LEWIS-CLARK VALLEY MPO

Regional Safety Action Plan

Technical Memorandum #1

Safety Analysis

March 2024

LEWIS-CLARK VALLEY METROPOLITAN PLANNING ORGANIZATION REGIONAL SAFETY ACTION PLAN

TECHNICAL MEMORANDUM #1 – SAFETY ANALYSIS
MARCH 2024

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Table of Contents

List of Figures

List of Tables

List of Acronyms

A	Serious Injury Crash
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
BIL	Bipartisan Infrastructure Law
CCR	Critical Crash Rate
CMV	Commercial Motor Vehicle
EPDO	Equivalent Property Damage Only
FHWA	Federal Highway Administration
GFA	Geographic Focus Area
GIS	Geographic Information System
HSIP	Highway Safety Improvement Program
HSM	Highway Safety Manual
ITD	Idaho Transportation Department
K	Fatal Crash
LCVMPO	Lewis-Clark Valley Metropolitan Planning Organization
PSI	Potential for Safety Improvement
RSAP	Regional Safety Action Plan
SHSP	Strategic Highway Safety Plan
SS4A	Safe Streets and Roads for All
T	Total Fatal and Serious Injury Crashes
TWLTL	Two-Way Left-Turn Lane
USDOT	United States Department of Transportation
VMT	Vehicle Miles Traveled
WSDOT	Washington State Department of Transportation

1. Introduction

Lewis-Clark Valley Metropolitan Planning Organization (LCVMPO) is preparing a Regional Safety Action Plan (RSAP). The RSAP will present a holistic, well-defined strategy to reduce roadway fatalities and serious injuries in the LCVMPO region.

The RSAP will analyze safety needs, identify high-risk locations and factors contributing to crashes, and prioritize strategies to address them.

The RSAP will meet eligibility requirements that allow local jurisdictions to apply for Implementation Grants from the United States Department of Transportation (USDOT) Safe Streets and Roads for All (SS4A) discretionary grant program.[1] The grant program was established by the Bipartisan Infrastructure Law (BIL) with $5 billion in appropriated funds, 2022-2026.

Technical Memorandum #1 provides an overview of the safety analysis methodology and results, leading to identification of a high-risk roadway network.

1.1. SS4A Grant Program Overview

The purpose of the SS4A discretionary grant program is to fund improvements and strategies to prevent roadway fatalities and serious injuries of all users of our highways, streets, and roadways: pedestrians, bicyclists, public transportation users, motorists, personal conveyance and micro-mobility users, and commercial vehicle operators.

The program provides funding to develop a comprehensive safety action plan (Action Plan) that identifies the most significant roadway safety concerns in a community, and implementation of projects and strategies to address roadway safety issues. SS4A requires that an eligible Action Plan be in place before jurisdictions may apply for funding to implement projects and strategies.

The SS4A programs provides Federal funds for two types of grants:

- **Planning and Demonstration Grants** to prepare an Action Plan. The goal of an Action Plan is to develop a holistic, well-defined strategy to prevent roadway fatalities and serious injuries in a locality, Tribe, or region.
- **Implementation Grants** to implement projects and strategies identified in an Action Plan to address a roadway safety problem. Projects and strategies may be infrastructure, behavioral, and/or operational activities. Applicants must have a qualifying Action Plan that meets the eligibility requirements to apply for Implementation Grants. In addition, applicant agencies must have ownership and/or maintenance responsibilities over a roadway network, safety responsibilities that affect roadways, or an agreement from the agency that has ownership and/or maintenance responsibilities for the roadway within the applicant's jurisdiction.

1.2. Safety Action Plan Components

SS4A requires an eligible Action Plan be in place before applying to implement projects and strategies. An eligible Action Plan is determined by the Self-Certification Eligibility Worksheet.[2] The Action Plan requirements are summarized in **Table 1.1**.

[1] https://www.transportation.gov/grants/SS4A
[2] https://www.transportation.gov/sites/dot.gov/files/2023-03/SS4A-Self-Certification-Eligibility-Worksheet-FY23.pdf

Table 1.1 – Action Plan Requirements

Action Plan Element		Required or Optional
The Safety Action Plan must include the three elements:		
1. **Safety Analysis:** Does the Action Plan include all the following?	Analysis of existing conditions and historical trends to baseline the level of crashes involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region;	Required Action Plan Elements
	Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types;	
	Analysis of systemic and specific safety needs, as needed (e.g., high risk road features, specific safety needs of relevant road users);	
	A geospatial identification (geographic or locational data using maps) of higher risk locations.	
2. **Strategy and Project Selections**: does the plan identify a comprehensive set of projects and strategies to address the safety problems in the Action Plan, time ranges when projects and strategies will be deployed, and explain project prioritization criteria?		Required Action Plan Element
3. **Completion Date:** Was the plan finalized and/or last updated between 2018 and June 2023[3]?		Required Action Plan Element
The Safety Action Plan must include at least four of the following six optional requirements:		
4. Are both of the following true: **Leadership Commitment:** Did a high-ranking official and/or governing body in the jurisdiction publicly commit to an eventual goal of zero roadway fatalities and serious injuries? **Goal:** Did the commitment include either setting a target date to reach zero, OR setting one or more targets to achieve significant declines in roadway fatalities and serious injuries by a specific date?		Optional Action Plan Element Included in RSAP scope of work
5. **Planning Structure:** To develop the Action Plan, was a committee, task force, implementation group, or similar body established and charged with the plan's development, implementation, and monitoring?		Optional Action Plan Element Included in RSAP scope of work
6. **Engagement and Collaboration**: Did the Action Plan development include all the following activities? ▪ Engagement with the public and relevant stakeholders, including the private sector and community groups. ▪ Incorporation of information received from the engagement and collaboration into the plan. ▪ Coordination that included inter- and intra-governmental cooperation and collaboration, as appropriate.		Optional Action Plan Element Included in RSAP scope of work

[3] Dates for 2024 applications are anticipated to be 2019 and 2024

Action Plan Element	Required or Optional
7. **Equity Considerations**: Did the Action Plan development include the following? ▪ Considerations of equity using inclusive and representative processes. ▪ Identification of underserved communities through data. ▪ Equity analysis, in collaboration with appropriate partners, focused on initial equity impact assessments of the proposed projects and strategies, and population characteristics.	Optional Action Plan Element Included in RSAP scope of work
8. **Policy and Process Changes:** Are both of the following true? ▪ Plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety; and ▪ Plan discusses implementation through the adoption of revised or new policies, guidelines, and/or standards.	Optional Action Plan Element Included in RSAP scope of work
9. **Progress and Transparency**: Does the plan include the following? ▪ A description of how progress will be measured over time that includes, at a minimum, outcome data. ▪ The plan is posted publicly online.	Optional Action Plan Element Included in RSAP scope of work

1.3. Safe System Approach

RSAP recommendations will be based on a Safe System Approach. The Safe System Approach is adopted by the USDOT as the guiding paradigm to address roadway safety and mitigate the risk inherent in our complex transportation system.[4]

The Safe System Approach builds multiple layers of protection to prevent crashes from happening and minimize the harm should a crash occur. The Safe System Approach focuses on human mistakes and human vulnerability to design a system with redundancies in place to protect everyone. A Safe System Approach includes the principles as summarized in **Figure 1-1**.

Implementing a Safe System Approach requires moving away from traditional safety paradigms, as summarized in the following list and in **Table 1.2.**[5]

- The Safe System approach seeks to prevent death and serious injuries.
- In addition to trying to improve human behavior, the Safe System approach

Figure 1-1 – Safe System Approach

Source: USDOT, https://www.transportation.gov/NRSS/SafeSystem

[4] https://www.transportation.gov/NRSS/SafeSystem
[5] https://highways.dot.gov/safety/zero-deaths/safe-system-approach-presentation-0

designs for human mistakes and limitations.

- While the traditional safety approach focuses on controlling speeding, the Safe System approach includes speed and other strategies to reduce system kinetic energy.
- Rather than asserting that only individual roadway users are responsible, the Safe System approach aims to share responsibility among system users, managers, and others.
- Instead of reacting based on crash history, the Safe System approach proactively identifies and addresses risks.

Table 1.2 – Safe System Approach Paradigm

Traditional Approach to Safety	Safe System Approach Paradigm
Prevent crashes	Prevent death and serious injury
Improve human behavior	Design for human mistakes/limitations
Control speeding	Reduce system kinetic energy
Individuals are responsible	Share responsibility
React based on crash history	Proactively identify and address risks

1.4. Idaho Strategic Highway Safety Plan

Idaho's goal is to have zero traffic-related fatalities as documented in the Idaho Strategic Highway Safety Plan (SHSP). A SHSP is a requirement of the Highway Safety Improvement Program (HSIP) (23 U.S.C. § 148) and is a statewide-coordinated safety plan that provides a comprehensive framework for reducing fatalities and serious injuries on all public roads.

The strategies identified within the Idaho SHSP are focused on efforts related to the four E's of safety:

- Engineering
- Education
- Emergency Medical Services
- Enforcement

The Idaho SHSP identified eleven focus areas to reach the Zero Fatalities goal.

- Aggressive Driving
- Distracted Driving
- Impaired Driving
- Occupant Protection
- People Who Walk or Bicycle
- Mature Drivers
- Motorcycles
- Youthful Drivers
- Commercial Motor Vehicles
- Intersections
- Lane Departure

1.5. Washington Highway Safety Plan

Washington's goal is to reduce traffic fatalities and serious injuries to zero by 2030 as documented in the Washington Highway Safety Plan (SHSP). A SHSP is a requirement of the Highway Safety Improvement Program (HSIP) (23 U.S.C. § 148) and is a statewide-coordinated safety plan that provides a comprehensive framework for reducing fatalities and serious injuries on all public roads.

The Washington SHSP identified eleven emphasis safety areas to focus on to reach Target Zero goals. Additionally, each emphasis area is given a classification of priority level one or two. Priority level one includes factors that consist of at least 25 percent of total fatalities, and priority level two is factors consisting of less than 25 percent of total fatalities.

- Impairment (Priority Level One)
- Distraction (Priority Level One)
- Speeding (Priority Level One)
- Unrestrained Occupants (Priority Level Two)
- Lane Departures (Priority Level One)
- Intersections (Priority Level One)
- Young Drivers (16-25) (Priority Level 1)
- Pedestrians and Bicyclists (Priority Level Two)
- Motorcyclists (Priority Level Two)
- Older Drivers 70+ (Priority Level Two)
- Heavy Trucks (Priority Level Two)

1.6. LCVMPO RSAP Project Overview

The LCVMPO RSAP will serve as the eligible Safety Action Plan to enable local jurisdictions to apply for the SS4A Implementation discretionary grant program. Development of the LCVMPO RSAP includes the following tasks as listed in **Table 1.3,** designed to meet Action Plan eligibility requirements**.**

Table 1.3 – LCVMPO RSAP Tasks

RSAP Task	Purpose
Task 1: Project Management	Bi-weekly coordination with LCVMPO Project Management Team, to complete the project on-schedule.
Task 2: Planning Structure	Coordinate with the RSAP Steering Team. The Steering Team is composed of representatives of cities, counties, Idaho Transportation Department (ITD), and Washington State Department of Transportation (WSDOT). The Steering Team meets quarterly during project development. In addition, two rounds of stakeholder meetings will be conducted. Meetings are organized into Geographic Focus Areas (GFA). Meetings will be held within each GFA to review safety analysis results and to discuss projects, strategies, and project types.
Task 3: Leadership and Goal Setting	Regional leaders will be asked to consider adopting or approving a Safety Commitment Resolution. The Safety Commitment Resolution will be presented to regional stakeholders at a Regional Safety Workshop in September 2024 for consideration.
Task 4: Safety Analysis	Includes analysis of existing data and trends, identification of risk factors, and high-risk locations.
Task 5: Engagement and Collaboration	A project website has been established, available at www.lcvmposafetyplan.org. Community organization stakeholder meetings will be held in conjunction with the GFA meetings.
Task 6: Equity Considerations	The safety analysis incorporates equity into the selection of priority segments. The analysis identifies concentrations of disadvantaged or vulnerable populations. The equity analysis utilizes tools published by LCVMPO and by the Federal Highway Administration (FHWA).
Task 7: Policy and Process Changes	Existing policies, programs, and practices will be reviewed that may impact safety. Opportunities for change will be identified. Potential engineering, enforcement, or education policies or practices will be recommended.
Task 8: Strategy and Project Type	The RSAP will recommend and prioritize countermeasures, strategies, and project types to prevent fatalities and serious injuries.

RSAP Task	Purpose
Task 9: Final Report, Safety Resolution, and Safety Summit	A final report will summarize study findings and recommendations. The final report will be presented to stakeholders at a Regional Safety Workshop in September 2024.

1.7. Document Organization

This document is organized into the following sections:

- **Section 1** introduces the RSAP and provides background information.
- **Section 2** summarizes the LCVMPO study area.
- **Section 3** describes the safety data analysis method.
- **Section 4** describes the results of the regional-scale safety analysis.
- **Section 5** describes the results of the individual Geographic Focus Area safety analysis.
- Appendices

2. Study Area

The RSAP study area includes each jurisdiction within the LCVMPO area, as illustrated in **Figure 2-1**. To organize the jurisdictions within the LCVMPO area into manageable analysis areas, jurisdictions are organized into two Geographic Focus Areas (GFA), Nez Perce County and Asotin County. A map of the GFAs is included in **Figure 2-1**. The safety analyses presented in subsequent sections of this Technical Memorandum are presented by GFA, as well as a regional level analysis. Roadways within the study area are divided into the following three categories:

- State Routes: ITD- and WSDOT-maintained roads.
- Federal Aid Routes: Local jurisdiction-maintained roads eligible for federal funding.
- Local Streets: Local jurisdiction-maintained roads that are not Federal Aid routes.

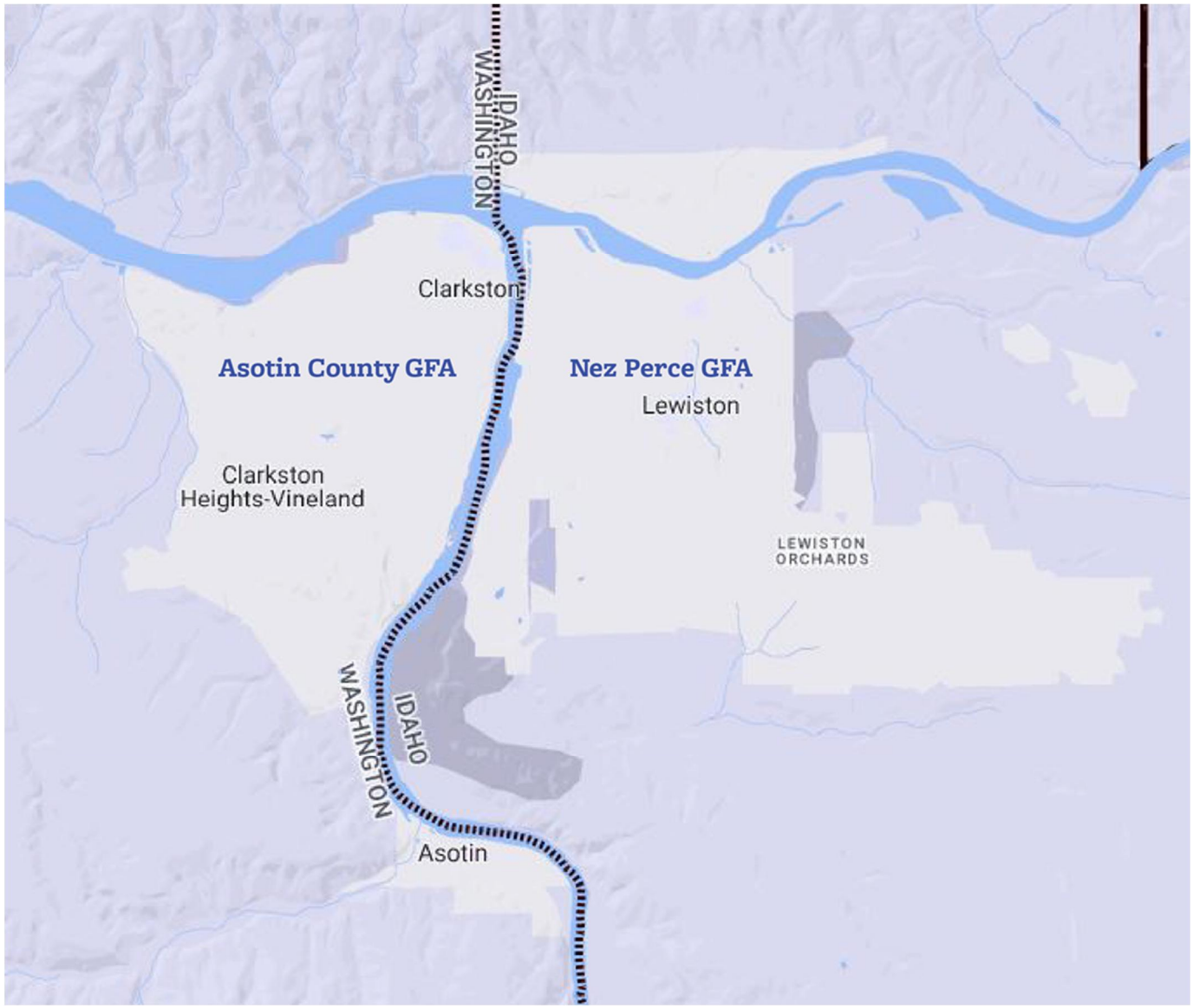

Figure 2-1 – LCVMPO Study Area by Jurisdiction and GFA

3. Safety Analysis Methodology

Three safety analysis methodologies are applied. The three methodologies listed below lead to the identification of intersections and roadway segments with potential for safety improvement. The safety analysis methodologies are:

- SHSP Emphasis Area Analysis
- Historical Crash Analysis
- Crash and Network Screening Analysis

Each analysis is explained in the following sections.

