County of Del Norte and City of Crescent City
Systemic Safety Analysis Report Program

Final Regional Systemic Safety Analysis Report

June 25, 2019

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June 25, 2019

Prepared for: County of Del Norte and City of Crescent City

Prepared by: TJKM Transportation Consultants

Table of Contents

Appendix A – Field Assessment Sheets

Appendix B – Survey Responses

Appendix C – Countermeasure Toolkit Results

Appendix D – SSARP Implementation Guidelines

List of Tables

List of Figures

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EXECUTIVE SUMMARY

The Systemic Safety Analysis Report Program (SSARP) is a State-funded program established in 2016. The SSARP assists local agencies with identifying safety issues through collision analysis and developing systemic low-cost countermeasures that may be funded through the Highway Safety Improvement Program (HSIP). This Regional Systemic Safety Analysis Report (SSAR) analyzes safety issues and develops safety projects for both the County of Del Norte and City of Crescent City to help secure funding through HSIP to improve the safety of transportation infrastructure. This report analyzes the County of Del Norte and City of Crescent City separately.

Goals and Reporting Requirements of SSARP Report

This SSAR follows and is consistent with, the Caltrans' SSARP Guidelines. The goal of the SSARP is to:

- Provide collision analysis for the roadway network in the County of Del Norte and City of Crescent City with the exclusion of state highways;
- Identify high-risk intersections and roadway segments;
- Develop an effective list of low-cost and long-term countermeasures;
- Develop safety projects to address key issues; and
- Secure funding for safety projects through HSIP grants.

The following table lists the required SSARP reporting requirements and the corresponding chapters in this report which provide the required information.

Table 1: SSARP Reporting Requirements

SSARP Reporting Requirements	Chapter
6.1 Executive Summary	Executive Summary
6.2 Engineer's Seal	Executive Summary
6.3 Statement of Protection of Data from Discovery and Admissions	Executive Summary
6.4 Safety Data Utilized (Crash, Volume, Roadway)	2
6.5 Data Analysis Techniques and Results	3, 4
6.6 Highest Occurring Crash Type	3, 4
6.7 High-Risk Corridors and Intersections (Crash History and Roadway Characteristics)	5
6.8 Countermeasures Identified to Address the Safety Issues	7
6.9 Viable Project Scopes and Prioritized List of Safety Projects	9
6.10 Attachments and Supporting Documents	Appendix

Relevant Data and Methodology

The study evaluated crash data for a five-year duration from January 2013 to December 2017 for roadway networks in the County of Del Norte and City of Crescent City, excluding the state highway system. The crash data was received from the Statewide Integrated Traffic Records System (SWITRS), University of California, Berkeley's Transportation Injury Mapping System (TIMS) and from traffic collision reports. The Geographic Information System (GIS) data, including roadway centerlines and jurisdictional boundaries, were retrieved from the sources such as US Census Bureau Tiger/Line Shapefiles and Caltrans GIS database. The Del Norte County-Crescent City Urban Boundary (DNC-CCUB) utilized in this document for crash analysis is from the Del Norte County General Plan. The DNC-CCUB captures crashes within the Crescent City urban area beyond and including the incorporated City. In this document, a reference to the City of Crescent City for the purpose of analysis would mean the area within the DNC-CCUB.

To identify and rank sites where countermeasures can result in the highest safety benefit, a Network Screening methodology was utilized. Sliding Window Screening method and Simple Ranking Screening method were utilized to identify the highest risk roadway segments and the highest risk intersections respectively. Detailed discussion on these methods is included in Chapter 5. Overall, the study efforts included the following:

1) Extensive review of all crashes in the County and City based on crash types, crash factors, year of occurrence, modes, and other apparent and non-apparent factors;
2) Review of geometric conditions, existing traffic control devices, striping and roadway markings, visibility, lighting, and other conditions that could limit accessibility and contribute to the unsafe conditions;
3) Analytical tools that clearly provide linkage between the data analysis and conclusions;
4) Selection of countermeasures; and
   Development of safety projects and their benefit-to-cost (B/C) ratio calculations.

Selection of Countermeasures

The study utilized the Caltrans Local Roadway Safety Manual (LRSM) for identifying the most appropriate countermeasures for roadway segments, signalized and unsignalized intersections in the County of Del Norte and City of Crescent City. The project team also utilized the Federal Highway Administration's Crash Modification Factor (CMF) Clearinghouse and relevant published research papers for further insight into the Crash Reduction Factors (CRFs) and effectiveness of countermeasures.

Countermeasures for County of Del Norte

Based on the crash analysis and review of the most appropriate countermeasures, the study identified a total of six countermeasures for implementation – four for the roadway segments and two for the signalized intersections in the County. The countermeasures recommended for the County are as follows:

- S2-Improve signal hardware: lenses, back-plates, mounting, size, and number;
- S19-Install pedestrian countdown signal heads;
- R4-Install Guardrail;
- R26-Install/Upgrade signs with new fluorescent sheeting (regulatory or warning);
- R27-Install chevron signs on horizontal curves; and
- R32-Install edge-lines and centerlines.

Countermeasures for City of Crescent City

Based on the crash analysis and review of the most appropriate countermeasures, the study identified a total of four countermeasures for implementation – two for the roadway segments and two for the signalized intersections in the City. The recommended countermeasures for the City are as follows:

- S2-Improve signal hardware: lenses, back-plates, mounting, size, and number;
- S19-Install pedestrian countdown signal heads;
- R26-Install/Upgrade signs with new fluorescent sheeting (regulatory or warning), and R32-Install edge-lines and centerlines.

Development of Safety Projects

Projects for County of Del Norte

The following two projects were proposed for systemic implementation in the County:

- Pavement delineation upgrade and installation of regulatory/warning signs;
- Installation of guardrails and chevron signs; and

The overall B/C ratio obtained for these projects were 9.8 and 10.1 respectively.

Projects for City of Crescent City

The project of pavement delineation and installation of regulatory/warning signs was proposed for systemic implementation in the City. The overall B/C ratio obtained for this project was 7.1.

The project of signal hardware upgrade and installation of pedestrian countdown signal heads was proposed jointly for the County and City. The overall B/C ratio obtained for this project was 13.3.

Statement of Protection of Data

For reports prepared under the State's Strategic Highway Safety Plan and HSIP, Section 148 of Title 23 of the United States Code recommends inclusion of the following statement:

Notwithstanding any other provision of law, reports, surveys, schedules, lists or data compiled or collected for any purpose relating to this section, shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists or other data.

Engineer's Seal and Statement

By signing and stamping this Systemic Safety Analysis Report, I am attesting to this report's technical information and engineering data upon which local agency's recommendations, conclusions and decisions are made.
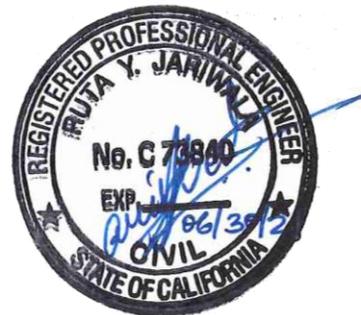
Ruta Jariwala, PE, TE

1. INTRODUCTION

1.1 Background

The County of Del Norte and City of Crescent City strive to provide better and safer transportation infrastructure to its residents and visitors. The development of the SSAR represents one of the County and City's many proactive steps towards improving safety for various transportation users, including motorists, bicyclists, pedestrians, and transit riders. The approach used for the SSAR analysis follows the Caltrans LRSM, Version 1.3 and Federal Highway Administration Systemic Safety Project Selection Tool methodologies and requirements. The SSAR process utilized in this report is as shown in **Figure 1**. This will also help facilitate the implementation of resulting projects through applicable grant programs such as the HSIP.

This study has been segregated into two parts:

1. Countywide analysis; and
2. Citywide analysis.

Note that the countywide analysis evaluates collisions of all incorporated and unincorporated areas in the County. For Citywide crash analysis, the analysis area was expanded to Del Norte County Urban Boundary (DNC-CCUB) to capture crashes within the Crescent City urban area beyond and including the incorporated City. In this document, a reference to the City of Crescent City for the purpose of analysis would mean the area within the DNC-CCUB.

1.2 Report Organization

The report is organized into the following chapters:

- *Chapter 1* – Introduction: This chapter describes how this report is organized, introduces the study area, and summarizes the reviews of planning documents to consolidate jurisdictional planning goals, policies, standards, and transportation improvement projects relevant to this SSAR.
- *Chapter 2* – Crash Data: This chapter discusses the source of crash data, summarizes the data needs and collection of the data including crashes, safety ranking, traffic volume, and roadway characteristics data.

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│      Collection of Crash Data    │
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│  Analysis of Crash Data by Roadway│
│    Segment and Intersection      │
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┌─────────────────────────────────┐
│ Selection of High-Risk Roadway Segments and │
│ Intersections based on Crash Analysis Results│
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│ Combination of High-Risk Location Data with Roadway │
│   Segment and Intersection Characteristics │
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│ Selection of Preliminary Countermeasures for High-Risk │
│   Locations Using Countermeasure Toolkit │
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│ Assessment of Feasibility of Preliminary Countermeasures │
│   through Field Review of High-Risk Locations │
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│      Final Selection of          │
│       Countermeasures            │
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│   Estimation of Total Project Cost │
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│   Calculation of Project B/C Ratio │
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│   Funding and Implementation of  │
│          Improvements            │
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│  Evaluation of the Effectiveness of │
│          Improvements            │
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Refine Project

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- *Chapter 3* –Data Analysis Approach and Preliminary Analysis: This chapter summarizes the data analysis approach and preliminary findings regarding safety issues for the County of Del Norte and City of Crescent City.

- *Chapter 4* –Data Analysis Results: This chapter summarizes the overall findings and detailed crash analysis by jurisdiction and facility type.

- *Chapter 5* – High-Risk Corridors and Intersections: This chapter summarizes crash rate methodology and resulting high-risk corridors and intersections, and field assessment of the priority locations.

- *Chapter 6* – Community and Stakeholder Outreach: This chapter summarizes efforts taken by the County and City to engage stakeholders and members of the community in the SSAR process, and to utilize their valuable inputs to increase roadway safety on County and City roadways.

- *Chapter 7* – Countermeasure Selection: This chapter summarizes suggested countermeasure for the reduction of fatal and severe injury crashes in the County of Del Norte and City of Crescent City.

- *Chapter 8* – Best Practices for Intersection and Roadway Safety Treatment: This chapter describes a few intersection safety treatments and lists the advantages and disadvantages of each treatment.

- *Chapter 9* – Safety Project Development and Prioritization: This chapter summarizes the safety projects suggested for the reduction of fatal and severe injury crashes in the County of Del Norte and City of Crescent City.

- *Chapter 10* – Summary: This chapter briefly summarizes the overall findings and project recommendation for the County of Del Norte and City of Crescent City in this report.

As a stated in the requirement of Caltrans-SSARP Guidelines, the crash analysis presented in this report focuses on fatal and severe injury (F+SI) crashes. The analysis was conducted by facility type, i.e. by intersections and roadway segments, within the County of Del Norte as well as City of Crescent City.

