Program

BAC – Blood Alcohol Content

## Appendix B: Glossary

### **Alcohol Impairment**

Any driver with a BAC of .08 or higher

### **Blood Alcohol Concentration**

BAC is measured as a percentage by weight of alcohol in the blood. A BAC of 0.01 g/dl and higher indicates alcohol was consumed, a BAC of 0.08 g/dl indicates intoxication.

### **Contributing Circumstances**

An element or driving action that, in the reporting officer's opinion, best describes the main cause of the crash.

### **Contributing Circumstances (second, third, fourth vehicle)**

Elements of a crash attributed to the other vehicles involved.

### **Countermeasures**

Reactive corrections used to mitigate the impacts of risk factors present on a road or intersection where multiple crashes occur with similar contributing circumstances.

### **Crash**

An unintended event that causes death, injury, or property damage and involves one motor vehicle or bicyclist on a public roadway.

### **Distracted Driver**

An individual who's attention has been taken away from the task of driving. Activities associated with a distracted driving crash include the following attributes recorded by the investigating officer: looked but did not see; distracted by vehicle occupant or object; while using a cell phone; adjusting vehicle controls; distracted by object/person outside the vehicle/ eating, drinking or smoking; emotional or lost in thought; other or unknown distraction.

### **Fatality**

A person who died within 30 days of a crash as a result of injuries sustained in the crash.

### **Heavy Truck**

- Any vehicle with a trailer classified at gross vehicle weight rating (GVWR) of 10,001 lbs. or more, or a single vehicle of 26,000 lbs. or less that is commercial driver license (CDL) required, or a commercial vehicle supplement to the crash report.
- A vehicle type of truck and trailer, truck tractor, truck tractor and semi-trailer, or truck-double trailer combination.
- A vehicle usage classification of concrete mixer, dump truck, logging truck, refuse/recycle truck, van over 10,001 lbs., tanker truck, or auto carrier.

**Impaired Driver**

Any driver with a BAC of .08 or greater and/or any driver with a positive result on a drug test or through an investigating officer or drug recognition expert (DRE) assessment of impairment.

**Motor Vehicle**

Any motorized device in, upon, or by which any person or property is or may be transported or drawn upon a public roadway, excepting devices used exclusively upon stationary rails or tracks. This includes every motorized vehicle that is self-propelled or propelled by electric power (excluding motorized wheelchairs), including that obtained from overhead trolley wires but not operated on rails.

**Non-motorist**

Any person who is not an occupant of a motor vehicle in transport; includes the following:

- Pedestrian
- Bicyclists, tricyclists, and unicyclists
- Occupants of parked motor vehicles
- Others such as people riding on animals and persons riding in animal-drawn conveyances

**Passenger**

Any occupant of a motor vehicle who is not a driver

**Pedestrian**

Any person not in or upon a motor vehicle or other vehicle but include persons on personal conveyance devices, such as foot scooters, skateboards, in-line skates, etc. Pedestrians also include people using any type of mobility assistive device such as a wheelchair, walker, or scooter.

**Risk Factors**

Roadway and intersection features that influence one or many categories of accidents. Data can be qualitative or quantitative.

**Rural**

Any area, incorporated and unincorporated, with a population of less than 5,000.

**Serious Injury**

Any injury other than a fatal injury that prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred. This definition applies to traffic crash data only. This is not the legal definition or medical definition of serious injury.

**Speeding**

Speeding occurs when drivers travel above the posted speed limit or too fast for conditions. Drivers may be traveling well under the posted speed limit, but may be considered speeding when road, traffic, or weather conditions such as icy roads, poor visibility, or fog may cause drivers to lose control of their vehicles or increase normal stopping distance.

**Tier 1 Category**

Crash categories that can be broken down into risk factors and countermeasures

**Tier 2 Category.**

Crash categories that involve a contributing circumstance or environmental factor outside the control of Douglas County.

**Urban**

Any incorporated area with a population of over 5,000.

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