3.1. SHSP Focus/Priority Area Analysis

The SHSP focus/priority area analysis compares the number of fatal and serious injuries for each of the eleven Idaho and Washington SHSP focus/priority areas. Below is each state's eleven SHSP focus/priority areas. A ranking is assigned to each focus/priority area for the GFA based on the frequency fatal and serious injuries for that focus/priority area. This analysis helps to determine priorities for each GFA, based on whether the ranked frequency of fatal and serious injury crashes within the GFA is significantly different than the statewide rankings.

Idaho SHSP Focus Areas

- Aggressive Driving
- Distracted Driving
- Impaired Driving
- Occupant Protection
- People Who Walk or Bicycle
- Mature Drivers
- Motorcycles
- Youthful Drivers
- Commercial Motor Vehicles
- Intersections
- Lane Departure

Washington SHSP Priority Areas

- Impairment
- Distraction
- Speeding
- Unrestrained Occupants
- Lane Departures
- Intersections
- Young Drivers (16-25)
- Pedestrians and Bicyclists
- Motorcyclists
- Older Drivers (70+)
- Heavy Trucks

3.2. Historical Crash Analysis

A historical crash data analysis was conducted for the most recent complete five-year period, 2018 through 2022 for crashes that occurred on roadways in the LCVMPO study area. The crash data was analyzed for the LCVMPO study area as a whole and for each individual GFA. Historical crash analysis results are summarized for the following areas:

- Total Number of Fatal and Serious Crashes
- Crashes by Year
- Crashes by Roadway Ownership
- Crashes by Crash Type
- Vulnerable User Crashes
- Intersection Crashes
- Crashes by Functional Class
- Crash Tree Diagrams

- Crash Type
- Crash Attribute
- Bikes and Pedestrian

The analysis summarizes fatal and serious injury crashes, fatal crashes by roadway ownership, and serious injury crashes by roadway ownership, as applicable.

3.3. Crash and Network Screening Analysis

The Highway Safety Manual (HSM) was developed by the American Association of State Highway and Transportation Officials (AASHTO) and provides guidance for incorporating quantitative safety analysis into project planning and development processes. With an emphasis on analytical methods to quantify safety, the HSM helps practitioners understand the safety effects of decisions in planning, design, operations, and maintenance efforts.

The HSM 1st Edition, 2010, consists of three volumes and a supplement and contains the following:

- Part A – Introduction, Human Factors, and Fundamentals (Volume 1)
- Part B – Roadway Safety Management Process (Volume 1)
- Part C – Predictive Method (Volume 2 and Supplement)
- Part D – Crash Modification Factors (Volume 3)

The Roadway Safety Management Process (Part B) outlines the recommended process for agencies to monitor and reduce crash frequency and severity on existing roadway networks. The basic structure of the Roadway Safety Management Process is illustrated in **Figure 3-1**.

The process is intended to be iterative so that agencies can use it continuously to improve overall safety on their existing roadway network. By implementing projects through data-informed processes, agencies can maximize the effectiveness of available funding sources.

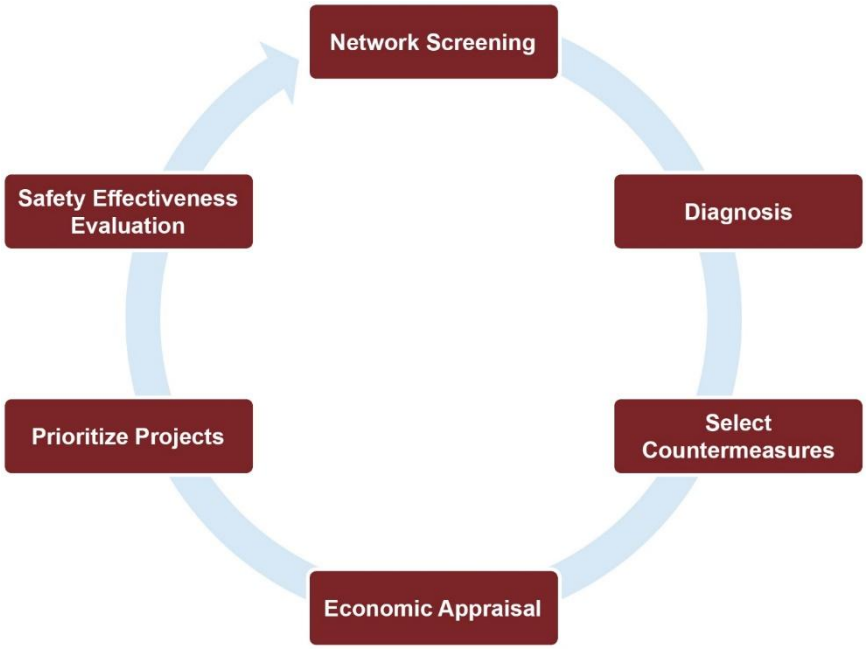

Figure 3-1 – Roadway Safety Management Process

Network screening is the first step of the Roadway Safety Management Process. HSM Chapter 4 introduces the network screening processes, defined as the process for reviewing a transportation

network to identify and rank sites from most likely to least likely to realize a reduction in crash frequency with the implementation of a particular countermeasure(s). The location of sites identified as most likely to realize a reduction in crash frequency should be studied in more detail to identify crash patterns, contributing factors, and appropriate countermeasures.

The HSM identifies five steps in this process:

- Establish Focus: Identify the purpose or intended outcome of the network screening analysis.
- Identify Network and Establish Reference Populations: Specify the types of sites or facilities being screened (i.e., segments, intersections, geometrics) and identify groupings of similar sites or facilities.
- Select Performance Measures: Performance measures are selected as a function of the screening focus and the data and analytical tools available.
- Select Screening Method: Three principal screening methods are described (ranking, sliding window, peak searching).
- Screen and Evaluate Results: Conduct the screening analysis and evaluate the results.

The crash and network screening analysis methodologies applied in the RSAP are based on Part B Chapter 4 of the HSM. Intersections and roadway segments were analyzed using the following crash metrics:

- Critical Crash Rate (CCR) – HSM Chapter 4
- Probability of Specific Crash Types Exceeding Threshold Proportion – HSM Chapter 4
- Equivalent Property Damage Only (EPDO) – HSM Chapter 4

The initial step of the crash analysis established sub-populations of roadway segments and intersections with similar characteristics (e.g., local road, major collector, arterial, etc.) Each GFA was analyzed independent of one another. Next, intersections were grouped by their control type (Signalized and Unsignalized) and segments by their roadway category (Local Road, Collector, Arterial) within the three roadway ownership groupings of State Route, Federal Aid Route, and Local Street. Individual crash rates were calculated for each sub-population. The sub-population level crash rates were used to assess whether a specific location has more or fewer crashes than expected. This is known as the Critical Crash Rate (CCR) analysis. These sub-populations were also used to determine typical crash patterns to help identify locations where unusual numbers of specific crash types are occurring. This is known as the Probability of Specific Crash Types Exceeding Threshold Proportion Analysis.

3.3.1. Critical Crash Rate (CCR) Analysis

Reviewing the number of crashes at a location is a good way to understand the cost to society incurred at a location but does not provide a complete indication of the level of risk for those who use that intersection or roadway segment.

The CCR method provides a statistical review of locations to determine where risk is higher than that experienced by other similar locations. It is also the first step in analyzing for patterns that may suggest systemic issues that can be addressed at that location, and proactively at others to prevent new safety challenges from emerging.

The CCR compares the observed crash rate to the expected crash rate at a particular location based on the facility type and volume using a GFA-specific calculated average crash rate for the specific type of intersection or roadway segment being analyzed. Based on traffic volumes and a weighted GFA-specific crash rate for each facility type, a CCR threshold is established at the 95% confidence level to determine locations with higher crash rates that are unlikely to be random. The threshold is calculated for each location based on its traffic volume and the crash profile of similar facilities, consistent with equations specified in HSM Chapter 4.

A CCR differential is determined for each intersection and roadway segment within the GFA by calculating the difference of the expected CCR to the location specific CCR. A positive CCR differential indicates a location with higher-than-expected crashes rates or a location with a potential for safety improvement.

Key findings are summarized in Chapter 5. Detailed results for each GFA are summarized in the Appendices.

3.3.2. Equivalent Property Damage Only (EPDO)

The Equivalent Property Damage Only (EPDO) method assigns weighting factors to crashes based on a crash severity level to develop a property-damage-only score. In this analysis injury and fatal crash costs were calculated for each GFA, based upon the 2022 Idaho Traffic Crashes Report and the Washington State Department of Transportation Safety Analysis (April 2020). This value is divided by the cost for a property-damage-only crash to calculate the equivalent number of property-damage-only crashes within each GFA. This value allows all locations to be compared based on injury crash costs. **Table 3.1** and **Table 3.2** shows crash cost by severity.

It should be noted that Washington uses values determined by the FHWA Crash Costs for Highway Safety Analysis (January 2018), while Idaho uses values from the 2022 Idaho Crash Report, therefore comparisons between these two GFA's are not appropriate for this analysis.

Table 3.1 – Asotin County Crash Costs

Washington	
	Cost per Occurrence
Fatality	$ 5,740,100.00
Serious Injury	$ 304,400.00
Minor Injury	$ 111,200.00
Possible Injury	$ 32,700.00
Property Damage Only	$ 10,100.00
Source: FHWA 2018 Crash Costs for Highway Safety Analysis, https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-09/fhwasa17071.pdf	

Table 3.2 – Nez Perce County Crash Costs

Idaho	
	Cost per Occurrence
Fatality	$ 12,626,000.00
Serious Injury	$ 528,228.00
Minor Injury	$ 143,873.00
Possible Injury	$ 73,466.00
Property Damage Only	$ 3,722.00
Source: Idaho Traffic Crashes 2022, https://apps.itd.idaho.gov/Apps/OHS/Crash/22/Analysis.pdf	

3.4. RSAP Safety Analysis Overview

Figure 3-2 is an overview of the safety analysis performed for the RSAP. This figure highlights how each safety analysis identifies a set of segments/intersections. Potenital safety improvement projects can be identified from each of the individiual analyses. The Composite High-Risk Roadway Network provides focused information for jurisdictional decisions regarding prioritization of safety improvements.

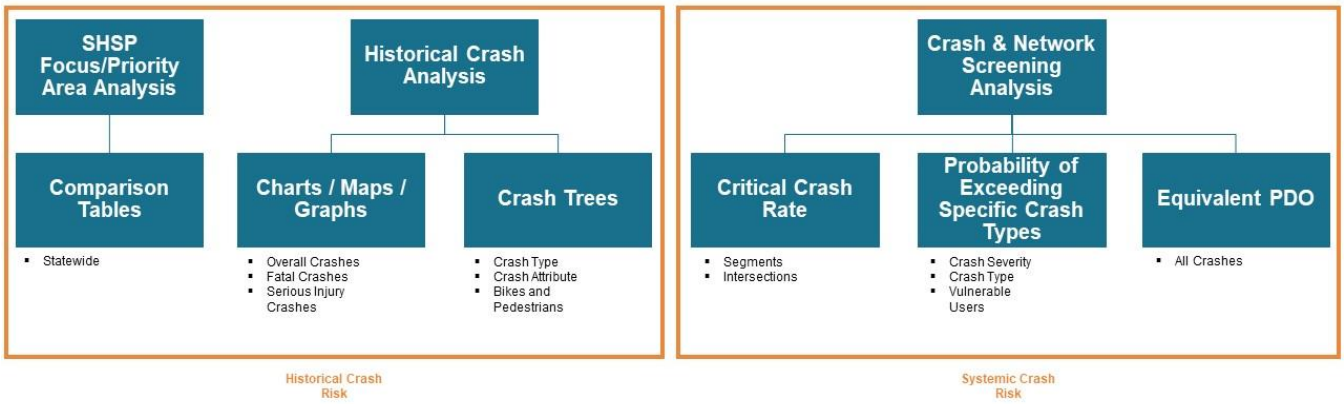

Figure 3-2 - Safety Analysis Overview

4. LCVMPO Study Area Analysis Results

A regional-level analysis was performed for the entirety of Nez Perce County and Asotin County respectively, to provide a baseline to which each GFA (the portion of each county within the MPO) is compared. This included the SHSP emphasis area analysis and the historical crash analysis. Data is reported for crashes that occurred within the LCVMPO study area, January 1, 2018 – December 31, 2022.

4.1. SHSP Focus/Priority Area Analysis Results

The SHSP focus/priority area analysis compares the ranking of total fatalities and serious injuries for each of the eleven statewide focus/priority areas, as identified by each state's State Highway Safety Plan, to total fatalities and serious injuries in each GFA for those focus/priority areas. Note that a single crash may be assigned multiple categories (e.g., Young/Youthful Drivers and Lane Departures). The results each of the SHSP focus/priority area comparison analyses are displayed in **Table 4.1** and **Table 4.2**.

Table 4.1 – Idaho SHSP Focus Area Analysis Summary

Idaho SHSP Focus Areas	Nez Perce County Totals	GFA Totals	Rank
	Fatal and Serious Injury	Fatal and Serious Injury	
Aggressive Driving	78	6	-
Distracted Driving	31	5	-
Impaired Driving	56	10	4
Occupant Protection	128	7	-
Pedalcyclists	4	3	-
Mature Drivers	50	9	5
Motorcycles	31	14	3
Youthful Drivers	22	2	-
Commercial Motor Vehicles	13	7	-
Intersections	44	33	1
Lane Departure	110	18	2

The five highest ranked focus areas within the Nez Perce County GFA are as follows:

IDAHO

- Intersections
- Lane Departure
- Motorcycles
- Impaired Driving
- Mature Drivers

4.1.1. Washington SHSP Priority Area Analysis Results

Table 4.2 – Washington SHSP Focus Area Analysis Summary

Washington SHSP Priority Areas	Asotin County Totals	GFA Totals	Rank
	Fatal and Serious Injury	Fatal and Serious Injury	
Impairment	74	4	T3
Distraction	3	2	T5
Speeding	5	2	T5
Unrestrained Occupants	*	*	-
Lane Departures	3	2	T5
Intersections	4	4	T3
Young Drivers (16-25)	*	*	-
Pedestrians and Bicyclists	42	9	1
Motorcyclists	9	5	2
Older Drivers 70+	*	*	-
Heavy Trucks	1	1	-

*Data provided by Asotin County did not include information pertaining to certain crash types and attributes and therefore could not be determined

The five highest ranked priority areas within the Asotin County GFA are as follows:

WASHINGTON

- Pedestrians and Bicyclists
- Motorcyclists
- Intersections/Impairment (Tied in 3rd)
- Distraction/Speeding/Lane Departures (Tied in 5th)

4.2. Historical Crash Analysis

A historical crash data analysis was conducted for the most recent complete 5-year period from 2018 to 2022 for crashes that occurred within the LCVMPO study area. This historical crash analysis is primarily focused on fatal and serious injury crashes.

4.2.1. Overall Crashes

Table 4.3 provides an overview of overall crashes by severity and roadway ownership within the LCVMPO study area for the five-year period (2018-2022). A review of the data shows:

- Four times as many fatal crashes occurred on Federal Aid Routes when compared to State Routes. Local Roads contributed to the highest number of fatal crashes overall with ten total.
- The total number of crashes that occurred on State Routes is similar to Federal Aid Routes while Local Routes have about ten times the amount on either State Routes or Federal Aid Routes.

Local Roads consist of just over half (53.2%) of the total miles within the LCVMPO with about 180 miles in total.

- 0.4% of all crashes resulted in a fatality in the LCVMPO study area.

Table 4.3 – Overall Crash by Severity by Roadway Ownership (2018-2022)

Route Type	Federal Aid		State		Local		Overall Total	
Crash Severity	#	%	#	%	#	%	#	%
(A) Suspected Serious Injury	5	1.8%	6	2.9%	79	2.7%	**90**	**2.7%**
(B) Suspected Minor/Visible Injury	19	7.0%	19	9.2%	268	9.2%	**306**	**9.1%**
(C) Possible Injury/Complaint	55	20.1%	37	17.9%	433	14.9%	**525**	**15.5%**
(K) Fatal Injury	4	1.5%	1	0.5%	10	0.3%	**15**	**0.4%**
(O) Property Damage Report	190	69.6%	140	67.6%	2088	72.0%	**2418**	**71.6%**
Unknown	0	0.0%	4	1.9%	20	0.7%	**24**	**0.7%**
Route Total	**273**	**100.0%**	**207**	**100.0%**	**2898**	**100.0%**	**3378**	**100.0%**

Figure 4-1 and **Figure 4-2** provide an overview of fatal and serious injury crashes by GFA for the LCVMPO study area for the five-year period (2018-2022). A review of the data shows:

- Nez Perce County experienced 80% of all fatal and serious crashes within the study area.
- Fatal and serious crashes made up 2.5% of all crashes within Nez Perce County and 0.6% within Asotin County
- Nez Perce County and Asotin County experienced a total of 105 fatal or serious crashes within the 5-year period.