1.3 Study Area

Del Norte County is bordered by Curry County, OR and Josephine County, OR to the north, Siskiyou County, CA to the east, Humboldt County, CA to the south, and the Pacific Ocean to the west. Del Norte County has an area of 1,230 square miles and is located 376 miles north of the City of San Francisco and 418 miles north of the City of Sacramento. According to the American FactFinder by the US Census Bureau, the County of Del Norte has an estimated population of 27,470 as of 2017, which is about 0.1 percent of the total population in the State of California.

The US-101 is a major highway providing north-south connections and US-199 provides east-west connections across the County. Redwood Coast Transit provides bus service in the County.

The Countywide analysis consisted of all Countywide roadways with the exception of state highways. The Countywide analysis includes both unincorporated and incorporated areas as shown in **Figure 2**.

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Legend

- Streets
- Crescent City
- DNC-CCUB
- Water Bodies
- Del Norte County
- State of California

DNC-CCUB

City of Crescent City

N

Miles
0 1 2   4   6   8

Crescent City is the only incorporated City in the County and the County seat. The population for Crescent City is 6,399 according to the US census estimates, which is about 23 percent of the total population of the County of Del Norte. US-101 is the major highway that runs through the City bifurcating into two one-way streets, namely M Street (US-101 North) and L Street (US-101 South). Redwood Coast Transit provides bus service in the City.

The Citywide analysis for the City of Crescent City consists of all citywide roadways with the exception of state highways. For this part of the analysis, the Del Norte County-Crescent City Urban Boundary (DNC-CCUB) was used based on similar urban characteristics to increase the size of the dataset. The Crescent City jurisdictional boundary (City limits) is fully inclusive in the DNC-CCUB. The DNC-CCUB boundary is shown in **Figure 3**. The detailed description of the crash data is discussed in Chapter 2 of this document.
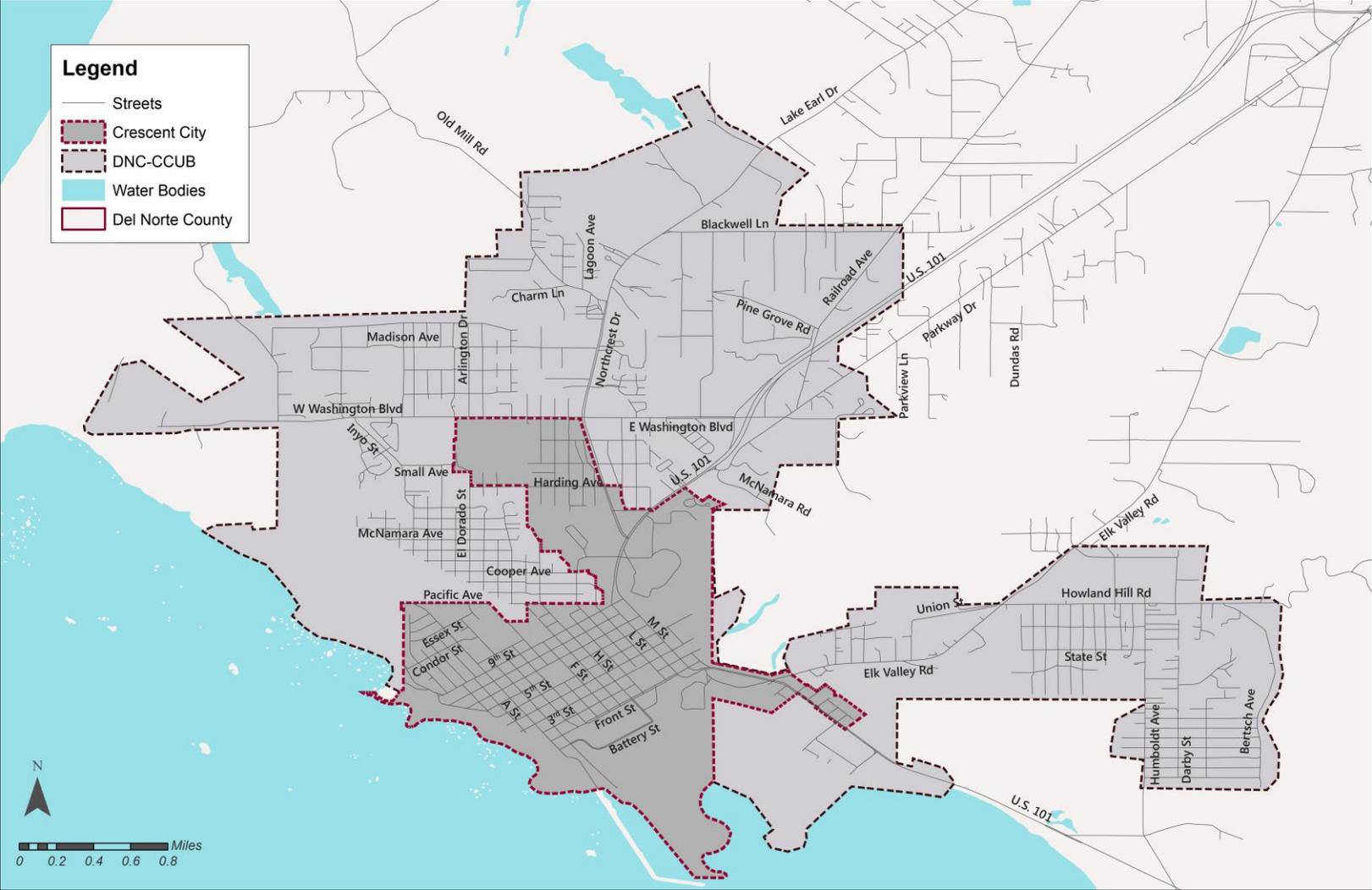
1.4 Literature Review

Del Norte Regional Transportation Plan (2016)

The Regional Transportation Plan (RTP) serves as the guide to the development of a coordinated and balanced multi-modal regional transportation system that is financially constrained to Local, State and Federal revenues. Transportation Improvements in this RTP are identified in the short-range (2016-2026) and long-range (2027-2036) time periods. This plan documents the policy direction, actions and funding to maintain and improve the regional transportation system. This plan thus serves as a guide to the planned improvements and will help promote consistency with the countermeasures proposed in this SSAR.
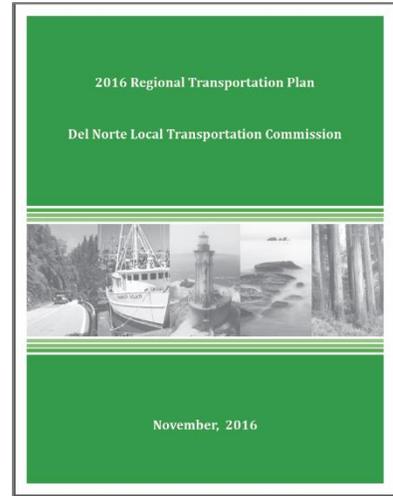
Del Norte Active Transportation Plan (2017)

The Del Norte Active Transportation Plan provides a vision for the future active transportation network in the Del Norte region. The plan prioritizes active transportation improvements that will meet the growing needs of the City of Crescent City and County of Del Norte, increase rider safety, comfort, and encourage bicycling as a practical form of transportation. The plan also focuses on expanding pedestrian facilities to increase the convenience of walking to work, running errands and exercising. The priority improvements identified in the document have focused on completing the Coastal Trail as a joint effort between Crescent City, the Harbor District, and the County, the Pacific Coast Bike Route, Coast-to-Caves and Coast-to-Crest Trails, Elk Valley Connector Trail and a number of other small improvements. This plan provides insights into all the suggested improvements, which will inform the safety projects suggested in this SSAR, and help consolidate improvements as required.
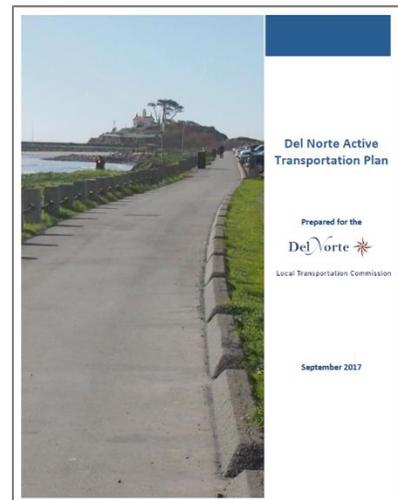
Short-Range Transit Development Plan for the Redwood Coast Transit Authority (2014)

Prepared in 2014, this document assesses transportation and transit-related issues in the County and provides a roadmap for transit improvements for the upcoming five year period. The plan looks into several issues such as funding, Yurok Transit, transit to isolated locations, transit to National Parks and State Parks, Non-Emergency Medical Transportation, etc. The plan summarizes transit demand prioritizing unmet demands and future trends. For the purpose of this SSAR, the planned transit services and routes are taken into consideration for the design of potential right-of-way reconfigurations.
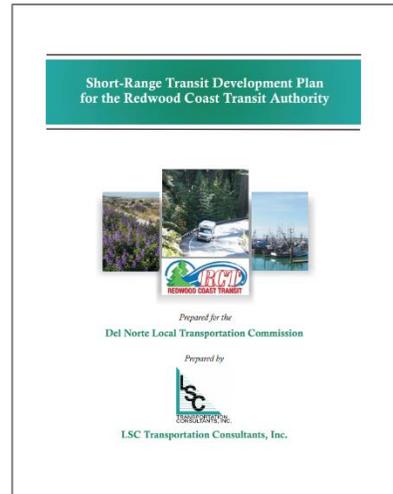
Del Norte County General Plan: Coastal Element (1983)

The Del Norte County General Plan Coastal Element consists of land use plan text and maps which were approved by California Coastal Commission in 1981 and certified in 1983. The Public Works section of the document looks into road systems in the County to determine if the road system would be a limiting factor for achieving developmental goals. The section compares the ADT of certain road segments in 1983 to their respective capacity, and concludes that the road systems at the time were functioning under capacity and therefore were not to be considered as a constraint to achieve developmental goals in the County.
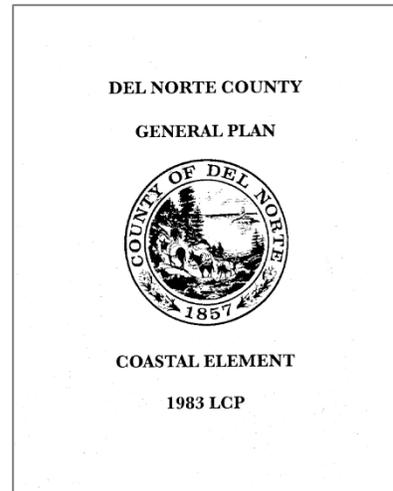
Del Norte County General Plan (2003)