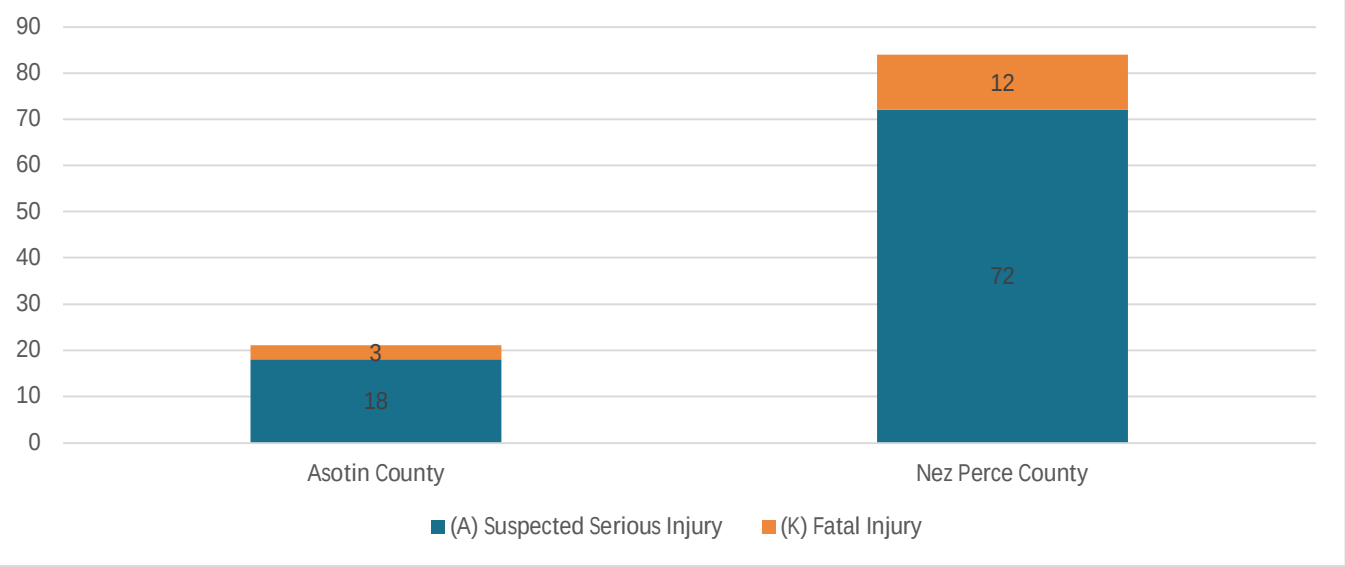

Figure 4-1 – Total Number of Fatal and Serious Injury Crashes by GFA, 2018-2022

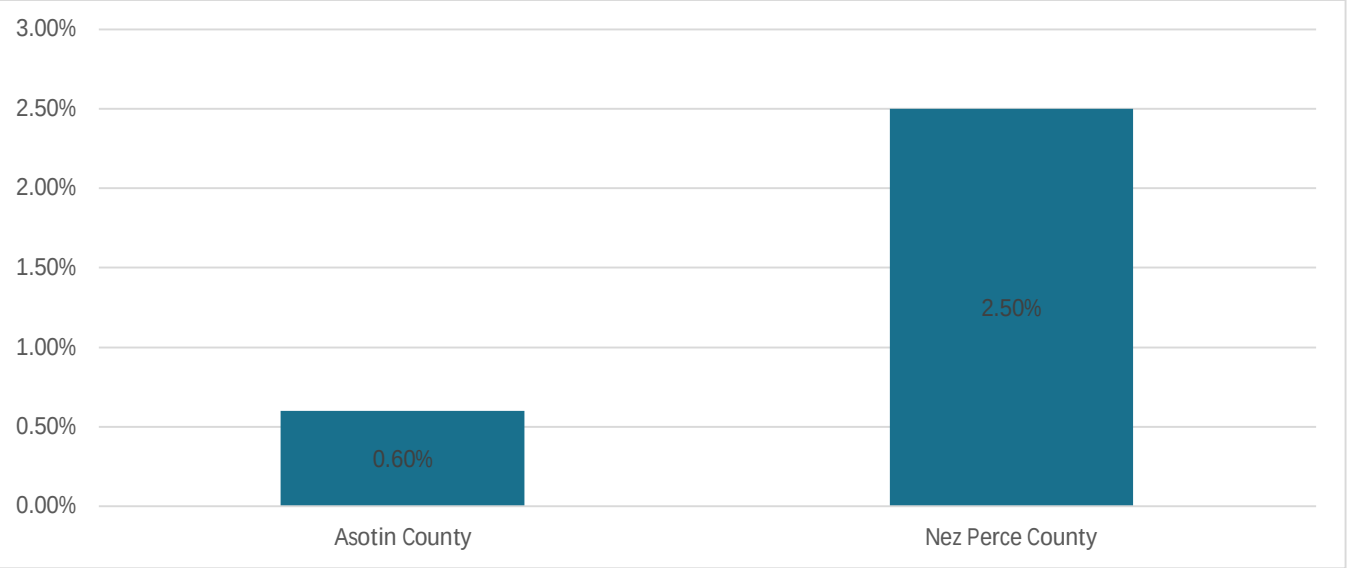

Figure 4-2 – Percent of Fatal and Serious Injury Crashes of Total Crashes by GFA, 2018-2022

4.2.2. Fatal and Serious Injury Crashes by Year

Figure 4-3 and **Figure 4-4** summarize fatal and serious injury crashes by year (2018-2022) and roadway ownership for the LCVMPO study area. A review of the data shows:

- There is an average of three fatal crashes per year throughout the reporting period.
- The number of serious injury crashes has decreased each year, between 2018 and 2022, except for a spike 2021.
- Federal Aid routes experienced the highest number of serious injury crashes with 62 total over the course of 5 years.

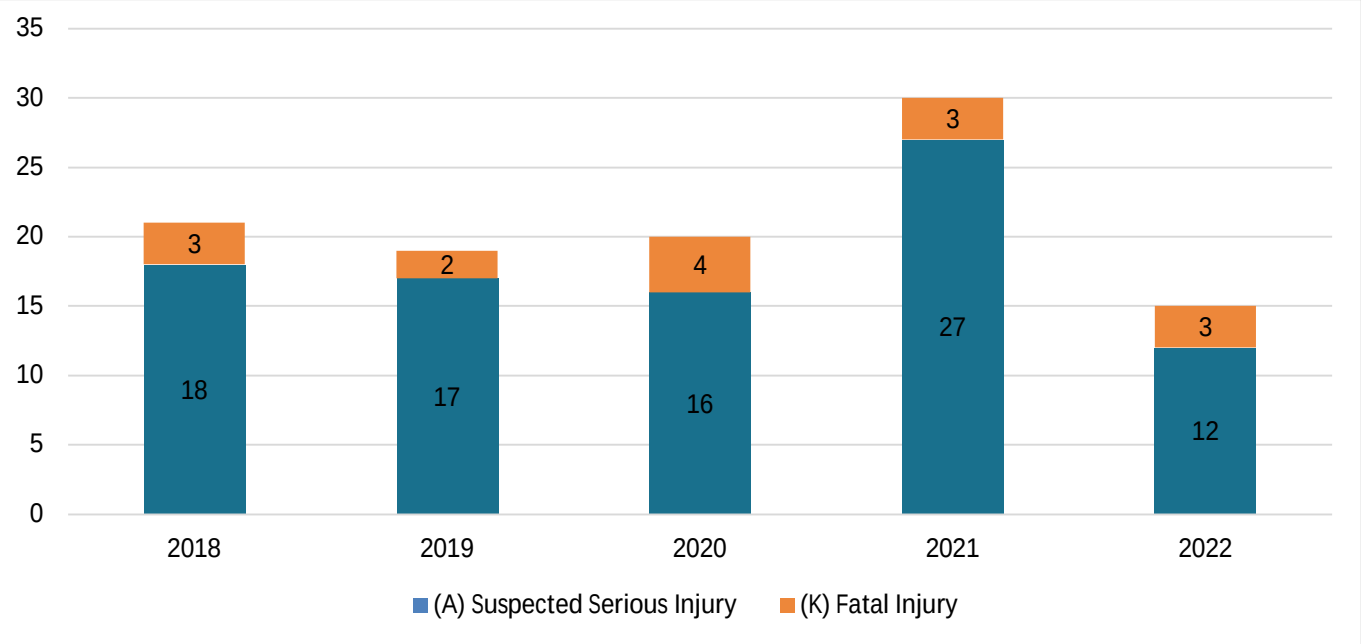

Figure 4-3 – Fatal and Serious Injury Crashes by Year, 2018-2022

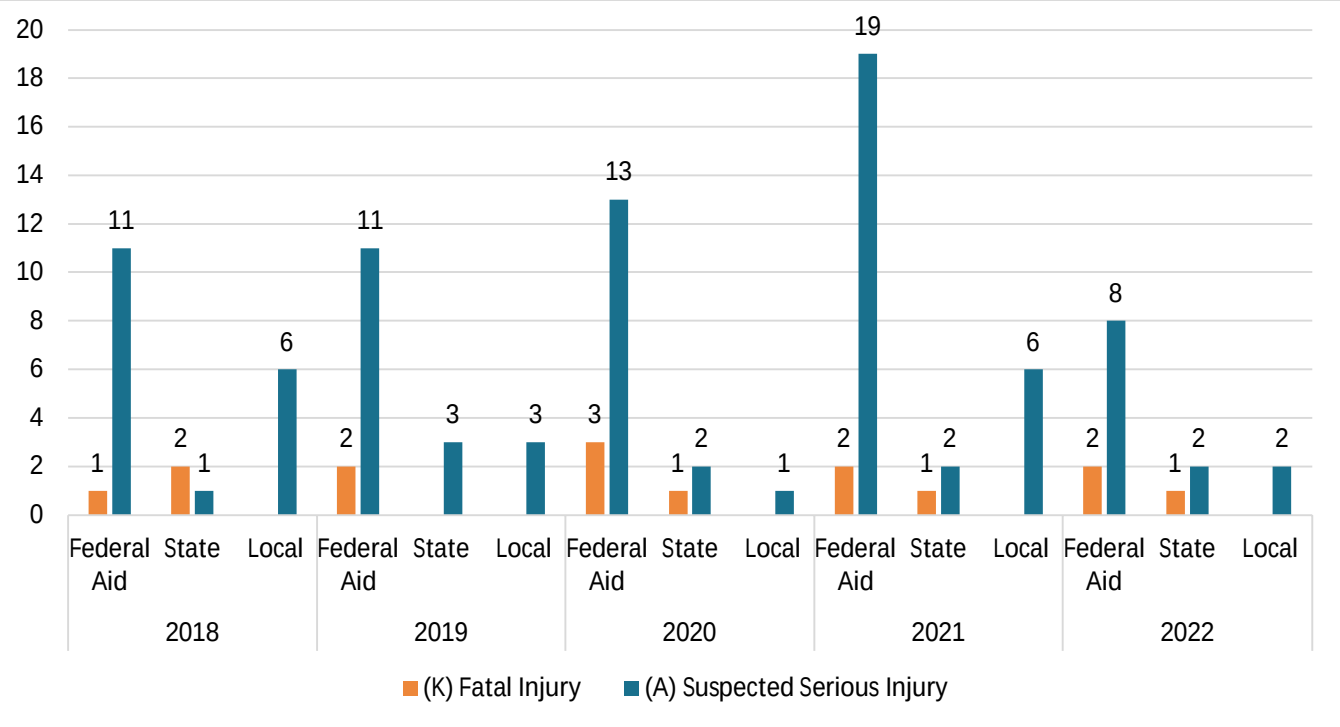

Figure 4-4 – Annual Fatal and Serious Injury Crashes by Roadway Ownership, 2018-2022

Figure 4-5 and **Figure 4-6** provide a visual representation of the locations of all fatal and serious crashes that occur in the Nez Perce County GFA and Asotin County GFA respectively, and **Figure 4-7** and **Figure 4-8** show a heat map of the density of fatal and serious crashes within the Nez Perce County GFA and Asotin County GFA.

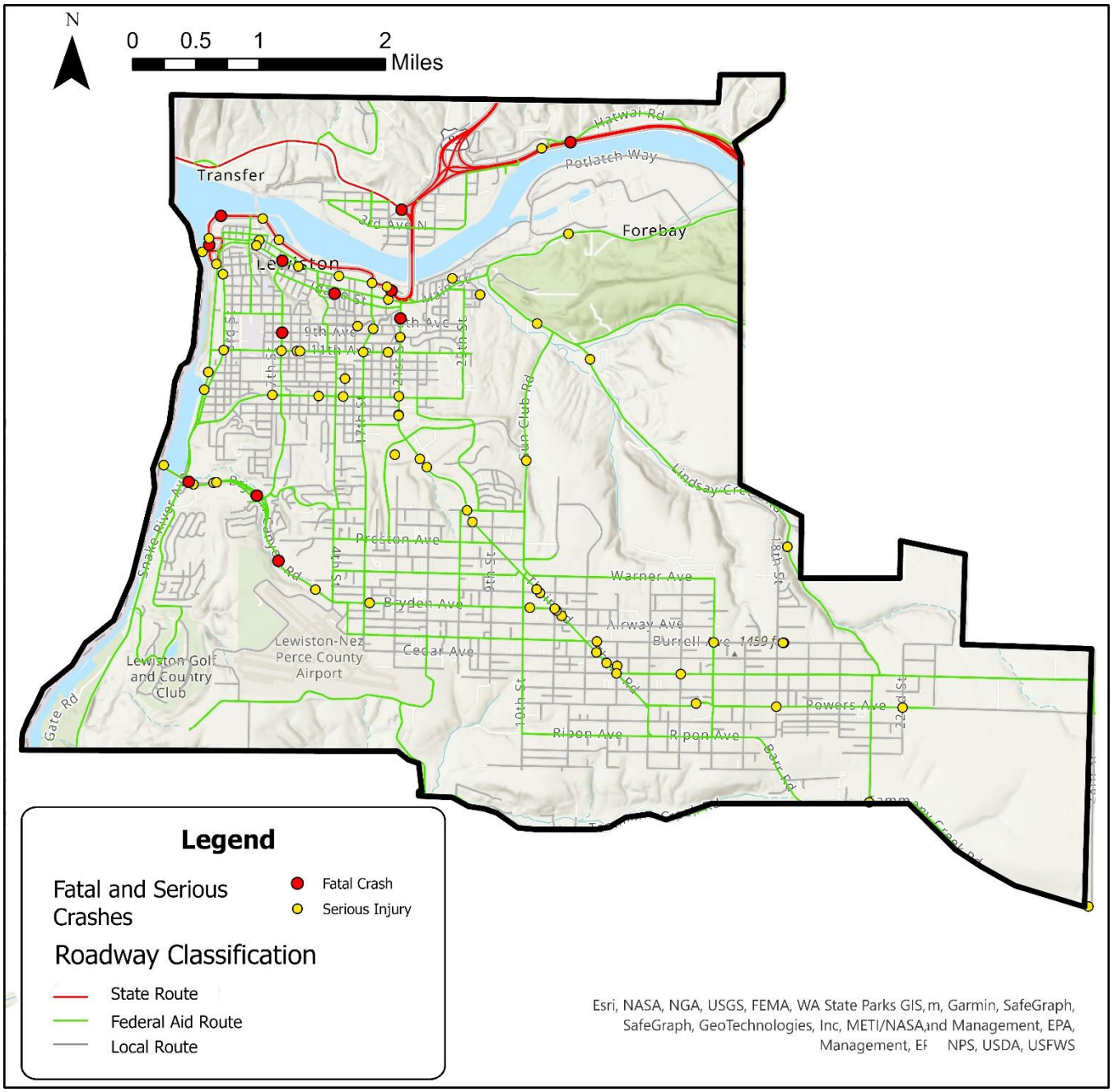

Figure 4-5 – Fatal and Serious Injury Crashes – Nez Perce County GFA

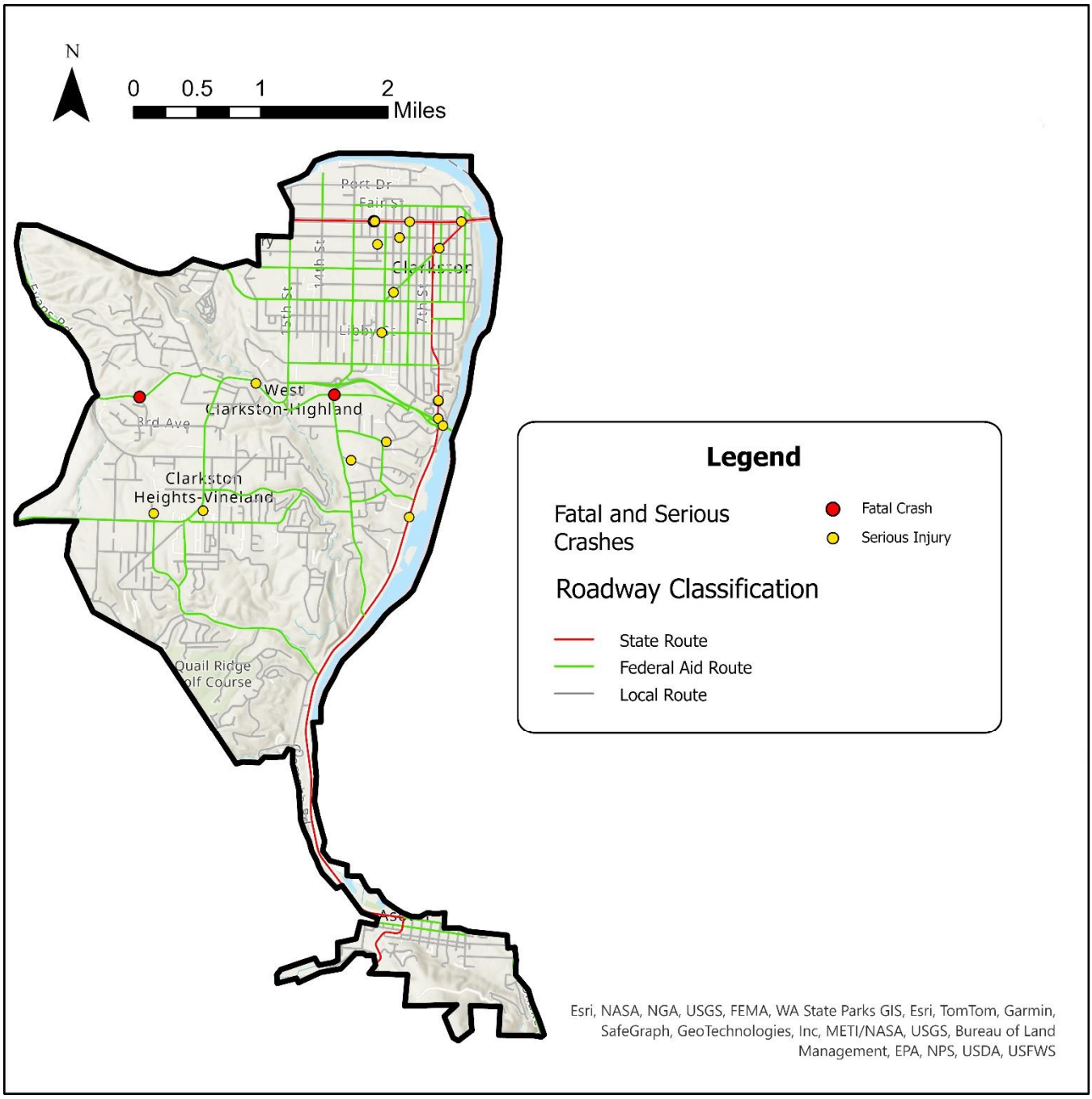

Figure 4-6 – Fatal and Serious Injury Crashes – Asotin County GFA

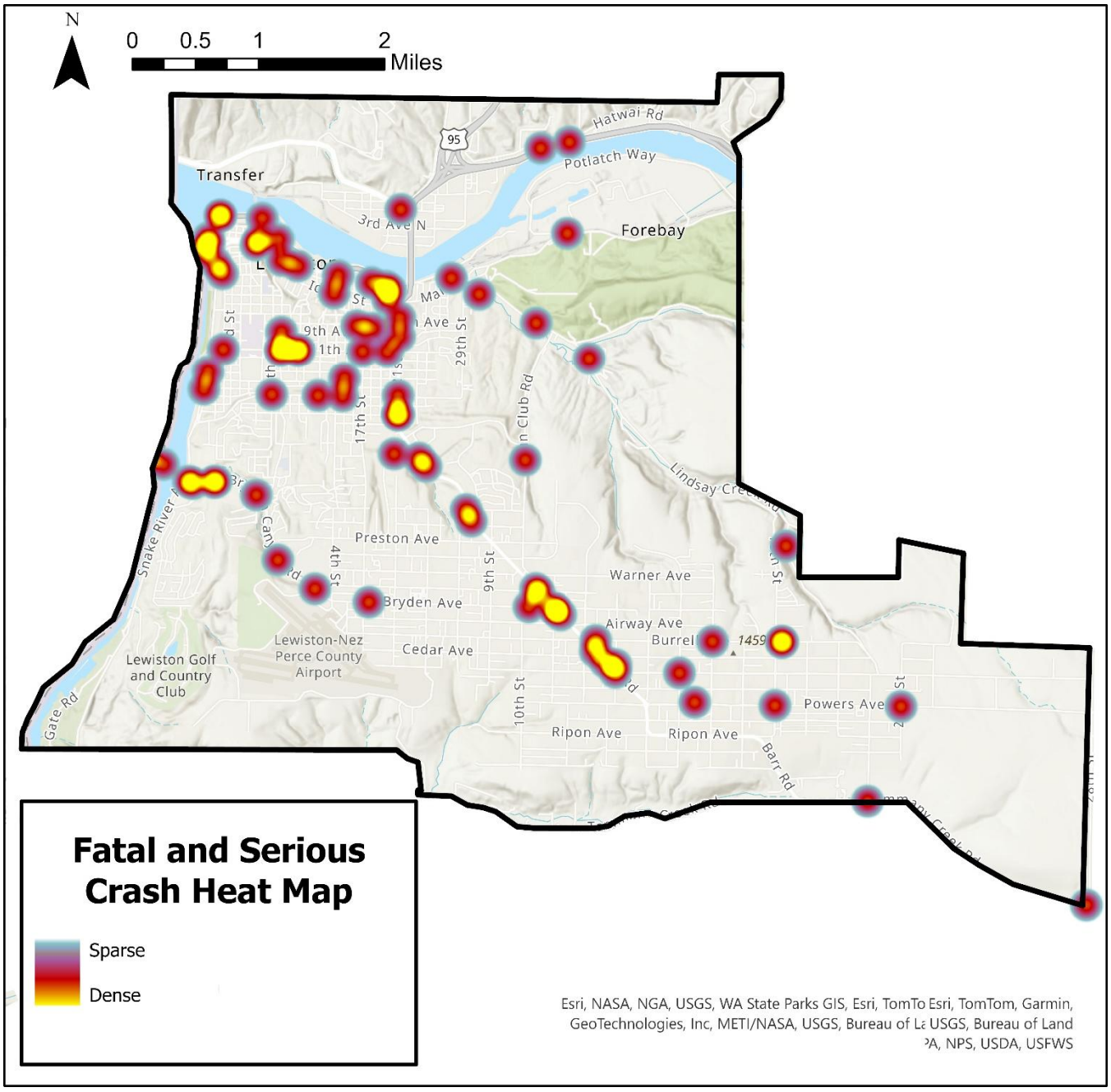

Figure 4-7 – Fatal and Serious Injury Crash Heat Map – Nez Perce County GFA

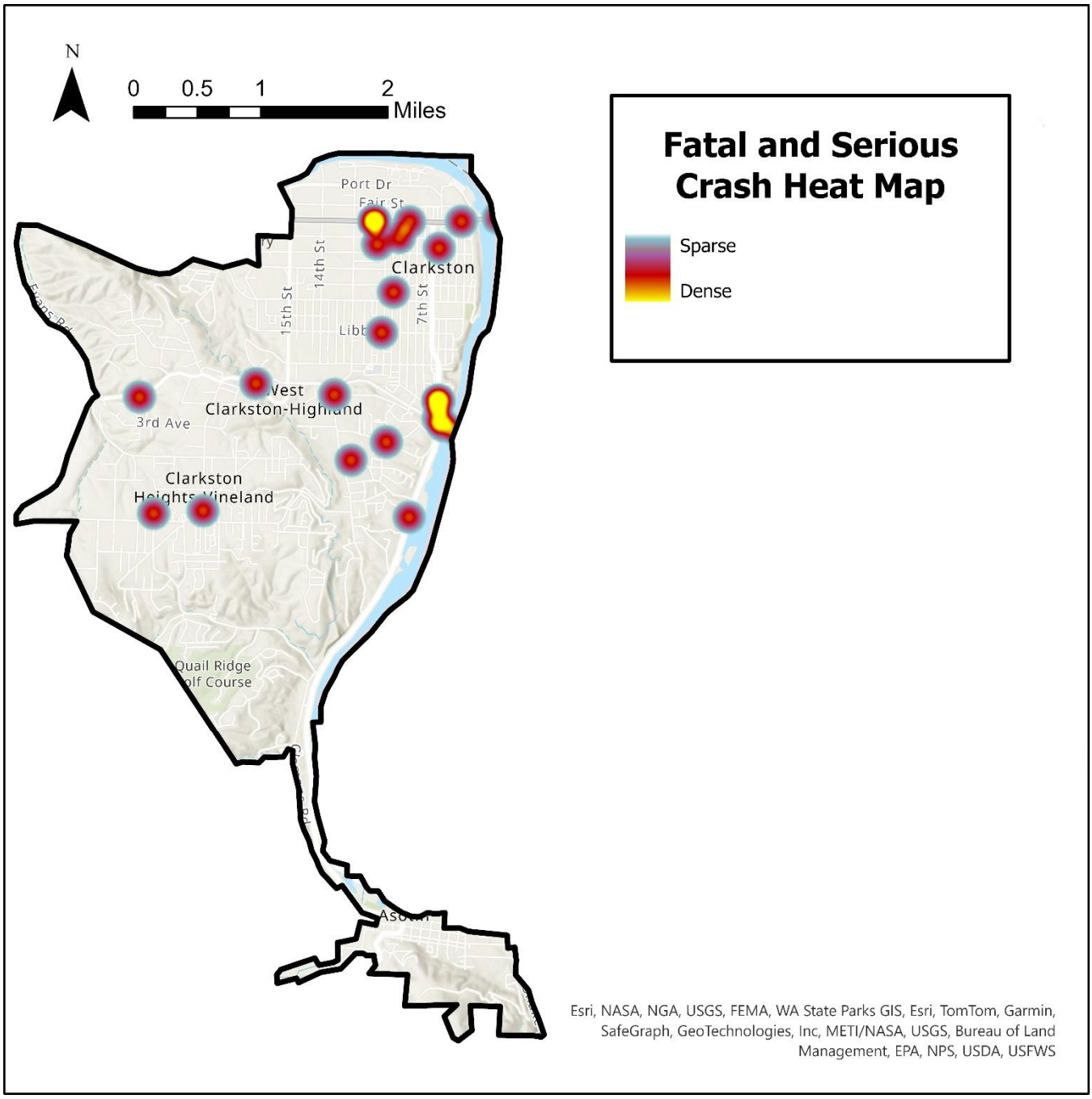

Figure 4-8 – Fatal and Serious Injury Crash Heat Map – Asotin County GFA

4.3. Idaho Crash Analysis

4.3.1. Fatal and Serious Injury Crashes by Crash Type

Figure 4-9 and **Figure 4-10** provide an overview of fatal and serious injury crashes by crash type and by crash attributes for the Nez Perce County GFA for the five-year period (2018-2022).

A review of the data shows:

- The most common crash types within Nez Perce County were Fixed Object followed by Pedestrian. It is noteworthy, that twelve pedestrian involved crashes occurred in the Nez Perce County GFA within the reporting period.
- Nez Perce county experienced twenty-two crashes caused by Failure to Yield, all of which occurred on Federal Aid Routes.

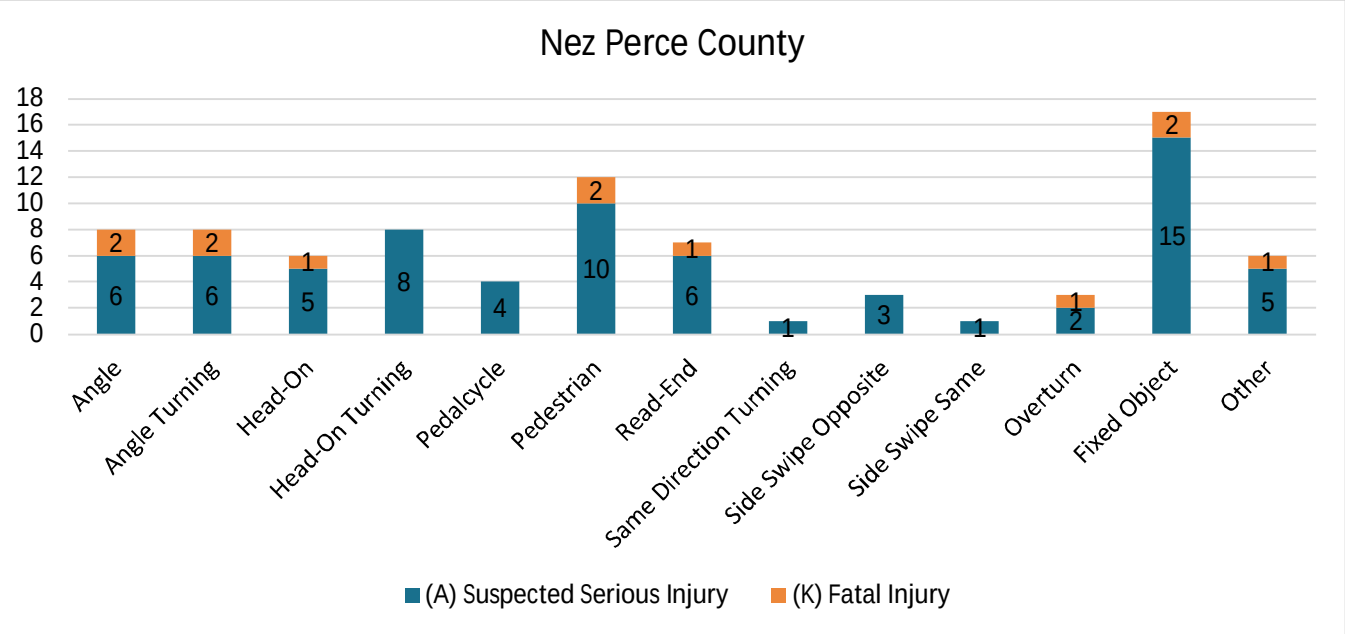

Figure 4-9 – Fatal and Serious Injury Crashes by Crash Type, 2018-2022

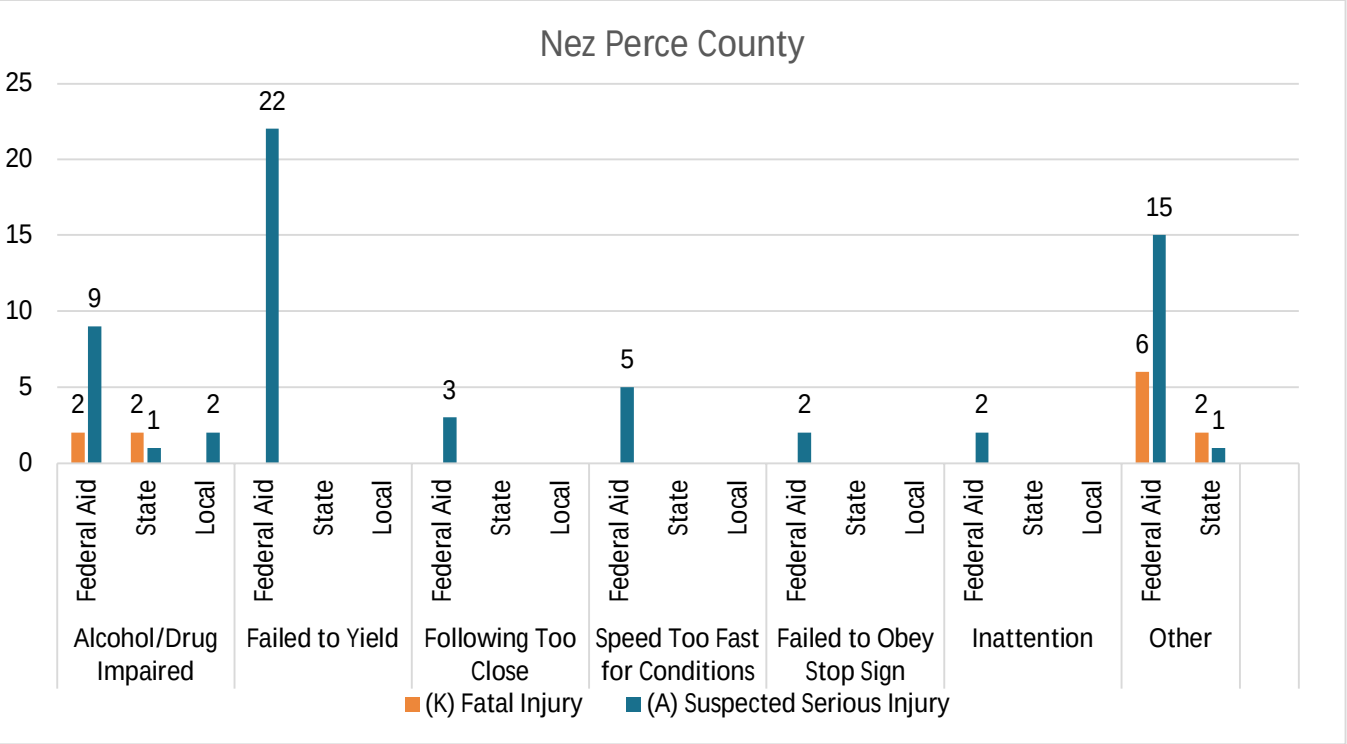

Figure 4-10 – Fatal and Serious Injury Crashes by Crash Attribute & Roadway Ownership, 2018-2022

4.3.2. Fatal and Serious Injury Vulnerable User Crashes

Figure 4-11 provides an overview of fatal and serious injury crashes by vulnerable road user and roadway ownership for the Nez Perce County GFA for the five-year period (2018-2022). A review of the data shows:

- In Nez Perce County most vulnerable user crashes are occurring on Federal Aid Routes.
- State Routes experienced the least number of crashes in Nez Perce County.

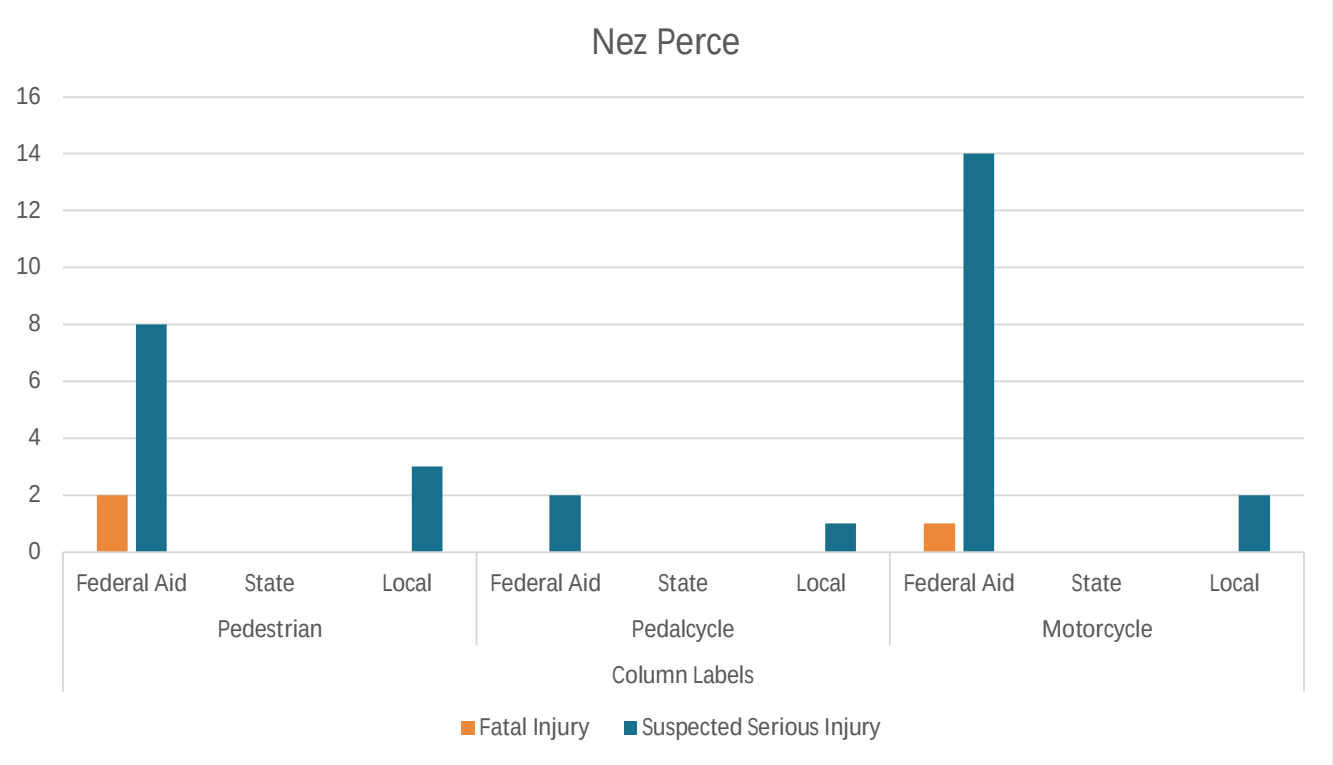

Figure 4-11 – Fatal and Serious Injury Crashes by Vulnerable User & Roadway Ownership, 2018-2022

4.3.3. Fatal and Serious Injury Intersection Crashes

Figure 4-12 and **Figure 4-13** provide an overview of fatal and serious injury crashes by intersection and roadway ownership for the Nez Perce County GFA for the five-year period (2018-2022).