The Del Norte County General Plan formalizes a long term vision for the physical evolution of Del Norte County and outlines policies, standards, and programs concerning the County's development. It serves as the community's blueprint for land use and development. This plan comprises of the Circulation Element which identifies the general location and extent of existing and proposed major transportation facilities, including major roadways, rail and transit, and airports. It informs the SSAR of the existing and proposed development and hence guides countermeasure selection within the County of Del Norte.
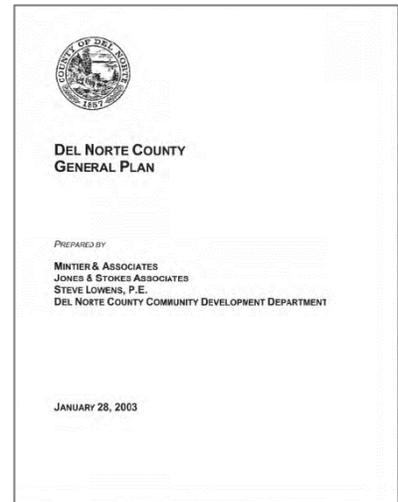
City of Crescent City General Plan: Policy Document

Prepared in 2001, the City of Crescent City General Plan – Policy Document is a planning document that compiled the City's long-term vision and outlined policies, standards, and programs to guide day-to-day decisions concerning the City's development. The document is categorized into land use and community development, housing, transportation and circulation, public facilities and services, recreational and cultural resources, natural resources/conservation, and health and safety. The Circulation Element identifies the general location and extent of existing and proposed major transportation facilities, including major roadways, rail and transit, and airports. It informs the SSAR of the goals and policies guiding transportation development and helps ensure the proposed countermeasures are well aligned with the City's vision.
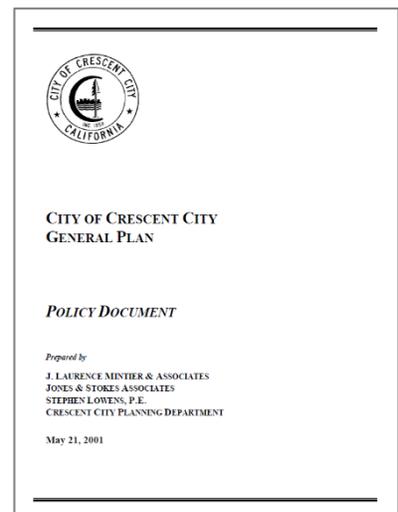
City of Crescent City General Plan: Local Coastal Plan Extract Policy Document (Coastal Land Use Plan) (2011)

The Coastal Land Use Plan establishes policies for all land within the Coastal Zone portions of the City of Crescent City. This Coastal Land Use Plan formalizes a long-term vision for the physical evolution of the portions of City of Crescent City within the California Coastal Zone. Designed to meet State general plan and coastal planning requirements, the Coastal Land Use Plan consists of two documents: this Coastal Land Use Plan Policy Document and a General Plan Background Report.
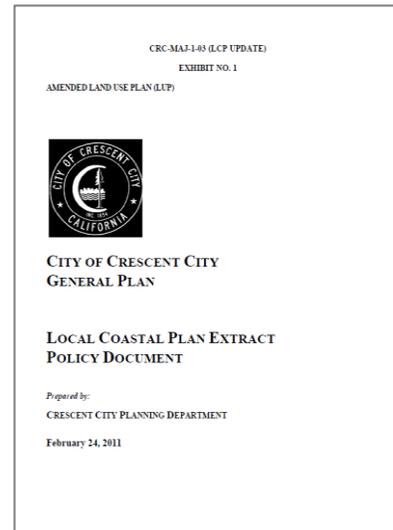
Table 2 below summarizes the relevant goals, policies, and projects from the above mentioned planning documents.

Table 2: Matrix of Planning Goals, Policies and Projects

Document	Relevant Goals, Policies, and Projects

Del Norte County Regional Plan (RTP) 2016	The rural nature of Del Norte County inherently creates connectivity challenges involving roadways, transit, and non-motorized transportation. The following goals and objectives have been identified in the plan:
	
	• **Goal**: Provide and maintain a safe, efficient and convenient countywide roadway system
	   o Maintaining roadways at acceptable safety standards.
	   o Implementation of improvement projects which will increase walkability, bikeability, and attractiveness of downtown areas.
	• **Goal:** Upgrade and improve roadways in order to preserve the existing county roadway system
	   o Accept new roads into the locally maintained road system only when they meet the criteria established by the City or County and when financial means exist.
	• **Goal**: Provide a safe, convenient and efficient non-motorized transportation system that is part of a balanced overall transportation system
	   o Provide a pedestrian and bikeway system that emphasizes safety.
	   o Integrate pedestrian and bikeway facilities into existing and future transportation networks.
	• **Goal:** Provide for the safe and efficient movement of regional and interregional goods
	• **Goal:** Promote Alternative Transportation
	   o Encourage active transportation facilities where possible.
	
	The Action Element lists projects and programs and prioritizes them as constrained (0-10 years) and unconstrained (11-20 years) transportation improvements that are consistent with the identified needs and policies.

Del Norte Active Transportation Plan (2017)	The following projects were identified as the ones that should be regionally prioritized for future active transportation funding sources: 1) Arlington Drive (Sidewalk) 2) Blackwell Lane (Class II) 3) First Street and Sarina Road (Class II) 4) Fred Haight Drive (Class III) 5) Front Street (Multi-use) 6) Glenn Street (Sidewalk) 7) The Highway 101 Gateway Projects (Multi-use) 8) Northcrest Drive (Sidewalk, Class II) The following projects are on-going/completed:

Document	Relevant Goals, Policies, and Projects
	9) Pacific Avenue, El Dorado Street, and Harding Avenue 10) Sunset Circle
Short-Range Transit Development Plan for the Redwood Coast Transit Authority (2014)	Transit expansions identified in the plan are as follows: • Reinstate Service Hours on Crescent City Routes and Dial-a-Ride, Weekdays. • Modify Routes to Reduce Running Time. • Non-Emergency Medical Transportation Service to Arcata/Eureka Coordinated with Humboldt Transit Authority. • Revise Route 20 to Expand Transit Access to Recreational Sites. • Provide a Systemwide Daypass.
County of Del Norte General Plan (2003)	• To plan for the long-range planning and development of Del Norte County's State Highway system to ensure the safe and efficient movement of people and goods. • To ensure the safe and efficient movement of people and goods on Del Norte County's local roadway system. • To develop and maintain a safe and efficient public transportation system that reduces congestion, and provide viable alternative transportation in and through Del Norte County. • To maximize the efficient use of transportation facilities so as to: 1) reduce travel demand on the county's roadway system; 2) reduce the amount of investment required in new or expanded facilities; and 3) reduce the quantity of emissions of pollutants from automobiles. • To provide a safe, comprehensive, and integrated system of facilities for non-motorized transportation.
Del Norte County General Plan: Coastal Element (1983)	The plan concludes that in 1983, road systems were functioning below capacity as can be seen below: | Road	ADT	Capacity
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Ocean View Drive	250	10,000
Fred Haight Drive	1,000	12,000
Lake Earl Drive at Blackwell Lane	5,400	18,000
Lake Earl Drive at Elk Valley Cross Road	3,100	18,000
Lake Earl Drive at Lower Lake Road	1,600	16,000
Morehead Road	700	12,000
Kellogg Road	200	12,000
Lower Lake Road	400	10,000
Old Mill Road	1,900	10,000
Washington Boulevard at Pebble Beach Drive	600	10,000
Washington Boulevard at Inyo Street	1,500	15,000
Washington Boulevard at Northcrest Drive	1,900	15,000
Pebble Beach Drive	800	10,000
Elk Valley Road	3,700	15,000	

Document	Relevant Goals, Policies, and Projects
City of Crescent City General Plan Update (2001)	- To plan for the long-range planning and development of Highway 101 to ensure the safe and efficient movement of people and goods. - To develop and maintain a safe and efficient public transportation system that reduces congestion and provides viable alternative transportation in and through the Crescent City Planning Area. - To encourage biking as an alternative, energy efficient mode of transportation within the city and to develop a system of bikeways and bicycle parking facilities which will safely and effectively serve those who wish to utilize bicycle for commute and recreational trips. - To encourage and facilitate walking throughout the city. - To promote the improvement and maintenance of general and commercial aviation facilities within the parameters of compatible surrounding land uses. - To promote the maintenance and improvement of the City of Crescent City Harbor facilities. - To promote the development of multimedia communications as a viable mode of transportation and commerce.
City of Crescent City General Plan: Local Coastal Plan Extract Policy Document (2011)	Same as Goals, Policies, and Programs listed in City of Crescent Plan Update (2001).

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2. CRASH DATA

This section of the report describes the source and the approach of the safety analysis for the County of Del Norte and City of Crescent City.

2.1 Source of Crash Data

Crash data helps understand different factors that might be influencing the number of collisions and collision patterns in a given area. The process of evaluating crash data is known as Collision Analysis. For the purpose of this analysis, the latest available five-year crash data, from 2013 to 2017 was utilized. SWITRS and TIMS are two online sources available to the public for obtaining crash data. TIMS data does not include Property Damage Only (PDO) collisions. The crash data utilized for collision analysis presented in this report was obtained from TIMS. Each collision in TIMS is geocoded so that the crash can be plotted on Arc Map or any software that has an integrated Geographic Information System. The plotted crash data was then analyzed to obtain high-risk intersections and corridors. Detailed traffic collision reports were also provided to the project team and information from these reports was used to find the coordinates of any crash data in TIMS that was found to have missing coordinates. There were a total of 225 crashes recorded from 2013 to 2017. Out of these 225 collisions, 118 collisions were recorded within the Del Norte County - Crescent City Urban Boundary (DNC-CCUB). As crash dataset within the incorporated City was not readily available, the project team used Arc Map to identify collisions falling within the DNC-CCUB.

The crash data from TIMS was segregated based on crashes occurring at intersections and on roadway segments i.e. by facility type, as the geometries of roadways and intersections differ and are affected varyingly by different factors. After the data was segregated based on intersections and roadways, a comprehensive evaluation was conducted based on factors such as crash severity, primary collision factors, lighting, weather, time of day, etc.

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2.2 Source of Roadway and Intersection Data

The existing roadway infrastructure used for analyzing and mapping the crash data included Countywide roadway centerline, County boundary, Crescent City boundary, and Del Norte County-Crescent City Urban Boundary (DNC-CCUB). Countywide roadway centerline shapefiles were obtained from the Caltrans GIS database. The County boundary and City boundary were obtained from US Census Bureau Tiger/Line Shapefiles. The Crescent City Urban Boundary was created by the project team using the Crescent City General Plan. The shapefile for water feature used in the maps was also obtained from the US Census Bureau Tiger/Line Shapefiles.

Roadway and intersection geometric characteristics were collected through field visits, Google aerial views and Microsoft Streetscape view. Attributes of roadway and intersection characteristics include but are not limited to lighting, number of lanes, roadway width, speed limits, intersection control type, type of median, length of crosswalk, etc. These attributes are utilized while evaluating the applicability and utility of the list of countermeasures obtained though crash rate analysis.

2.3 Office of Traffic Safety (OTS) Collision Rankings

OTS rankings are developed each year so that counties and cities can compare their traffic safety statistics to other counties and cities which are similarly sized based on population. OTS rankings are indicators of potential problems and these indicators can be utilized to conduct further analysis of concerning safety issues. The latest available OTS ranking is from 2016. The rankings are summarized below for the County of Del Norte and City of Crescent City.