A review of the data shows:

- Intersection-related serious and fatal crashes make up about one-third of all serious and fatal crashes across the Nez Perce County GFA.
- Over 60% of fatal and serious crashes were experienced on Federal Aid Routes in Nez Perce County with 28% being intersection related and 35% being non-intersection related.

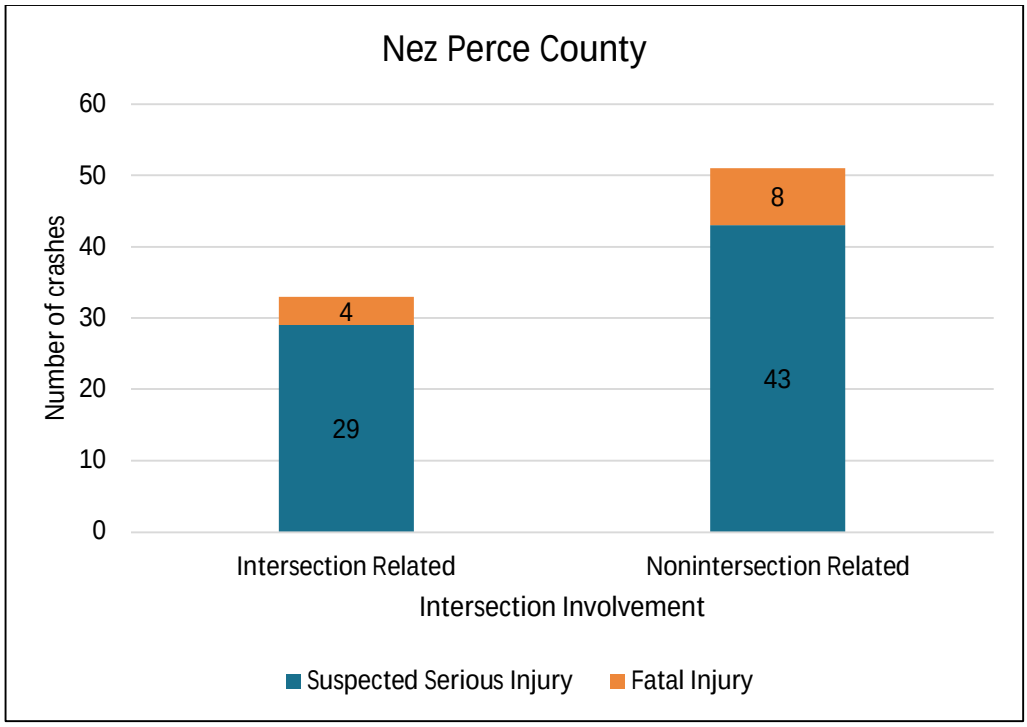

Figure 4-12 – Fatal and Serious Injury Crashes by Intersection, 2018-2022

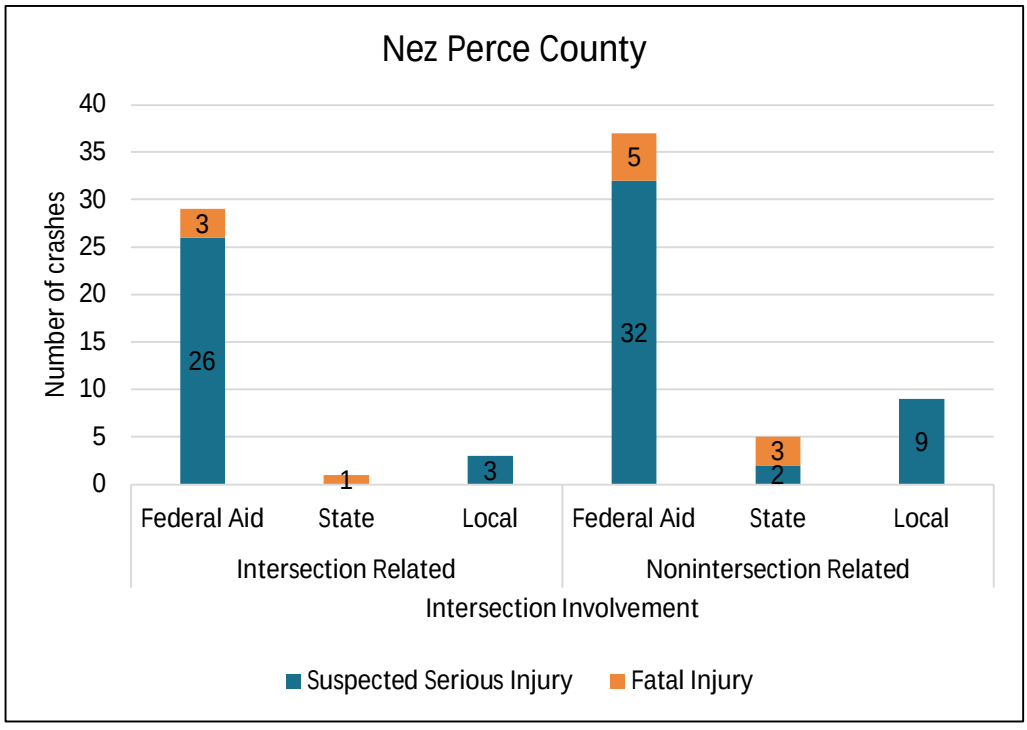

Figure 4-13 – Fatal and Serious Injury Crashes by Intersection & Roadway Ownership, 2018-2022

4.3.4. Fatal and Serious Injury Crashes by Functional Class

Figure 4-14 provides an overview of fatal and serious crashes by roadway functional class for the Nez Perce County GFA for the five-year period (2018-2022)

A review of the data shows:

- The highest frequency of fatal and serious injury crashes occurs on arterial roads in Nez Perce County.

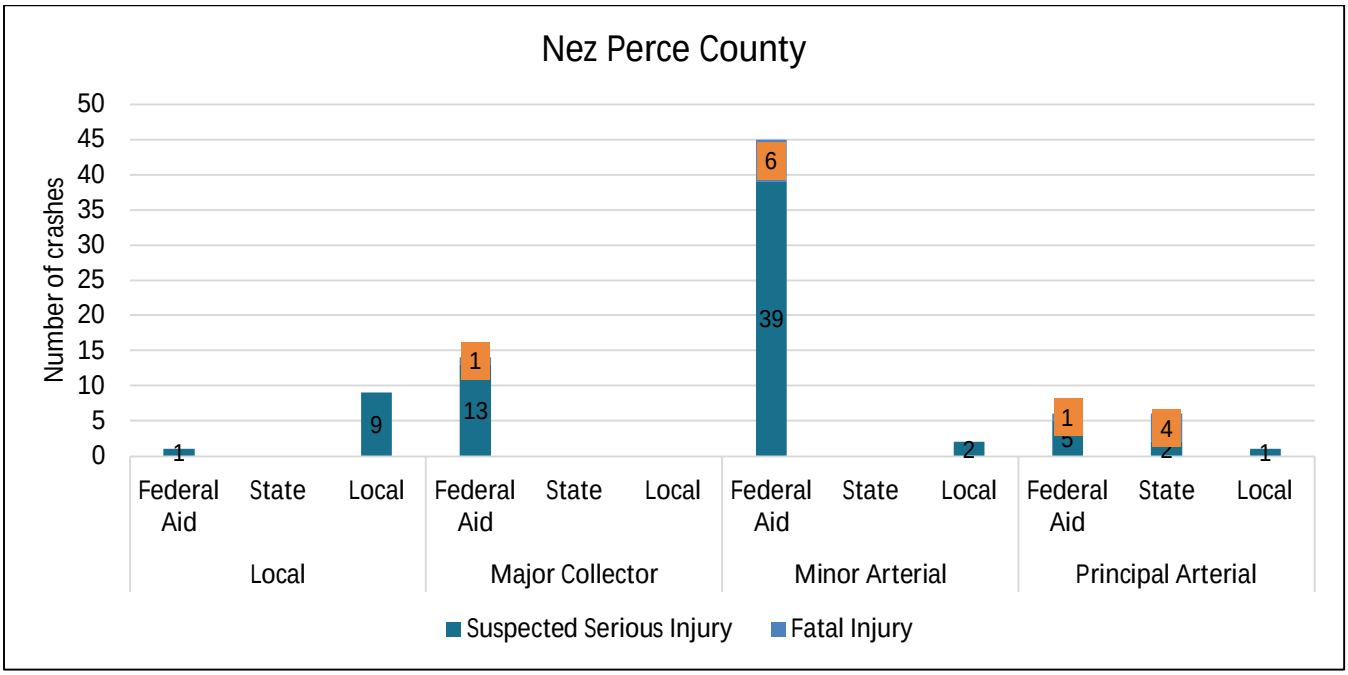

Figure 4-14 – Fatal and Serious Injury Crashes by Functional Class & Roadway Ownership, 2018-2022

4.3.5. Fatal and Serious Injury Crash Tree Diagrams

Fatal and serious injury crash tree diagrams were generated for the Nez Perce GFA. These crash tree diagrams, for the five-year period (2018-2022), are presented in **Figure 4-15** though **Figure 4-17.**

For clarity and emphasis, the crash trees are limited to the three crash types with highest frequency crash type and manner of collision. The crash trees are organized by:

1. Roadway Ownership
2. Intersection/Non-Intersection
3. Categories:
   a. Pedestrian and Bikes
   b. Crash Attribute
   c. Crash Type

A review of the data shows:

Federal Aid Routes:

- Nez Perce County saw the highest percentage of Pedestrian involved crashes with a total of 10 occurring on Federal Aid routes.
- Most frequently occurring crash types are:
  - Angle
  - Pedestrian
  - Head-On Turning/Drove Left of Center

State Routes:

- About 15% (14.3%) of fatal and serious crashes occurred on State Routes.
- Most frequently occurring crash types are:
  - Vehicle Strikes Pedestrian
  - Drove Left of Center
  - Angle/Entering at Angle

Local Streets:

- No fatal accidents occurred on Local Streets within the LCVMPO
- The most frequent crash type on Local Streets was Pedestrian involved.

Each crash tree diagram displays the total fatal and serious injury crashes (T), fatal crashes (K), and serious injury crashes (A). It should be noted, crashes reported on Unknown road types are included in the total crashes but not designated as Federal Aid, State Routes, or Local Streets.

Legend

T – Total

K – Fatal

A – Serious Injury

Crash Types

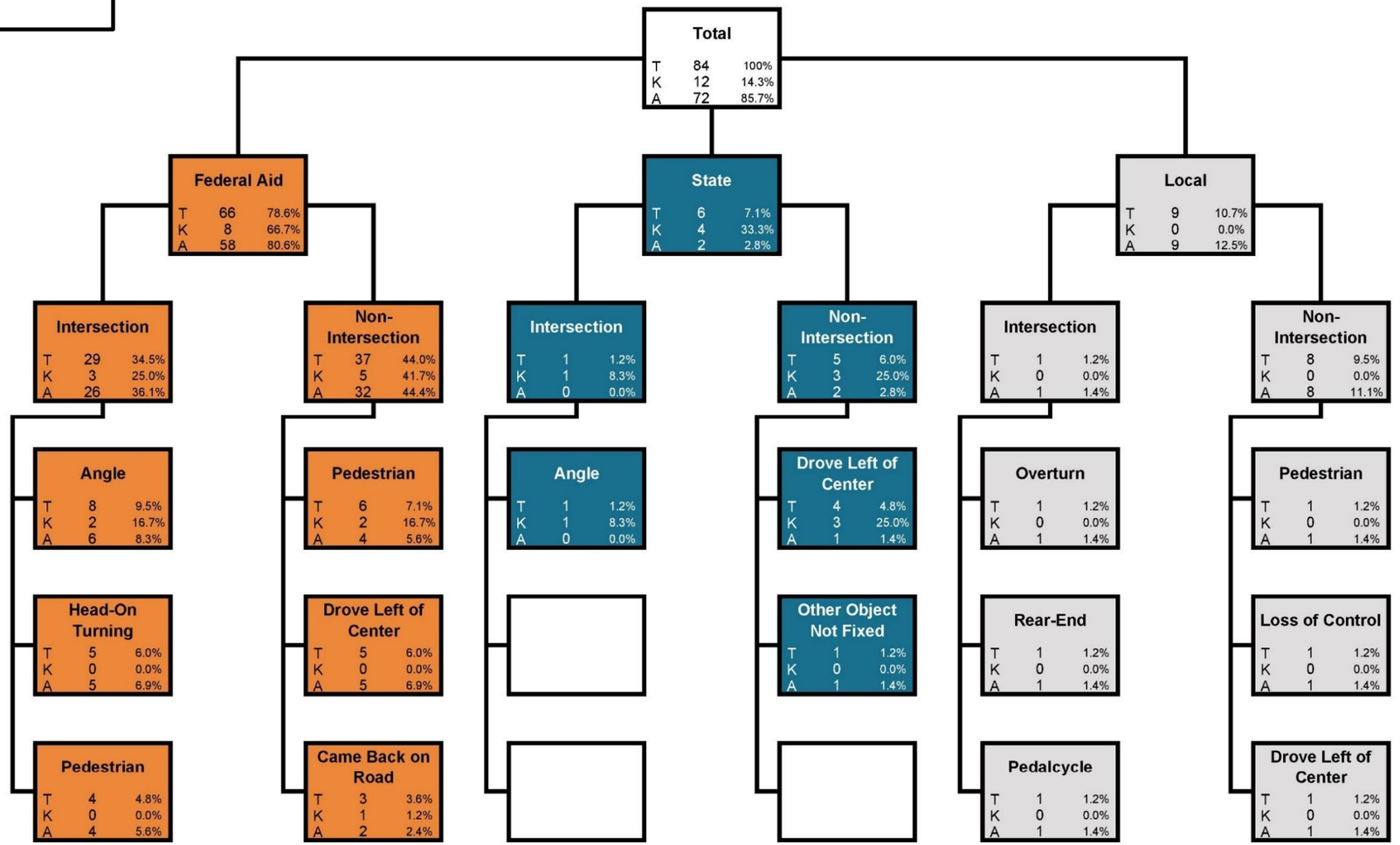

Figure 4-15 – Nez Perce County Fatal and Serious Injury Crash Tree Diagram, 2018-2022 (Crash Types)

Crash Attributes

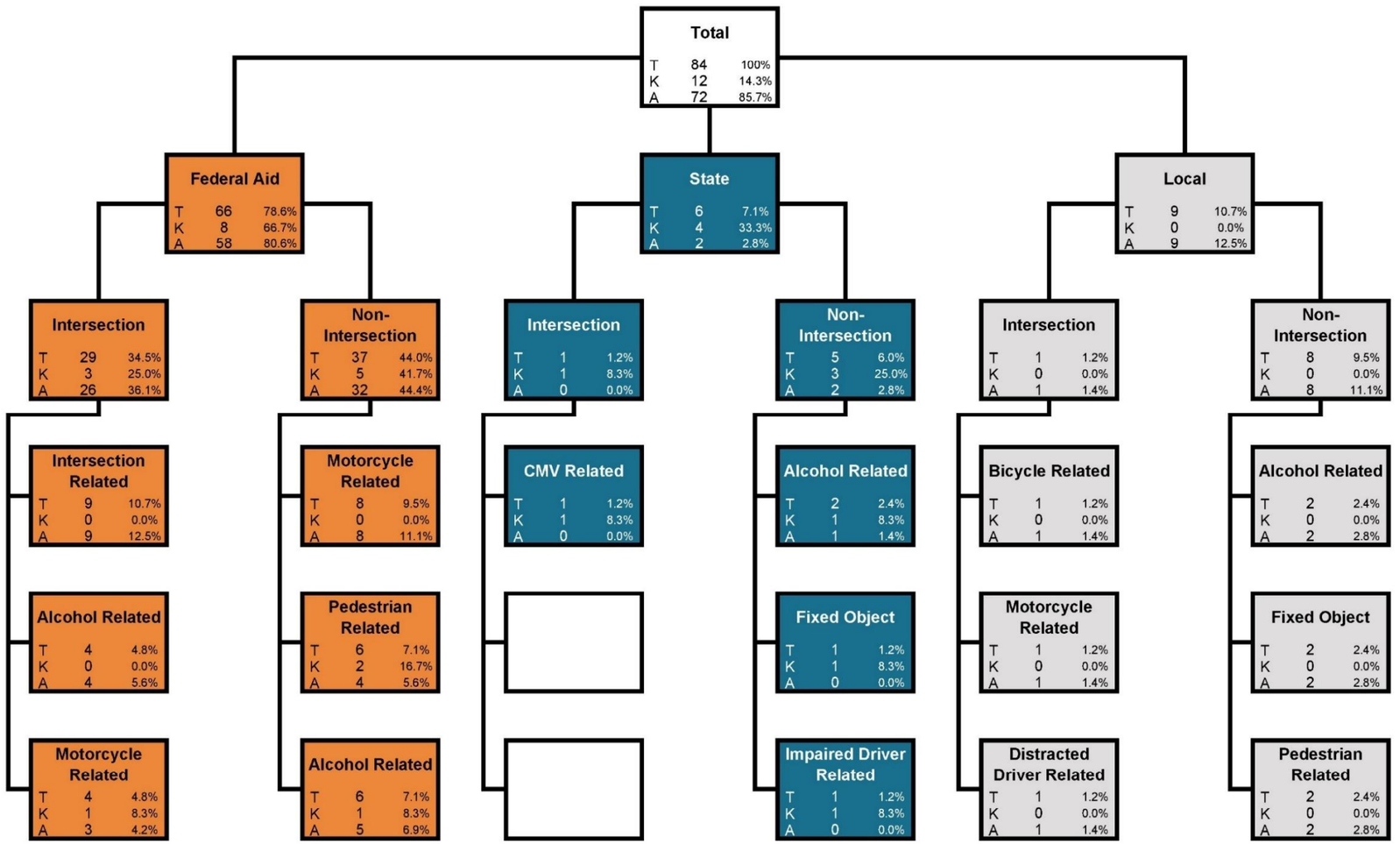

Figure 4-16 – Nez Perce County Fatal and Serious Injury Crash Tree Diagram, 2018-2022 (Crash Attributes)

Bikes and Pedestrians

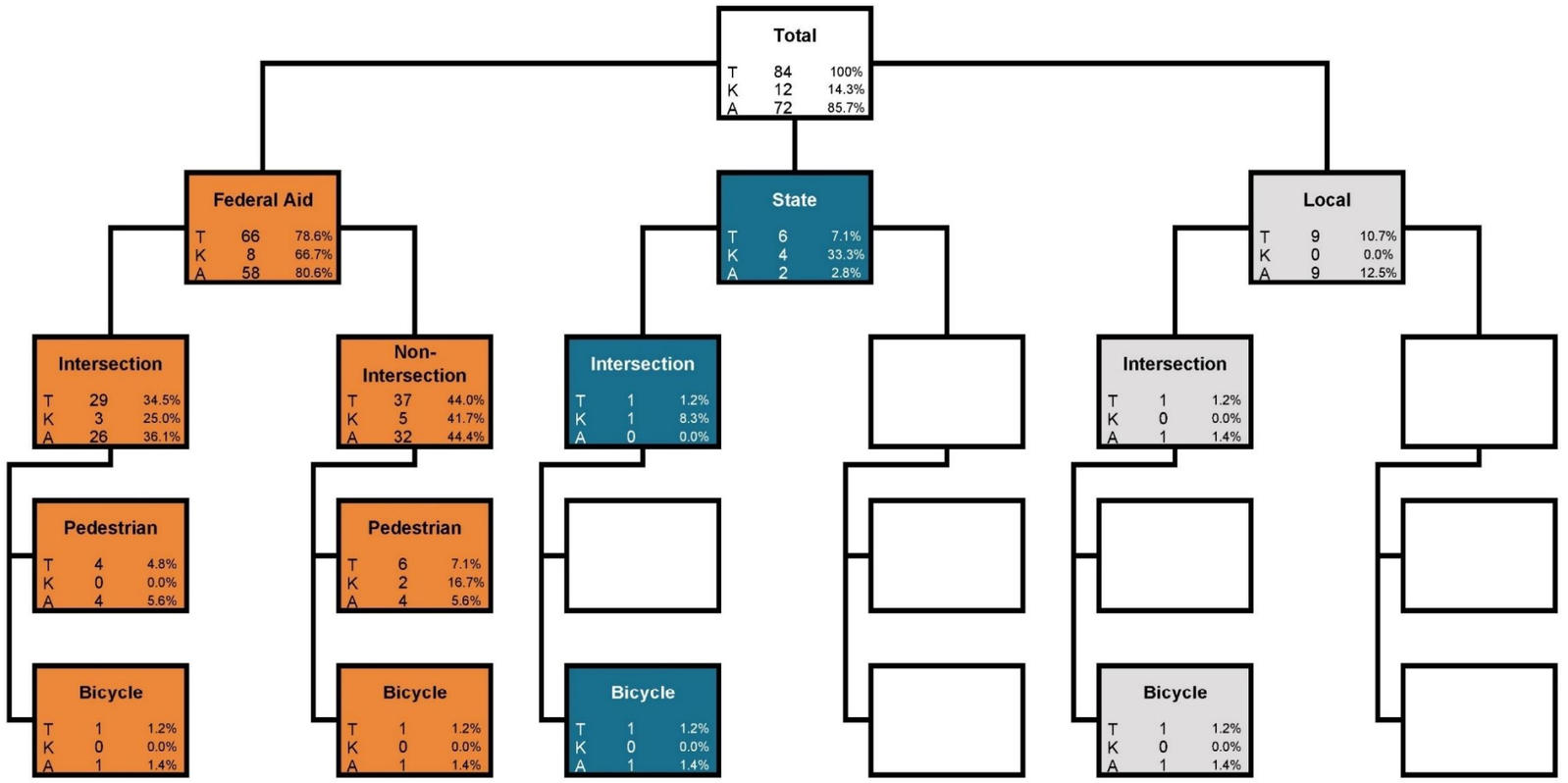

Figure 4-17 – Fatal and Serious Injury Crash Tree Diagram, 2018-2022 (Bikes and Pedestrians)

4.4. Washington Crash Analysis

4.4.1. Fatal and Serious Injury Crashes by Crash Type

Figure 4-18 provides an overview of fatal and serious injury crashes by crash type and by crash attributes for the Asotin County GFA for the five-year period (2018-2022).

A review of the data shows:

- The most common crash types within Asotin County were Vehicle Hits Pedestrian followed by Vehicle Overturned. The most common crash types within Nez Perce County were Fixed Object followed by Pedestrian. It is noteworthy, that about ten pedestrian involved crashes occurred in each GFA within the reporting period.

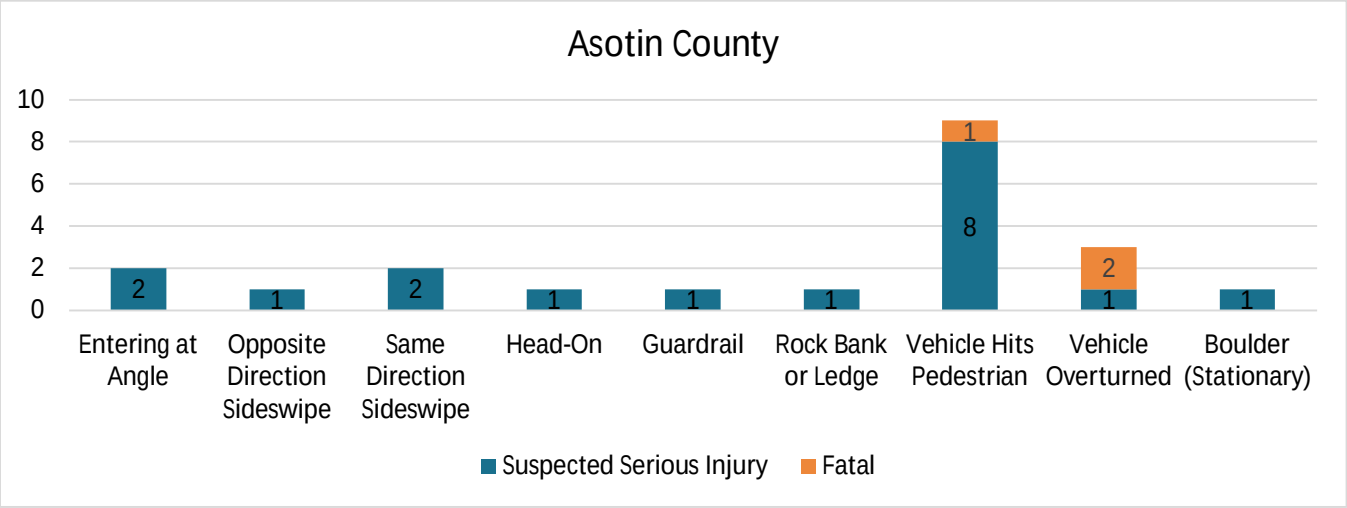

Figure 4-18 – Fatal and Serious Injury Crashes by Crash Type, 2018-2022

4.4.2. Fatal and Serious Injury Vulnerable User Crashes

Figure 4-19 provides an overview of fatal and serious injury crashes by vulnerable road user and roadway ownership for the Asotin County GFA for the five-year period (2018-2022). A review of the data shows:

- Asotin County experienced zero pedacycle involved serious or fatal crashes during the five-year period (2018-2022).
- State Routes experienced the least number of crashes in Asotin County.

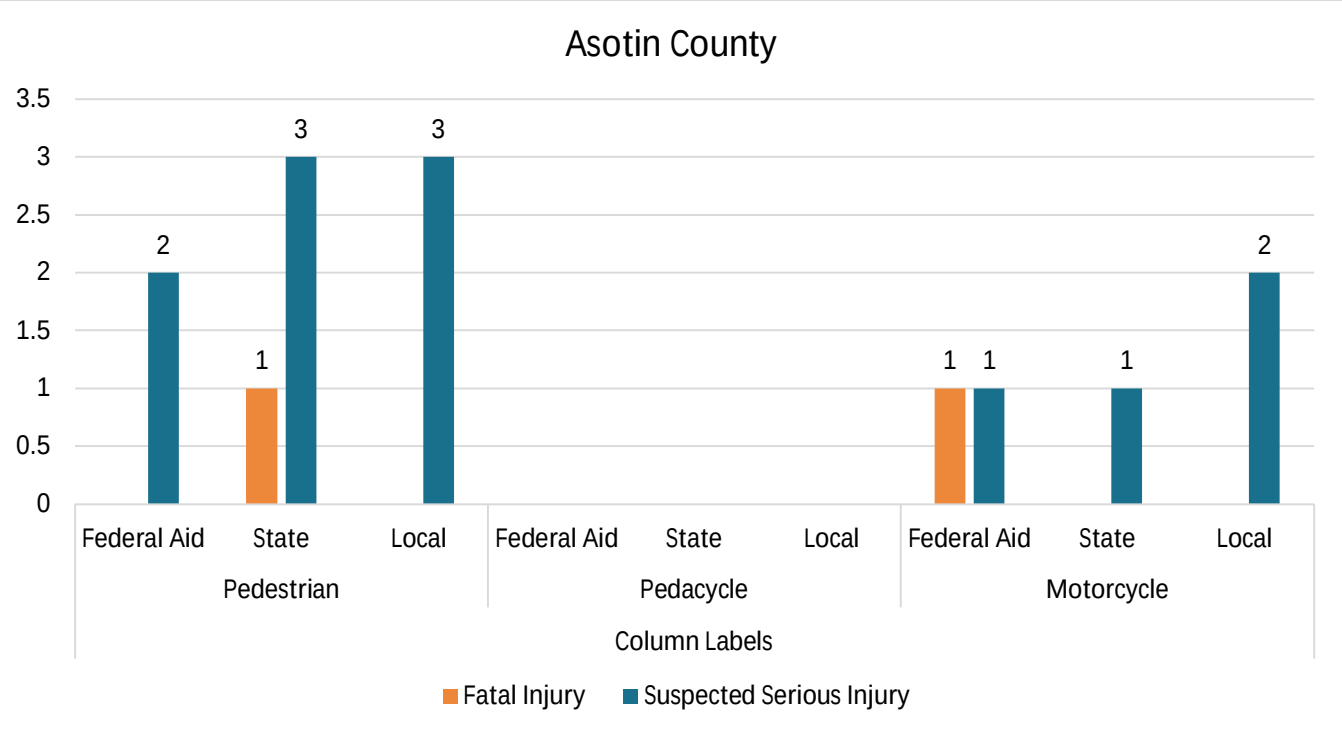

Figure 4-19 – Fatal and Serious Injury Crashes by Vulnerable User, 2018-2022

4.4.3. Fatal and Serious Injury Intersection Crashes

Figure 4-20 and **Figure 4-21** provide an overview of fatal and serious injury crashes by intersection and roadway ownership for the Asotin County GFA for the five-year period (2018-2022).

A review of the data shows:

- All fatal injuries that occurred within the Asotin County were non-intersection related, with two occurring on Federal Aid routes, and one occurring on a State route.

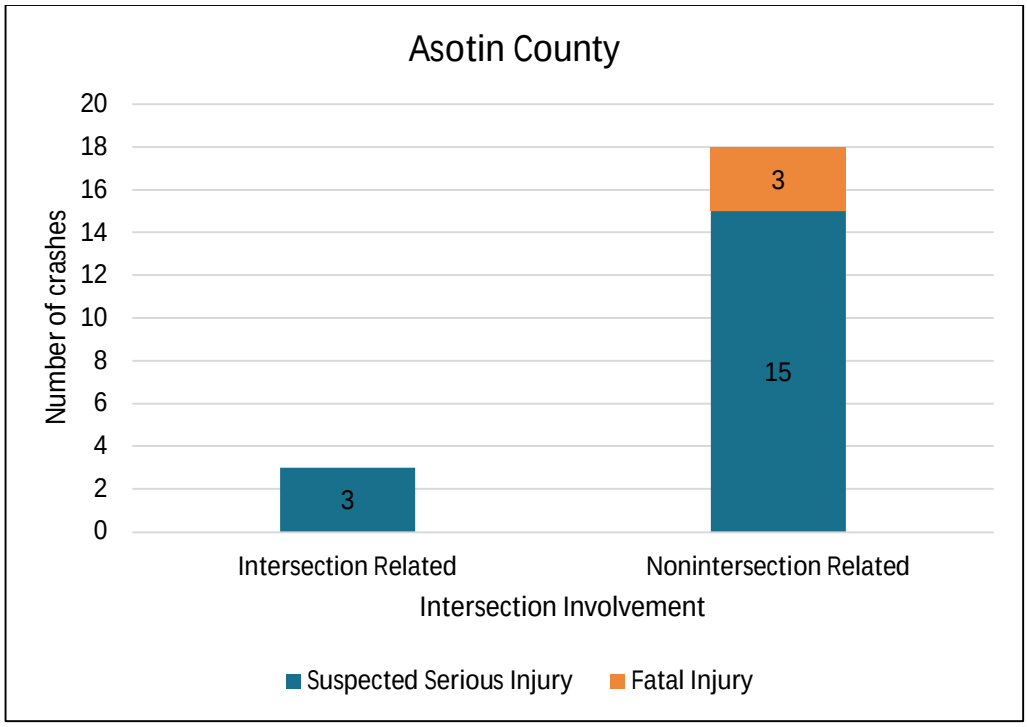

Figure 4-20 – Fatal and Serious Injury Crashes by Intersection, 2018-2022

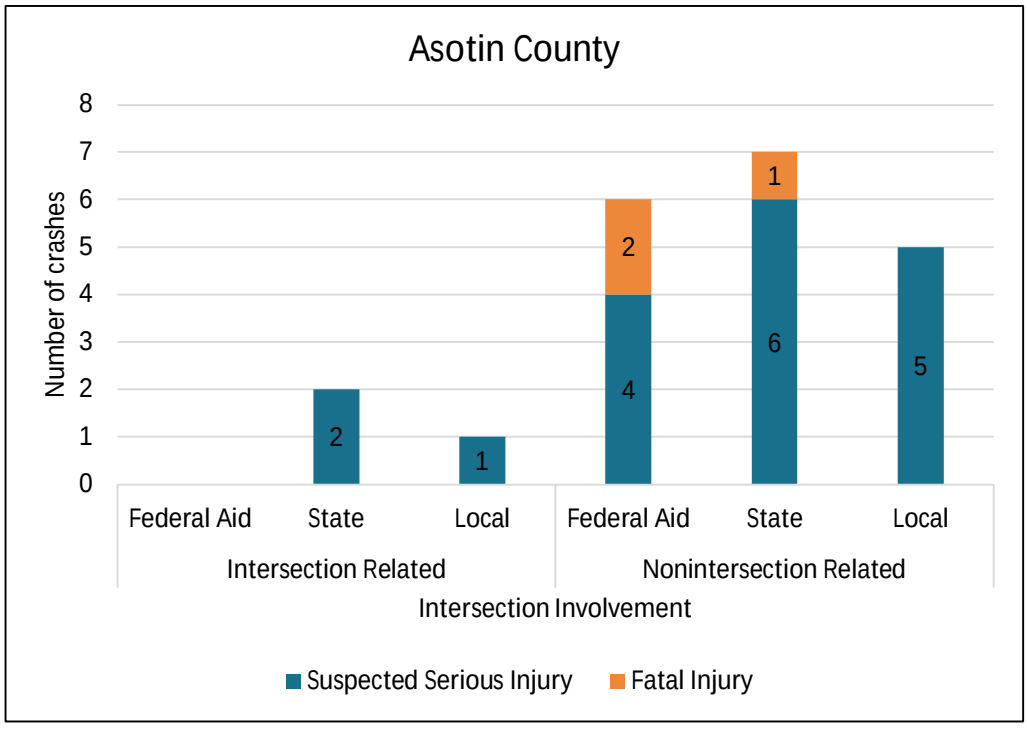

Figure 4-21 – Fatal and Serious Injury Crashes by Intersection & Roadway Ownership, 2018-2022

4.4.4. Fatal and Serious Injury Crashes by Functional Class

Figure 4-22 provides an overview of fatal and serious crashes by roadway functional class for the Asotin County GFA for the five-year period (2018-2022)

A review of the data shows:

- The highest frequency of fatal and serious injury crashes occurs on arterial roads in Asotin County.