OTS rankings from 2016 for the *County of Del Norte* indicate that the County ranks 35 out of 58 in terms of the total number of fatalities and injuries. This indicates that the County ranks midway in comparison to counties of similar population size. Other rankings indicating safety issues are as follows:

1. Collisions involving had been drinking drivers of age less than 21 – 10th (out of 58)
2. Collisions involving alcohol – 20th (out of 58)
3. Speed-related collisions – 14th (out of 58)
4. Collisions occurring at nighttime – 18th (out of 58)

OTS rankings from 2016 for the *City of Crescent City* indicate that the City ranks 63rd out of 67 in terms of the total number of fatalities and injuries. This indicates that the City ranks lowest in comparison to cities of similar population size. Other rankings indicating safety issues are as follows:

1   Collisions involving had been drinking drivers of age less than 21 – 31st (out of 67)

2   Collisions involving alcohol – 51st (out of 67)

3   Collisions involving pedestrians 65 or older – 34th (out of 67)

4   Collisions involving pedestrians 15 or less – 41st (out of 67)

The data stated above from OTS covers crash data only within the limits of Crescent City and not the Del Norte County - Crescent City Urban Boundary (DNC-CCUB) that is being used in this report for the purpose of analysis. Hence the above-listed safety indicators might not provide a comprehensive picture of the safety issues within the DNC-CCUB.

3. DATA ANALYSIS APPROACH AND PRELIMINARY ANALYSIS

3.1 Segregating Crash Data

For a comprehensive evaluation of data, crash data is segregated based on the type of facility: intersection crashes, and roadway segment crashes. This segregation is necessary as the geometries of roadways and intersections differ and are affected varyingly by different factors. Out of the 225 crashes recorded for the County and 118 crashes recorded for the DNC-CCUB during the period 2013-2017, the number of collisions obtained after segregation into roadway and intersection is as shown in **Table 3**:

Table 3: Roadway and Intersection Collisions

Jurisdiction	Intersection	Roadway	Total
County of Del Norte	150	75	225
Del Norte County - Crescent City Urban Boundary (DNC-CCUB)	97	21	118

The crashes segregated by intersection and roadway segments, which include collisions of all severities for the County of Del Norte are shown in **Figure 4**. The crashes segregated by intersection and roadway segments, which include the collision of all severities for the City of Crescent City are shown in **Figure 5.**

The crash data was further segregated based on crash severity. The SSAR process requires a detailed analysis of F+SI crashes. Considering all collisions for analysis might provide a different picture of influential factors as compared to the analysis conducted considering only F+SI crashes. F+SI type of collisions cause the most damage to the victims, road users, and infrastructure. The SSAR process focuses on these collisions to proactively counter these safety issues.

Figure 4: Intersection and Roadway Crashes of All Crash Severities (County)

Legend

- ● Roadway Crashes
- ● Intersection Crashes
- — Streets
- Crescent City
- DNC-CCUB
- Water Bodies
- Del Norte County

Klamath

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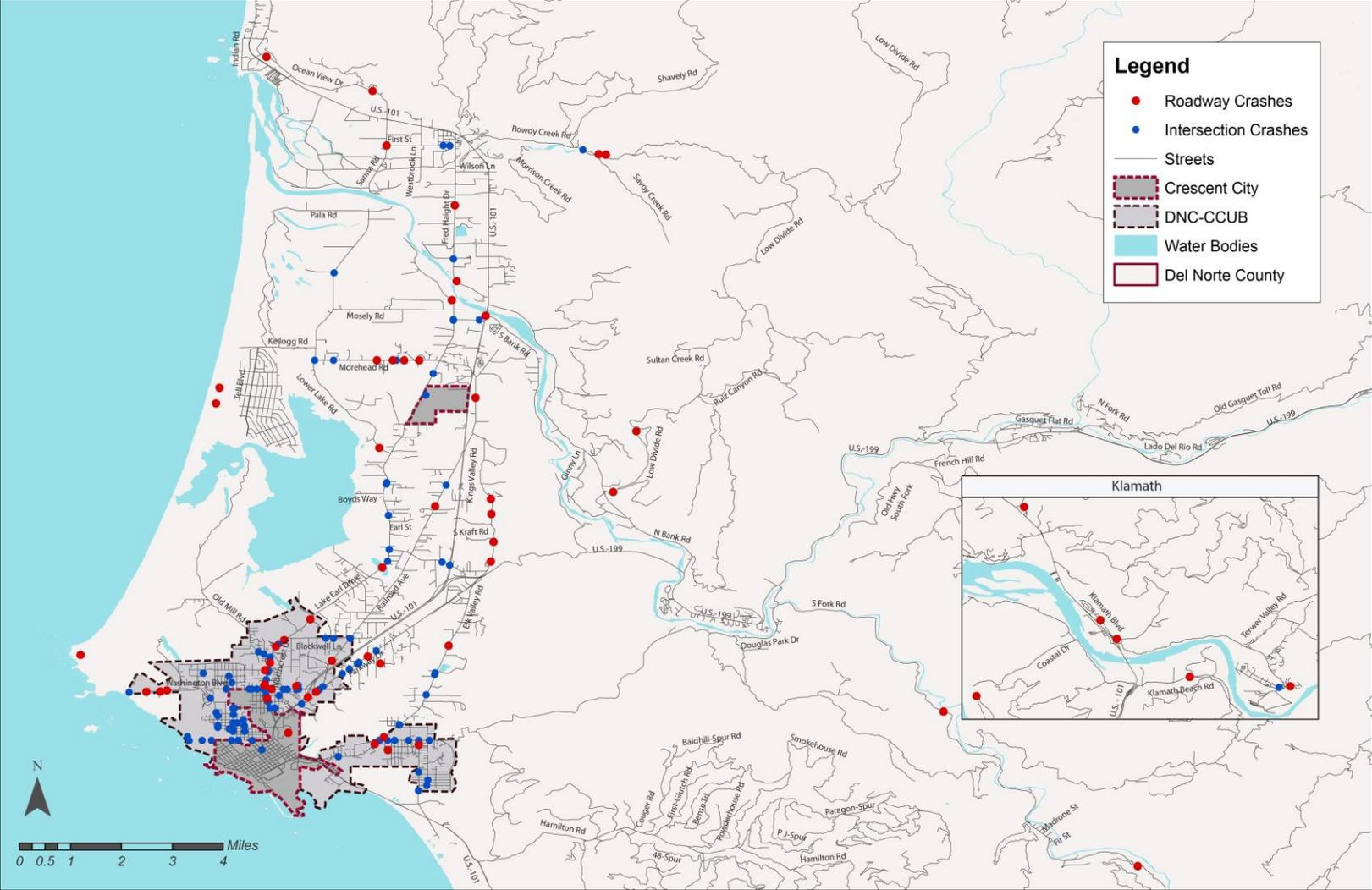
Figure 5: Intersection and Roadway Crashes of All Crash Severities (City)

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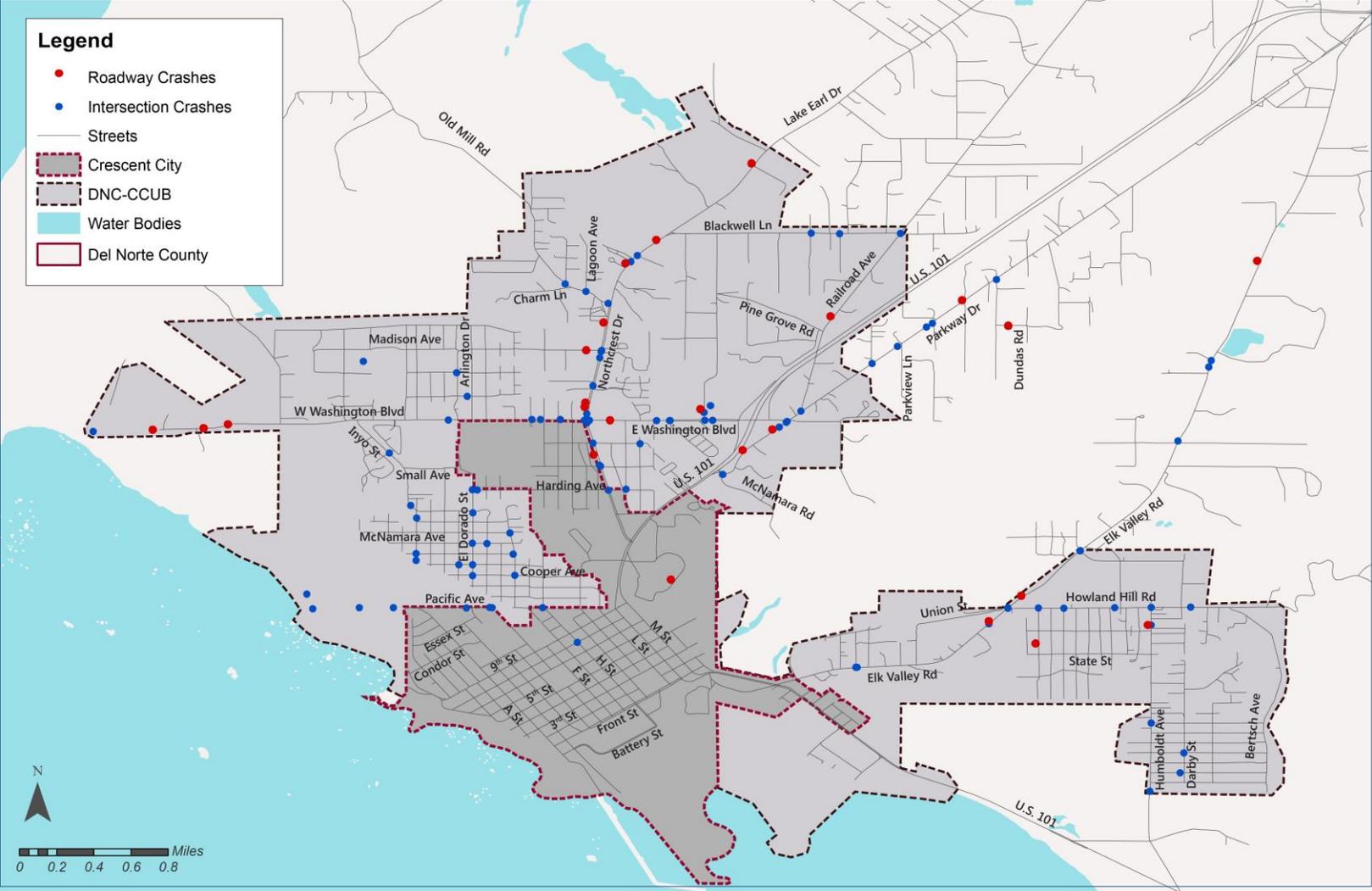
Out of the 225 crashes recorded for the County of Del Norte, there were a total of six fatal collisions and 26 severe injury collisions. **Table 4** presents the number of crashes segregated by crash severity, and occurrence at either intersection or roadway.