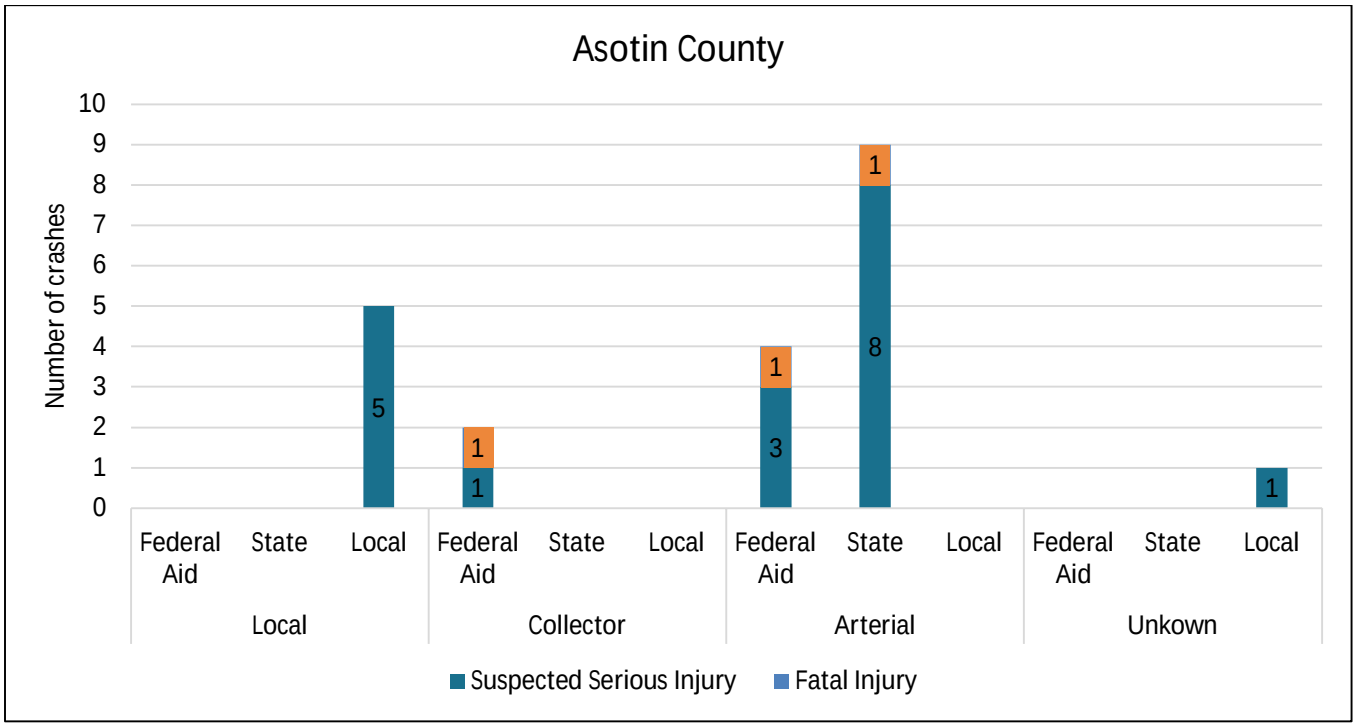

Figure 4-22 – Fatal and Serious Injury Crashes by Functional Class & Roadway Ownership, 2018-2022

4.4.5. Fatal and Serious Injury Crash Tree Diagrams

Fatal and serious injury crash tree diagrams were generated for the Asotin County GFA. These crash tree diagrams, for the five-year period (2018-2022), are presented in **Figure 4-23** though **Figure 4-25**.

For clarity and emphasis, the crash trees are limited to the three crash types with highest frequency crash type and manner of collision. The crash trees are organized by:

1. Roadway Ownership
2. Intersection/Non-Intersection
3. Categories:
   a. Pedestrian and Bikes
   b. Crash Attribute
   c. Crash Type

A review of the data shows:

Federal Aid Routes:

- Most frequently occurring crash types are:
  - Angle

- Pedestrian
- Head-On Turning/Drove Left of Center

State Routes:

- About 15% (14.3%) of fatal and serious crashes occurred on State Routes.
- About 5% (4.8%) of fatal crashes occurred on State Routes within the LCVMPO.
- Most frequently occurring crash types are:
  - Vehicle Strikes Pedestrian
  - Drove Left of Center
  - Angle/Entering at Angle

Local Streets:

- No fatal accidents occurred on Local Streets within the LCVMPO
- The most frequent crash type on Local Streets was Pedestrian involved.

Each crash tree diagram displays the total fatal and serious injury crashes (T), fatal crashes (K), and serious injury crashes (A). It should be noted, crashes reported on Unknown road types are included in the total crashes but not designated as Federal Aid, State Routes, or Local Streets.

Legend

T – Total

K – Fatal

A – Serious Injury

Crash Types

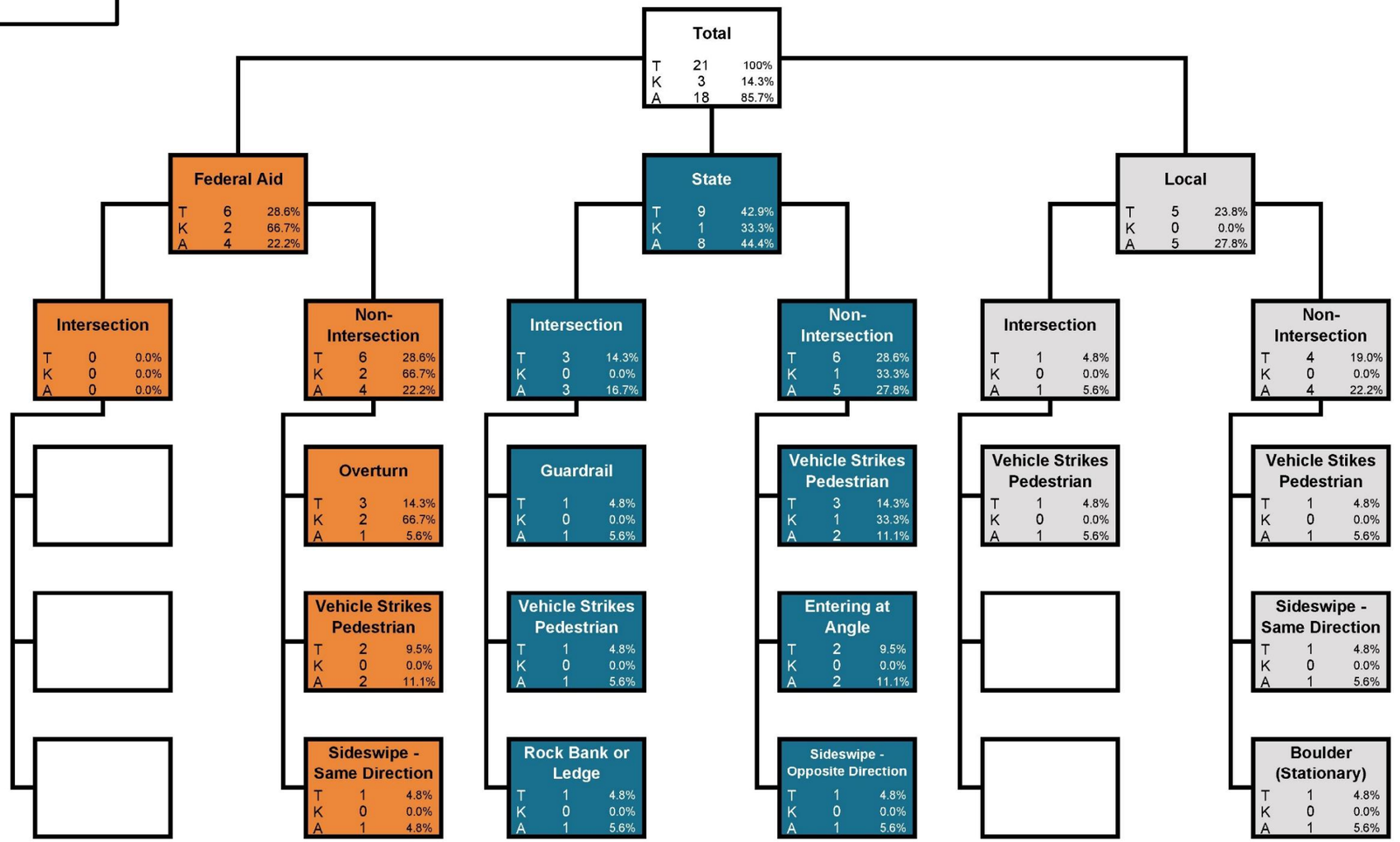

Figure 4-23 – Asotin County Fatal and Serious Injury Crash Tree Diagram, 2018-2022 (Crash Types)

Crash Attributes

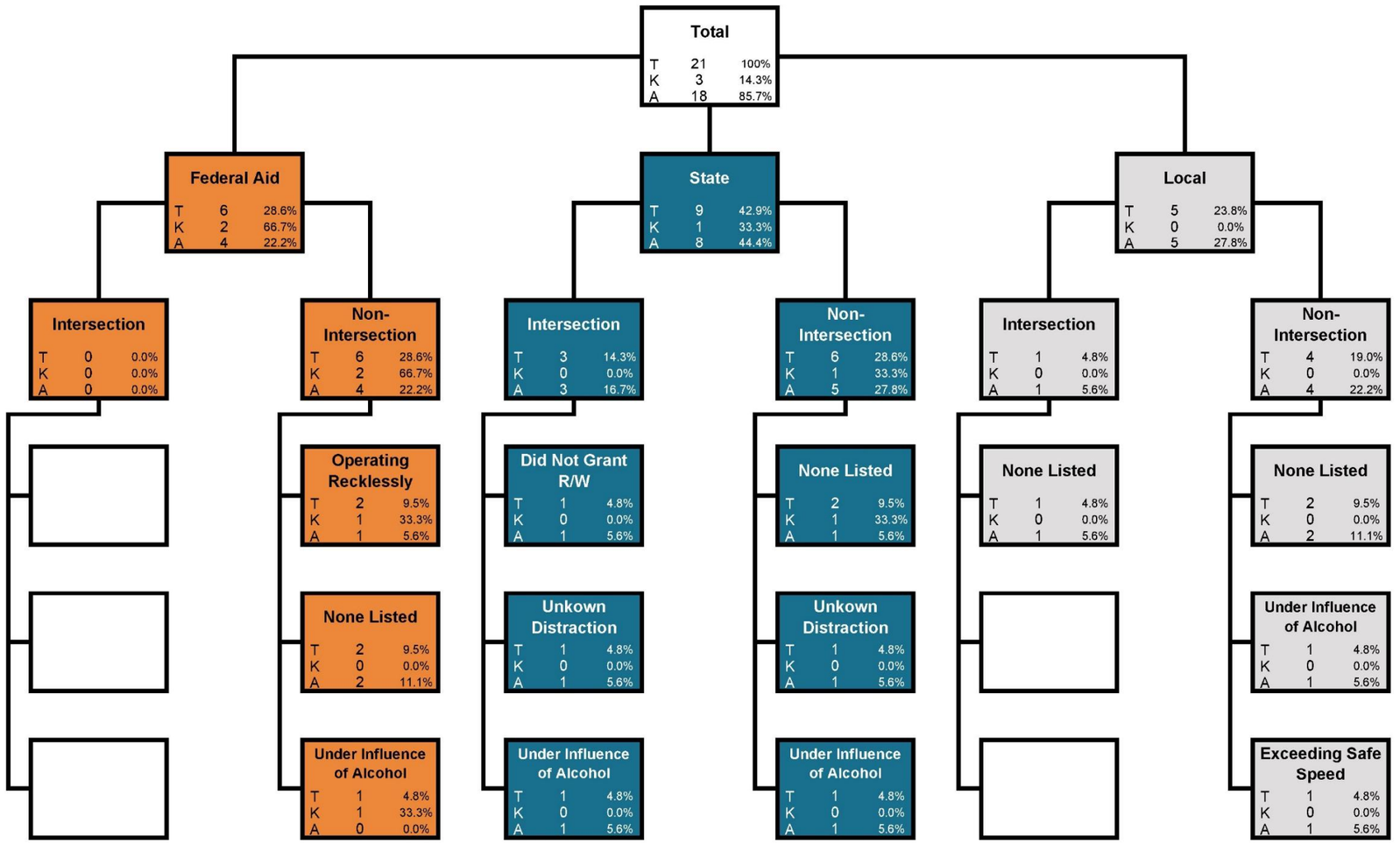

Figure 4-24 – Asotin County Fatal and Serious Injury Crash Tree Diagram, 2018-2022 (Crash Attributes)

Bikes and Pedestrians

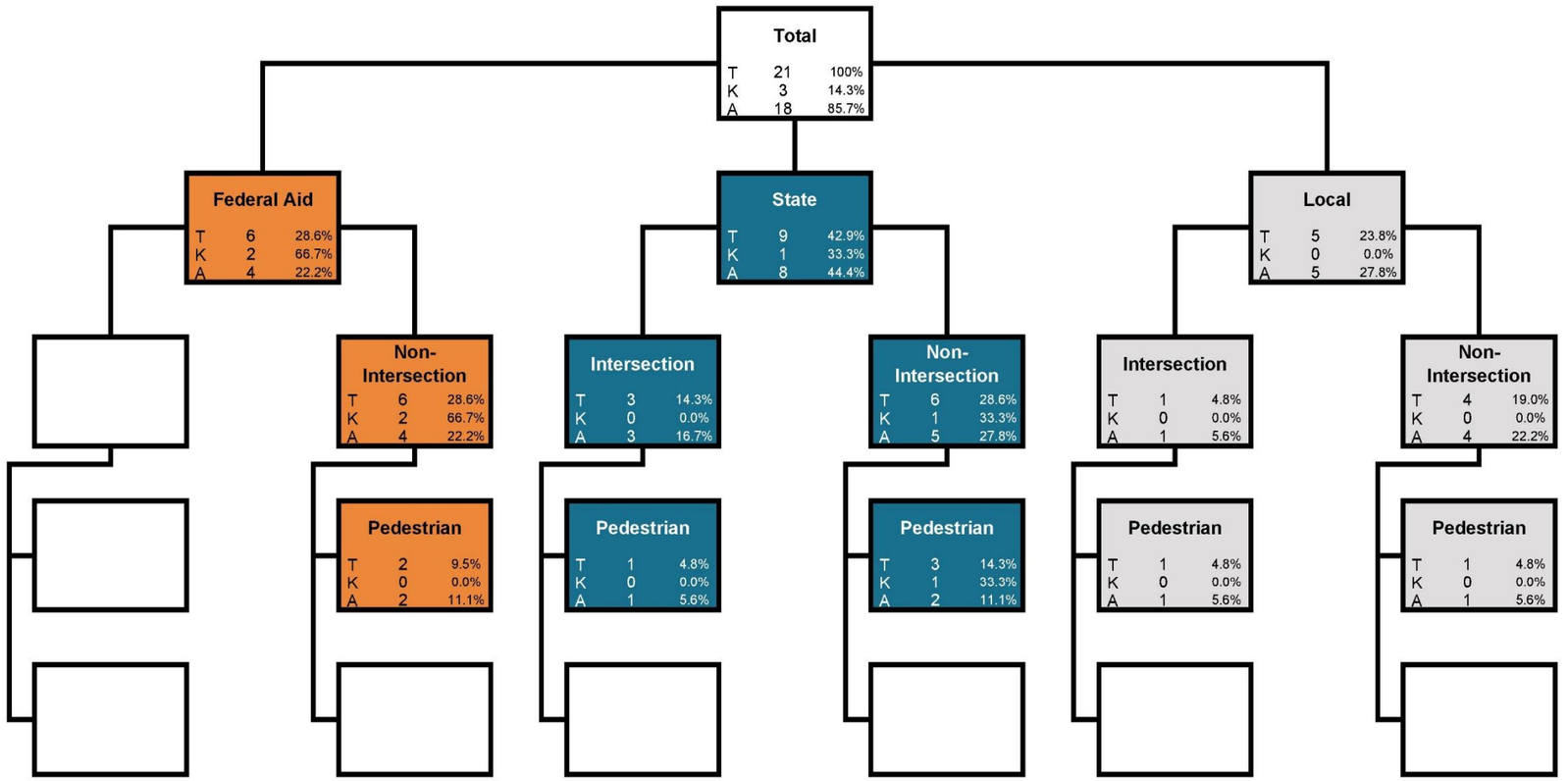

Figure 4-25 – Asotin County Fatal and Serious Injury Crash Tree Diagram, 2018-2022 (Bikes and Pedestrians)

4.5. Crash and Network Screening Analysis Results

This section summarizes the safety analyses performed for both the Asotin County and Nez Perce County GFAs.

A summary of results based on the CCR analysis methodologies described in this report are compiled below. **Figure 4-26** and **Figure 4-28** identify intersections for each GFA, and **Figure 4-27** and **Figure 4-29** illustrate roadway segments for each GFA, determined to be most problematic by the CCR analysis.

CCR differential for roadway segments are illustrated in **Table 4.4** and **Table 4.5** for the Nez Perce County GFA and Asotin County GFA respectively. CCR differential for intersections are illustrated in **Table 4.6** and **Table 4.7** for Nez Perce County GFA and Asotin County GFA respectively. Each roadway segment and intersection noted in **Table 4.4** through **Table 4.7** also include EPDO for each location.

A positive Local CCR differential is an indication of a location with potential for safety improvements to be made. These locations represent those with the highest potential for safety improvements and can be considered as potential safety project locations.

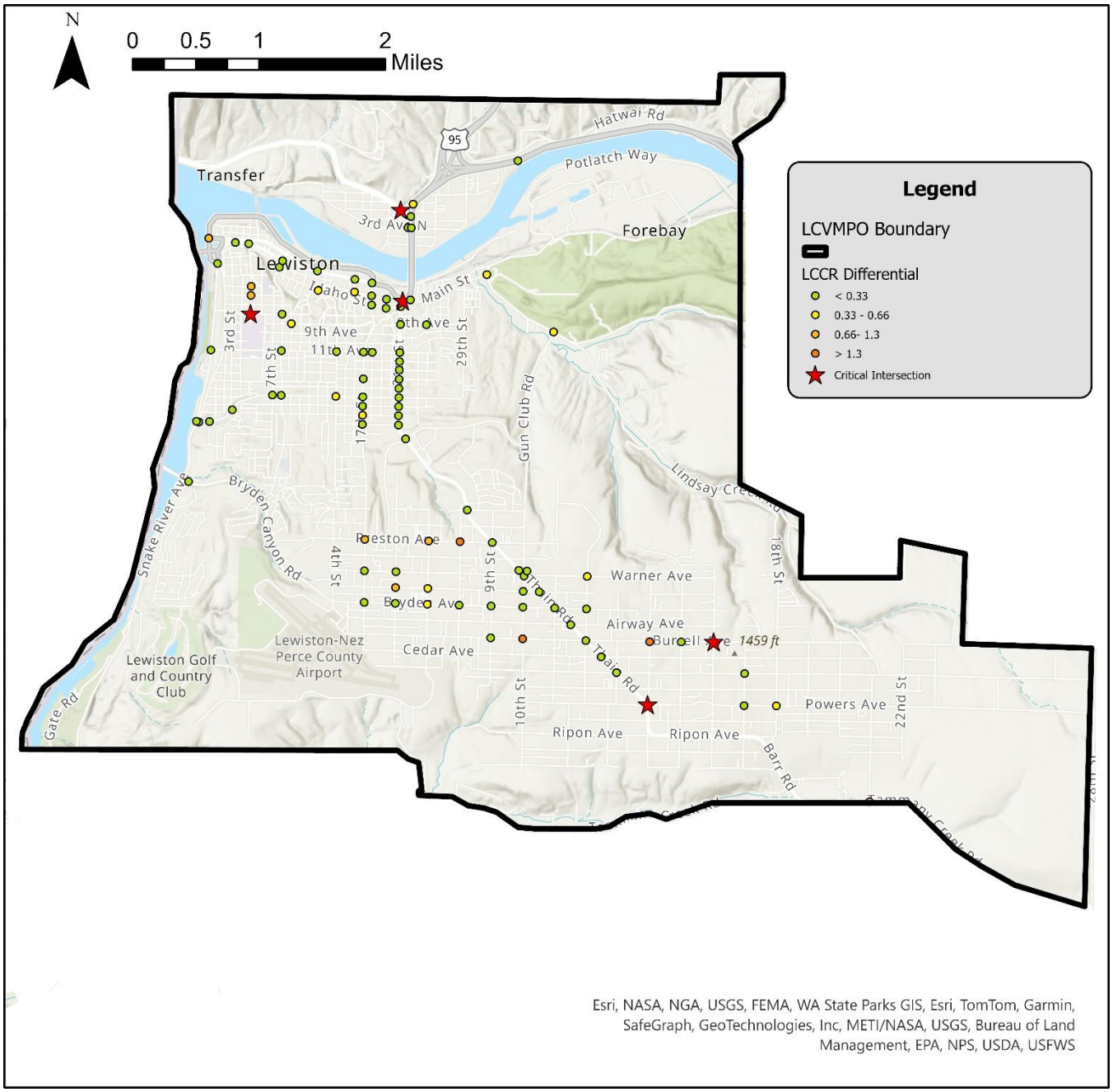

Figure 4-26 – Nez Perce County GFA Intersections for Improvement

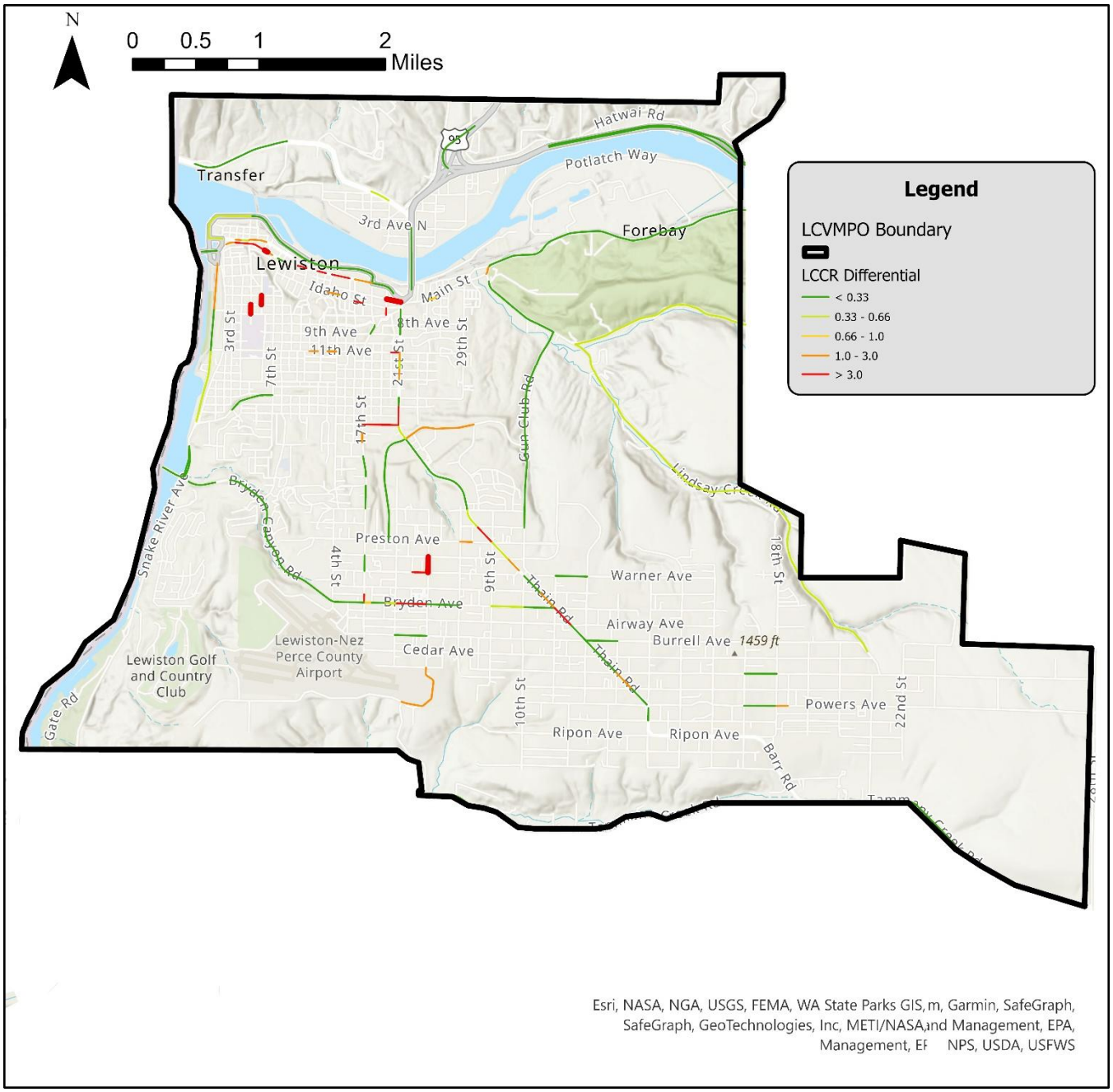

Figure 4-27 – Nez Perce County GFA Roadway Segments for Improvement

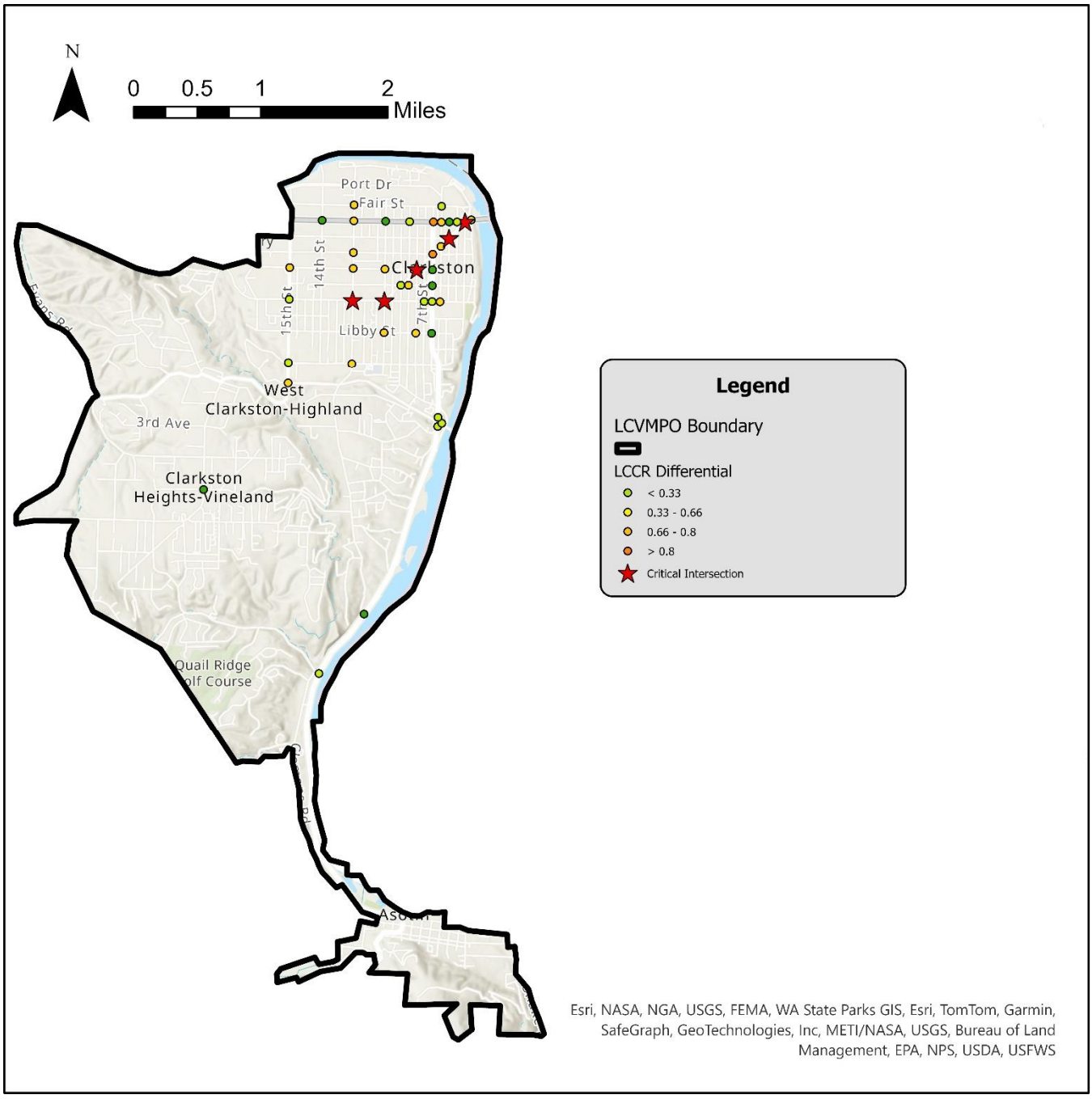

Figure 4-28 – Asotin County GFA Intersections for Improvement

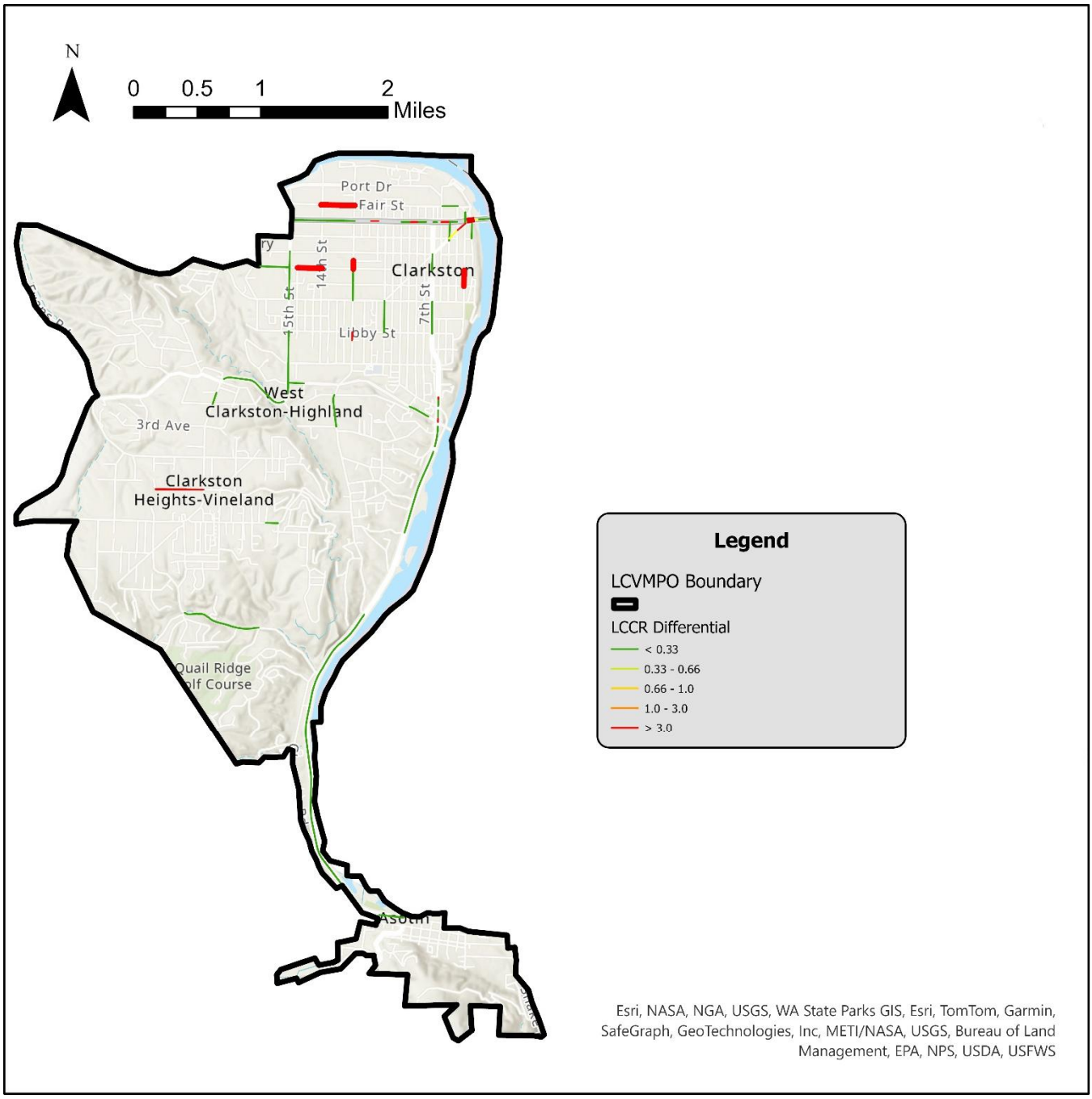

Figure 4-29 – Asotin County GFA Roadway Segments for Improvement

Table 4.4 –CCR Analysis Results – Roadway Segments in Nez Perce County

Street Name	From Street	To Street	GFA	Total Number of Collisions	Fatal	Serious Injury	LCCR Diff	EPDO
6th St	5th Ave	6th Ave	Nez Perce County	3	0	0	30.12	59
5th St	6th Ave	7th Ave	Nez Perce County	3	0	0	17.95	22
Main St	7th St	8th St	Nez Perce County	6	0	0	16.98	25
G St	19th St	-	Nez Perce County	3	0	1	12.78	181
7th St	Park Ave	Warner Ave	Nez Perce County	3	0	0	12.57	22

Table 4.5 –CCR Analysis Results – Roadway Segments in Asotin County

Street Name	From Street	To Street	GFA	Total Number of Collisions	Fatal	Serious Injury	LCCR Diff	EPDO
Fair St	14th St	13th St	Asotin County	3	0	0	13.72	3
Elm St	Van Ardsol St	14th St	Asotin County	4	0	0	11.75	24
2nd St	Elm St	Sycamore St	Asotin County	3	0	0	6.89	3
13th St	Ash St	Elm St	Asotin County	5	0	0	5.23	17
Bridge Street (US-12)	Diagonal St	Riverview St	Asotin County	5	0	0	4.7	5

Table 4.6 –CCR Analysis Results - Intersections in Nez Perce County

Intersection	GFA	Total Number of Collisions	Fatal	Serious Injury	LCCR Diff	EPDO
Thain Road & Powers Ave	Nez Perce County	7	0	0	4.2	26
W 22nd St & Old North South Hwy	Nez Perce County	6	1	0	1.59	3454
5th St & 7th Ave	Nez Perce County	5	0	0	1.49	43
16th St & Burrell Ave	Nez Perce County	8	0	1	1.37	168
21st St & Main St	Nez Perce County	20	0	0	1.36	133

Table 4.7 –CCR Analysis Results - Intersections in Asotin County

Intersection	GFA	Total Number of Collisions	Fatal	Serious Injury	LCCR Diff	EPDO
4th St & Diagonal St/Poplar St	Asotin county	14	0	0	4.24	21
12th St & Diagonal St/Chestnut St	Asotin county	7	0	0	3.01	11
2nd St & US-12	Asotin county	15	0	0	2.03	34
8th St & Diagonal St/Elm St	Asotin county	4	0	0	1.26	14
13th St & Chestnut St	Asotin county	12	0	0	0.87	21

APPENDIX