Table 4: Crashes by Severity (County)

Crash Severity	Intersection	Roadway	Total
1- Fatal	2	4	6
2- Severe Injury	11	15	26
3- Visible Injury	54	29	83
4- Complaint of Pain	83	27	110
Total	**150**	**75**	**225**

Figure 6 shows the F+SI collisions segregated as intersection and roadway crashes in the County of Del Norte.

Out of the 118 crashes recorded for the City of Crescent City, there were a total of three fatal collisions and nine severe injury collisions. **Table 5** presents the number of crashes segregated by crash severity, and occurrence at either intersection or roadway.

Table 5: Crashes by Severity (City)

Crash Severity	Intersection	Roadway	Total
1- Fatal	1	2	3
2- Severe Injury	5	4	9
3- Visible Injury	31	6	37
4- Complaint of Pain	60	9	69
Total	**97**	**21**	**118**

Figure 7 shows the F+SI collisions segregated as intersection and roadway crashes in the City of Crescent City.

Figure 6: F+SI Intersection and Roadway Crashes (County)

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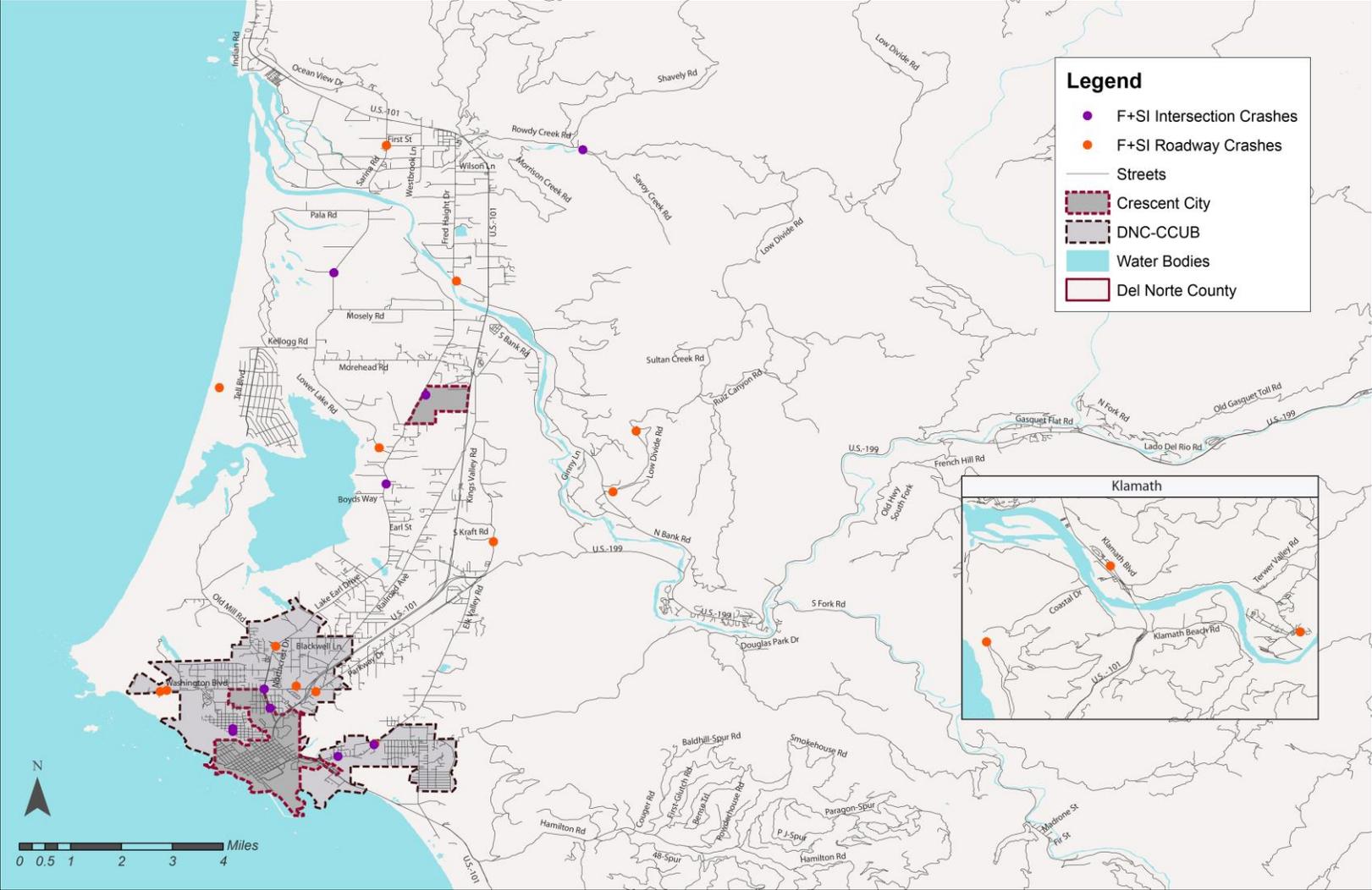
Figure 7: F+SI Intersection and Roadway Crashes (City)

Legend
- F+SI Intersection Crashes
- F+SI Roadway Crashes
- Streets
- Crescent City
- DNC-CCUB
- Water Bodies
- Del Norte County

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27
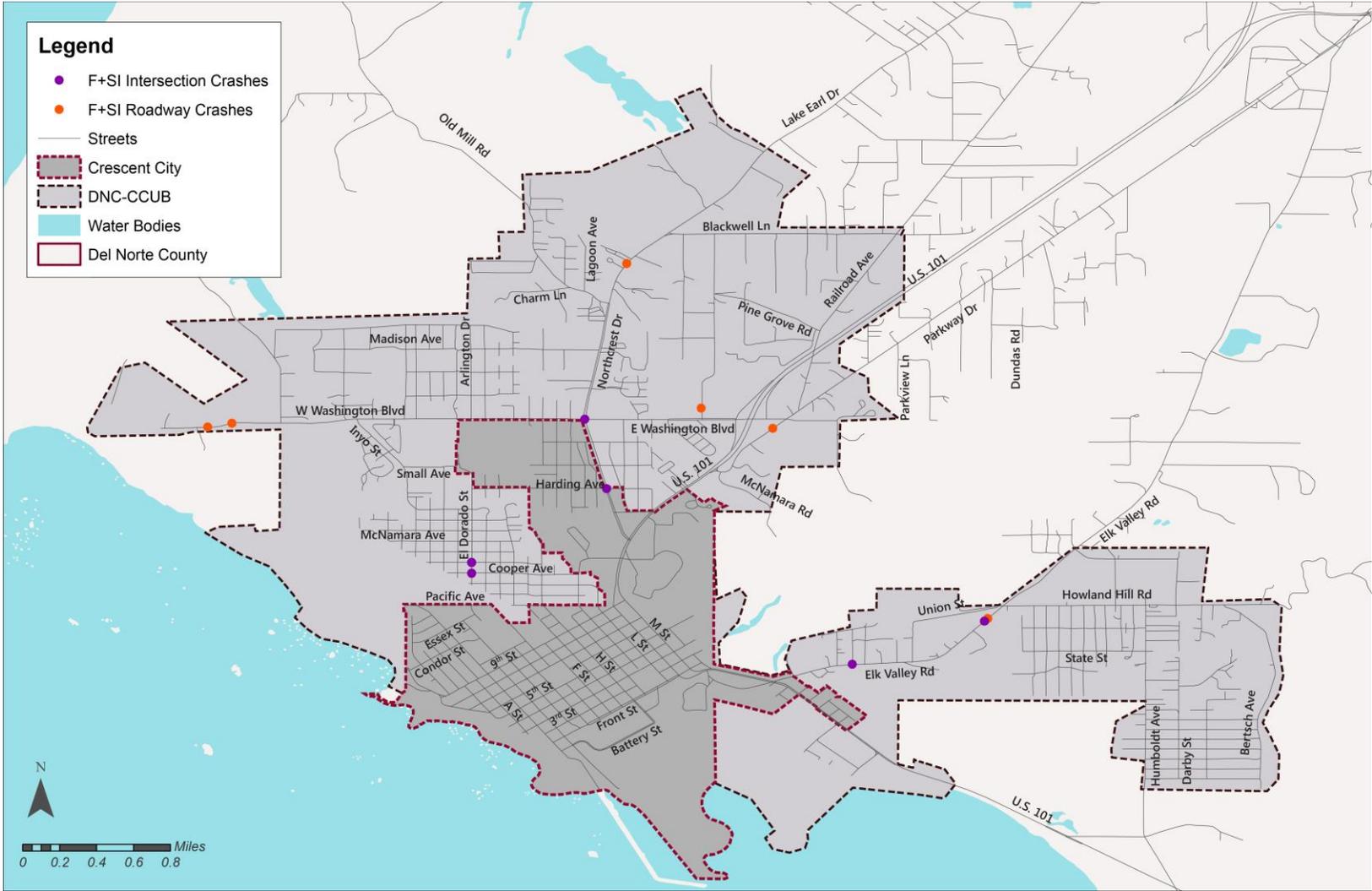
3.2 Preliminary Analysis

3.2.1 The Relationship between F+SI and All Crash Severities

As mentioned earlier, considering all collisions for analysis might provide a different picture of influential safety factors as compared to the analysis conducted considering only F+SI crashes. F+SI type of collisions cause the most damage to the victims, road users and infrastructure. It can be observed from **Figure 8** that although the percentage of collisions occurring at intersections is higher when considering collisions of all crash severities for both the County and the City, this ratio changes when only F+SI collisions are considered. The percentage of F+SI crashes on roadway segments becomes considerably higher in comparison to roadway segment crashes of all severities.

Figure 8: Intersection and Roadway Crashes

ALL COLLISIONS FOR DEL NORTE COUNTY

Roadway Segment, 33%
Intersection, 67%
Total of 225 crashes

ALL COLLISIONS FOR CRESCENT CITY

Roadway Segment, 18%
Intersection, 82%
Total of 118 crashes

F+SI COLLISIONS FOR DEL NORTE COUNTY

Roadway Segment, 59%
Intersection, 41%
Total of 32 crashes

F+SI COLLISIONS FOR CRESCENT CITY

Roadway Segment, 50%
Intersection, 50%
Total of 12 crashes
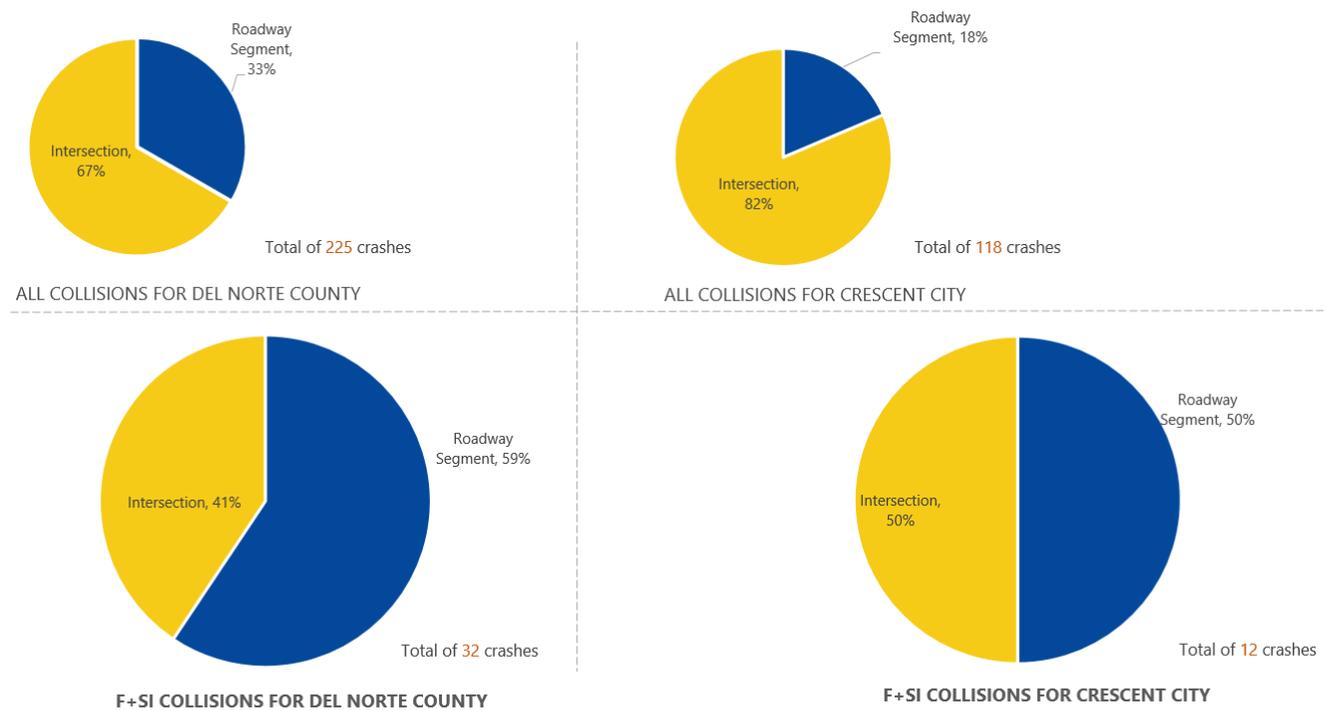
3.2.2 Pedestrian and Bicycle Crashes

Among the 225 crashes in the County, there were a total of 14 pedestrians and 18 bicycle crashes, which accounted for 14 percent of the total number of crashes throughout the County. Within the City, there were a total of 12 pedestrian and 14 bicycle crashes, which accounted for 22 percent of the total number of crashes throughout the City. The pedestrian and bicycle crashes based on facility type and jurisdiction are shown in **Table 6. Chapter 8** of this report lists out best practices which can help reduce pedestrian and bicycle crashes.

Table 6: Pedestrian and Bicycle Crashes by Facility and Jurisdiction

	Intersection		Roadway Segment		
	Pedestrian	Bicycle	Pedestrian	Bicycle	Total
County of Del Norte	8	12	6	6	**32**
City of Crescent City	7	11	5	3	**26**

Locations of the pedestrian and bicycle crashes occurring in the County are shown in **Figure 9**, and location of the pedestrian and bicycle crashes occurring in the City are shown in **Figure 10.**
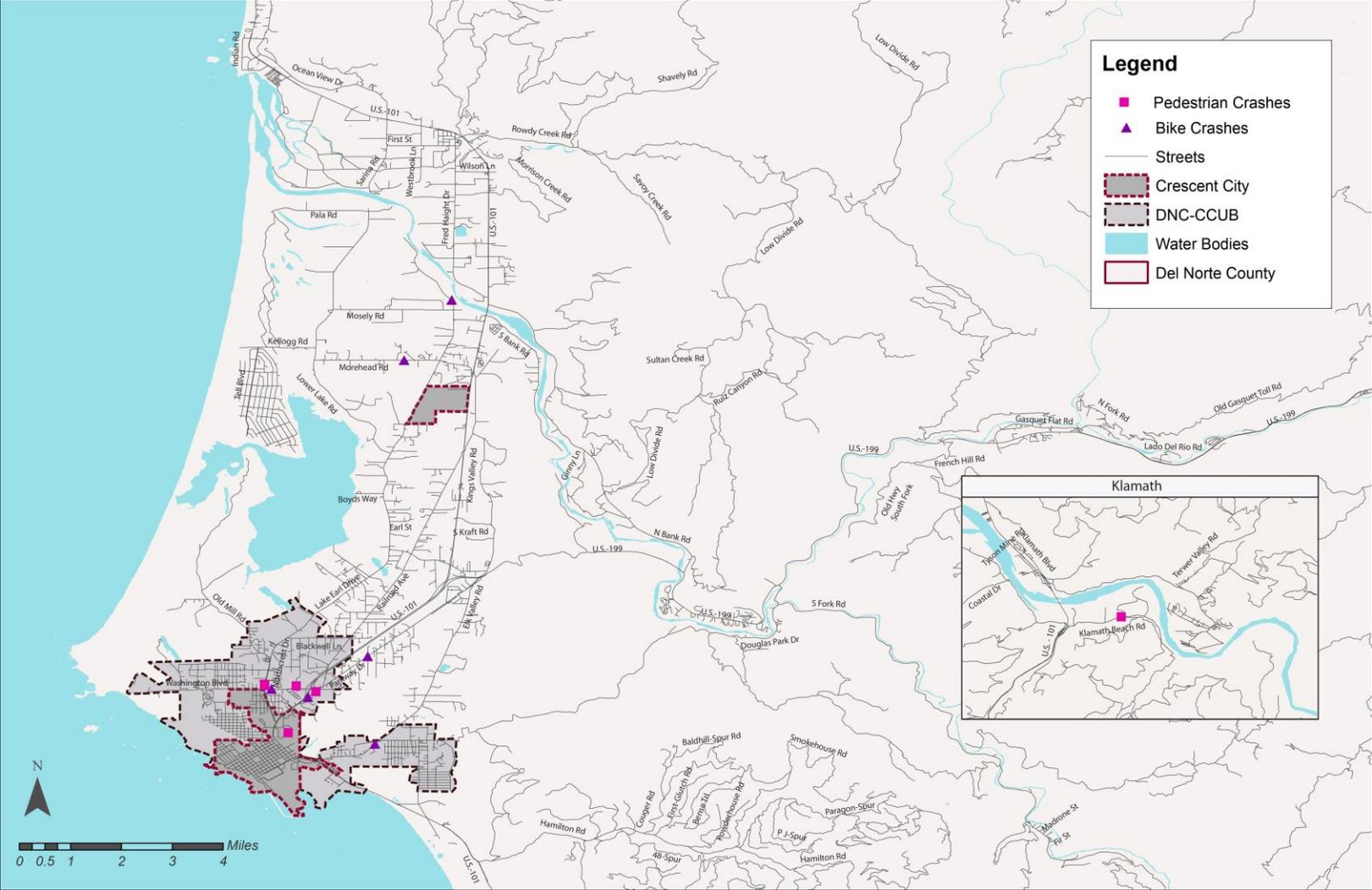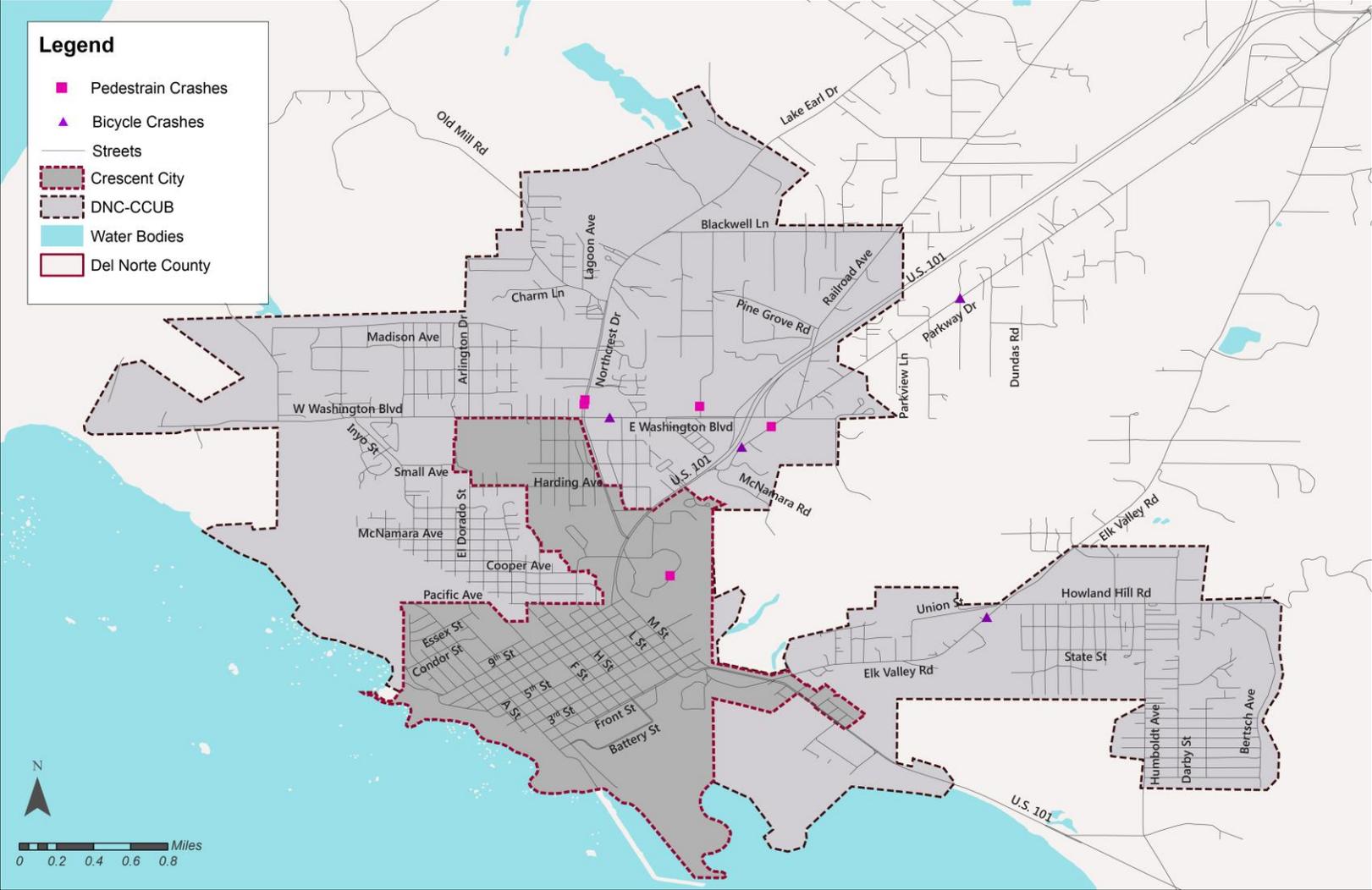
3.2.3 Crescent City vs. Del Norte County

This section compares few prominent safety attributes between the County and the City taking into consideration crashes of all severities. Types of crashes as a result of driving under the influence of alcohol are shown in **Figure 11.** Crashes by mode of travel for all crashes are shown in **Figure 12.**

Figure 11: Crashes Involving Alcohol and Crash Type for All Crashes

Del Norte County — 6%, 6%, 2%, 4%, 5%, 77%

Crescent City — 5%, 5%, 5%, 47%, 0%, 16%

Legend:
- B- Sideswipe
- C- Rear End
- D- Broadside
- E- Hit Object
- F- Overturned
- G- Vehicle/ Pedestrian
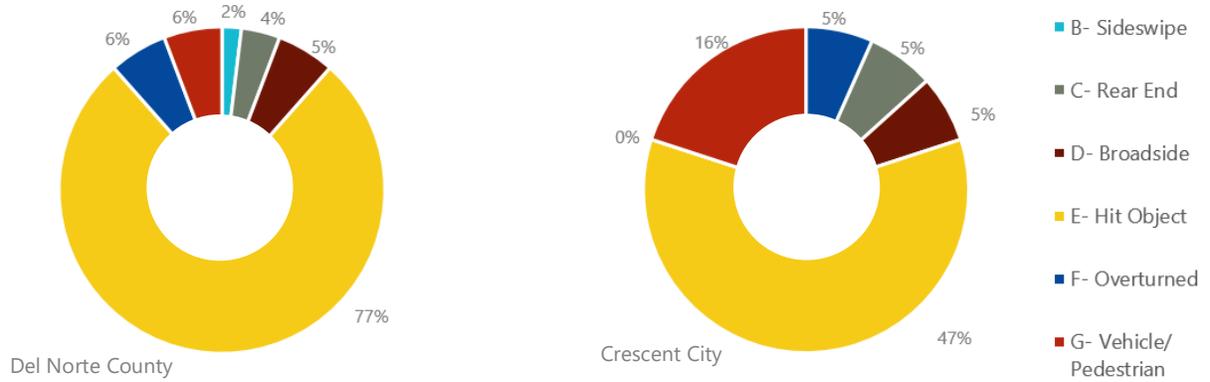
Figure 12: Crashes by Travel Mode Involved for All Crashes

Del Norte County — 6%, 8%, 6%, 80%

Crescent City — 12%, 7%, 10%, 71%

Legend:
- Vehicle/ Other
- Pedestrian
- Bicycle
- Motorcycle
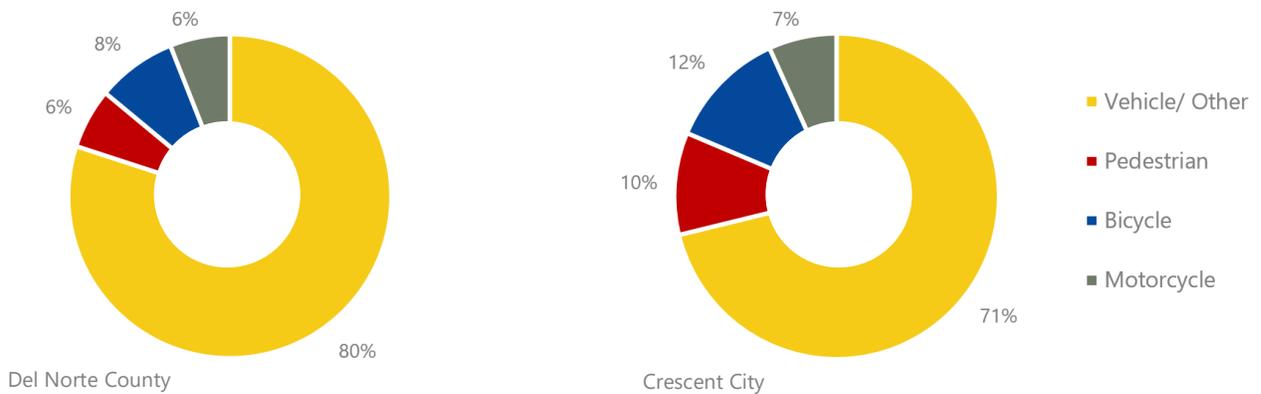
Table 7 below provides a comparison of percentage by type of crash in Crescent City to type of crash in Del Norte County for all crash severities.

Table 7: Collision Type by Jurisdiction for All Crashes

	Head-on	Sideswipe	Rear-end	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Other
City of Crescent City	5%	6%	24%	29%	19%	5%	10%	3%
County of Del Norte	4%	4%	15%	19%	40%	8%	6%	4%

3.3 Data Analysis Approach

After a preliminary analysis was conducted to obtain a broad understanding of the crashes occurring in the County and the City, a detailed crash analysis was conducted in order to understand the factors influencing the collisions occurring on roadways and at intersections. This section summarizes the approach and attributes used for analyzing crashes.

Figure 13 illustrates the way data has been organized through the analysis based on jurisdiction and facility type. It further lists out the specific attributes that were highlighted as potential safety issues through the preliminary analysis and thus have been used for detailed analysis. For the purpose of this analysis in compliance with the guidelines for SSARP, only F+SI crashes were considered; other crashes that resulted in visible injury and complaint of pain were excluded from the analysis.
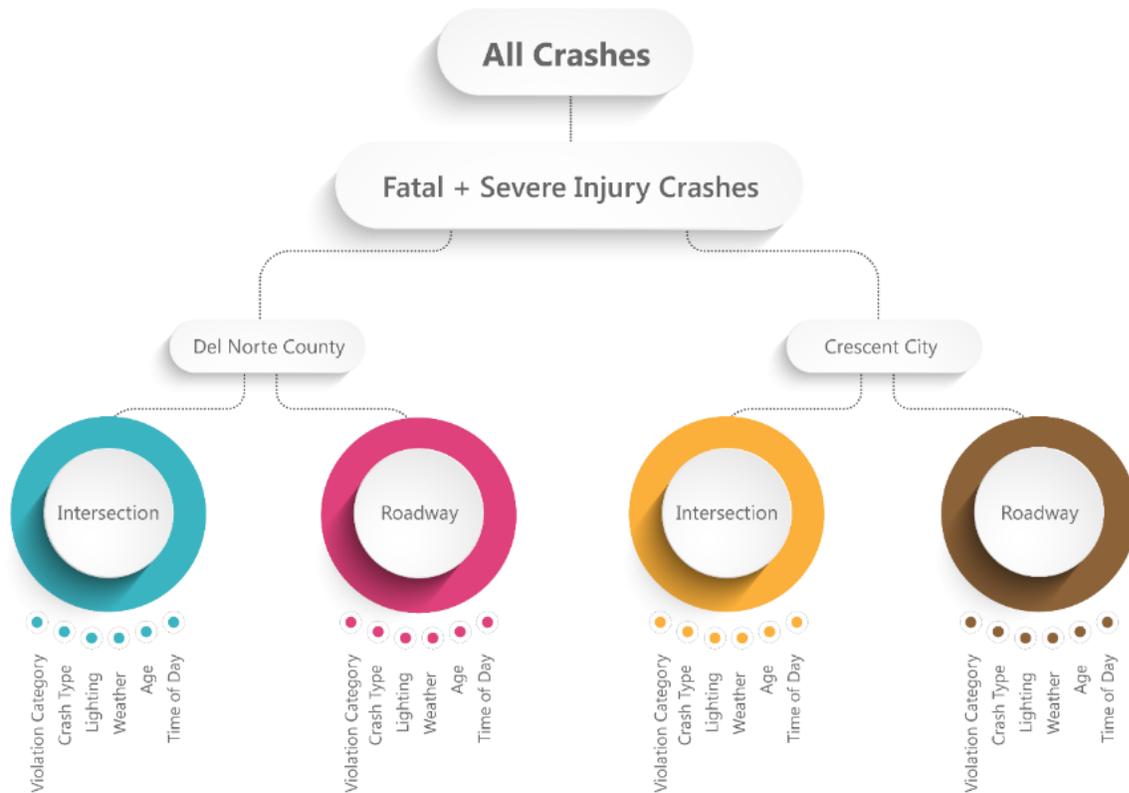
Intersections and roadway segments were analyzed separately for the County of Del Norte and City of Crescent City, and six crash attributes were identified as the key evaluation features:

- Violation Category
- Crash Type
- Lighting Conditions

- Weather Conditions
- Age and Gender
- Time of Day

Each of the six crash attributes interprets a specific aspect of a crash. Violation Category and Crash Type are two fundamental elements in interpreting a crash, i.e., the primary factors of the crash and the resulting type of such crash. The other attributes are identified as each shows a significance particularly in the study area which differentiates the crash patterns from other jurisdictions. The comparison of these attributes provides statistical evidence that justifies the identification of risk factors and the selection of countermeasures.

4. DATA ANALYSIS RESULTS

This section provides detailed crash analysis of crashes that have occurred in the County of Del Norte followed by crashes that have occurred in the City of Crescent City. Each sub-section provides a quick overview of the top trends that were noted by jurisdiction and by facility type. The collision trends for crashes occurring in the County and the City combined are shown in **Figure 14.** Top collision attributes for the County and the City combined are shown in **Figure 15.**

Figure 14: Collision Trends Countywide
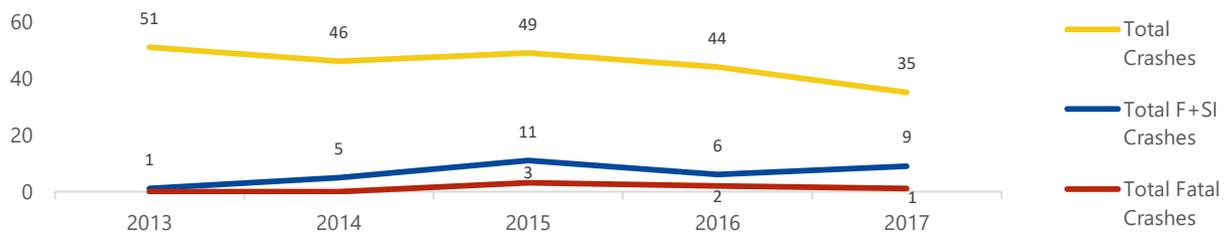
Figure 15: Top Collision Attributes Countywide

Violation	Crash Type	Lighting	Weather	Age & Gender
41% of F+SI crashes in the County were a result of DUI violation.	41% of F+SI crashes in the County resulted in hit object crash type.	60% of F+SI crashes in the County occurred during dusk and nighttime.	37% of F+SI crashes in the County occurred during cloudy and rainy weather.	25% of F+SI crashes in the County occurred due to 16-25 year old males.

4.1 County of Del Norte Data Analysis for Intersections Crashes

This section analyzes all the crashes that have occurred at intersections in the County of Del Norte. The analysis considers crash attributes including crash type, violation factor, lighting conditions, weather conditions, age and gender of the person involved, and the time of day during which the crash occurred, to assist in understanding the influence of all these attributes on the occurrence of crashes. From this analysis, it was found that driving or bicycling under the influence of alcohol or drugs, traffic signs and signals, and automobile right-of-way were the most prominent violation factors for Del Norte County that led to F+SI crashes at intersections.

The collision trends for crashes occurring at County intersections are shown in **Figure 16.** An overview of the top collision attributes for crashes occurring at intersections is presented in **Figure 17.**

Figure 16: Collision Trends at County Intersections
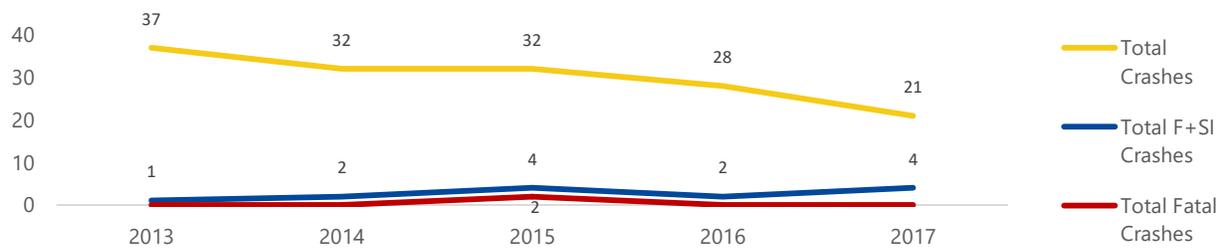
Figure 17: Top Collision Attributes at County Intersections

Violation	Crash Type	Lighting	Weather	Age & Gender
46% of F+SI crashes at intersections were a result of DUI or improper turning.	55% of F+SI crashes at intersections resulted in broadside crash type.	46% of F+SI crashes at intersections occurred during nighttime.	30% of F+SI crashes at intersections occurred during cloudy and rainy weather.	37% of F+SI crashes on County intersections occurred due to under 16 and 16-25 males.

4.1.1 Violation Factor and Crash Type

Driving or bicycling under the influence of alcohol or drug (23 percent), improper turning (23 percent), and automobile right-of-way (15 percent) were the most commonly occurring primary violation factors responsible for F+SI crashes in the County as shown in **Figure 18**. These violations resulted in broadside, hit object and overturned type of crashes. **Table 8** presents the percentage of primary collision factors for the observed F+SI crashes at intersections in Del Norte County.

Figure 18: Primary Collision Factors for F+SI Crashes at Intersections (County)
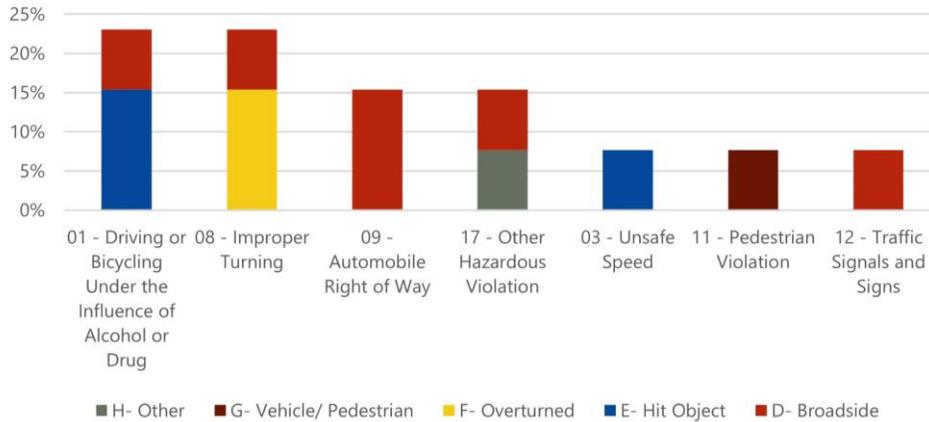
Table 8: Collision Factors for F+SI Crashes at Intersections (County)

Primary Collision Factor	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
01 - DUI	8%	15%	0%	0%	0%	**23%**
03 - Unsafe Speed	0%	8%	0%	0%	0%	**8%**
08 - Improper Turning	8%	0%	15%	0%	0%	**23%**
09 - Automobile Right of Way	15%	0%	0%	0%	0%	**15%**
11 - Pedestrian Violation	0%	0%	0%	8%	0%	**8%**
12 - Traffic Signals and Signs	8%	0%	0%	0%	0%	**8%**
17 - Other Hazardous Violation	8%	0%	0%	0%	8%	**15%**
Total	**47%**	**23%**	**15%**	**8%**	**8%**	**100%**

Note:
1. Primary collision factors and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.1.2 Crash Type and Severity

This section analyzes the types of crashes occurring and the resulting level of severity. The crash type distribution shown in **Figure 19**, considers all crash severities in the County. Broadside crashes resulted in four percent F+SI crashes for the County. It was also observed that hit object (two percent), vehicle/pedestrian (one percent) and overturned (one percent) crashes resulted in severe injuries for the County. **Table 9** represents the percentage of crash types and the resulting severity of the crashes occurring at intersections in Del Norte County.

Figure 19: Crash Type for All Crash Severities at Intersections (County)
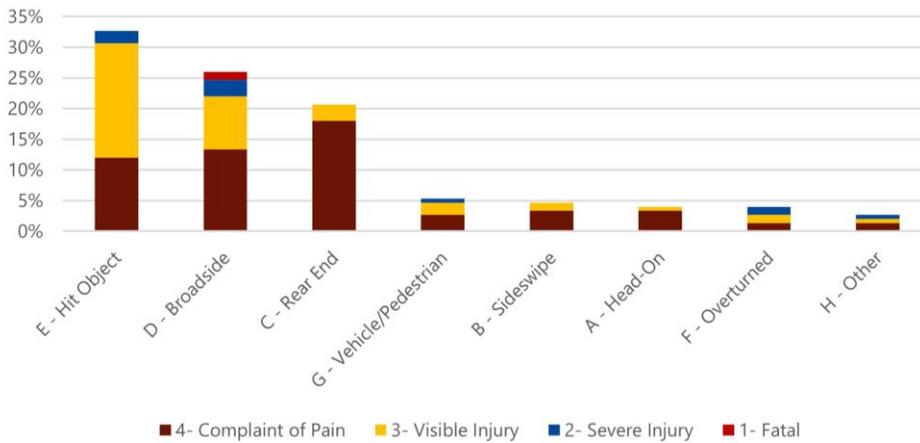
Table 9: Crash Type for All Crash Severities at Intersections (County)

Crash Type	Fatal	Severe Injury	Visible Injury	Complaint of Pain	Total
A - Head-On	0%	0%	1%	3%	**4%**
B - Sideswipe	0%	0%	1%	3%	**5%**
C - Rear End	0%	0%	3%	18%	**21%**
D - Broadside	1%	3%	9%	13%	**26%**
E - Hit Object	0%	2%	19%	12%	**33%**
F - Overturned	0%	1%	1%	1%	**4%**
G - Vehicle/Pedestrian	0%	1%	2%	3%	**5%**
H - Other	0%	1%	1%	1%	**3%**
Total	**1%**	**7%**	**36%**	**55%**	**100%**

Note: The totals might not match due to variation created by rounding off the percentage.

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4.1.3 Lighting Condition and Crash Type

A total of 46 percent of crashes occurred during daylight, 23 percent occurred in the dark in areas with street lights, and 23 percent occurred in the dark in areas with no street lights at County intersections as shown in **Figure 20**. The percentage of crashes with lighting conditions and the resulting crash type for Del Norte County has been listed in **Table 10.**

Figure 20: Lighting Condition for F+SI Crashes at Intersections (County)
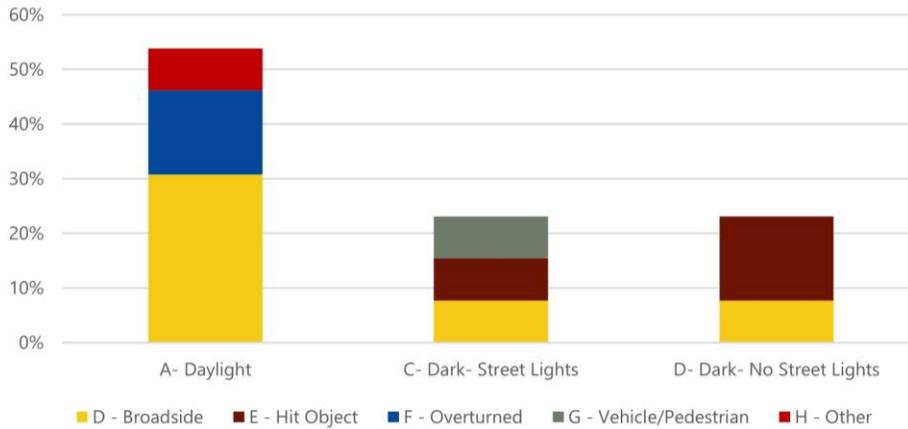
Table 10: Lighting Condition for F+SI Crashes at Intersections (County)

Lighting Condition	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
A - Daylight	31%	0%	15%	0%	8%	**54%**
C - Dark- Street Lights	8%	8%	0%	8%	0%	**23%**
D - Dark- No Street Lights	8%	15%	0%	0%	0%	**23%**
Total	**46%**	**23%**	**15%**	**8%**	**8%**	**100%**
Note: 1. Lighting conditions and crash types with no corresponding crashes were not included in the table. 2. The totals might not match due to variation created by rounding off the percentage.						

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4.1.4 Weather Condition and Crash Type

A total of 69 percent crashes occurred during clear weather conditions, 15 percent crashes occurred during cloudy weather conditions, and 15 percent crashes occurred during rainy weather conditions as shown in **Figure 21**. The major type of crashes that occurred during cloudy and rainy weather are broadside, hit object, and vehicle/pedestrian. The percentage of the kind of weather conditions and the resultant crash type for F+SI crashes at intersections for Del Norte County have been listed in **Table 11**.

Figure 21: Weather Conditions for F+SI Crashes at Intersections (County)
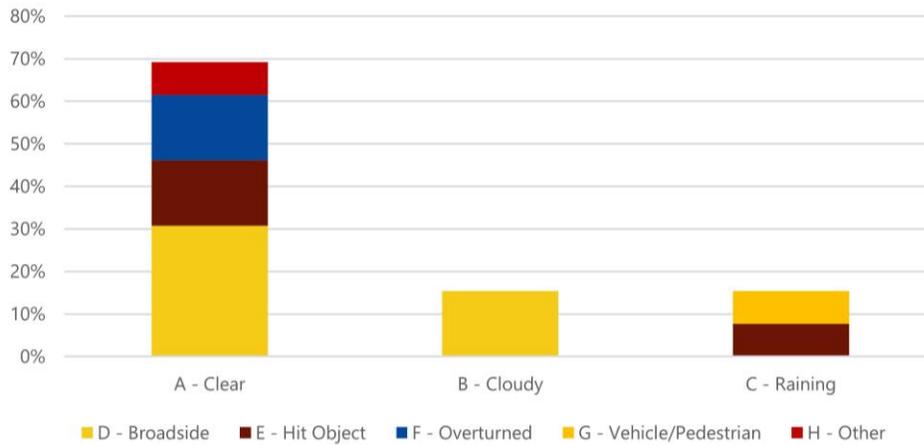
Table 11: Weather Conditions for F+SI Crashes at Intersections (County)

Weather Condition	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
A - Clear	31%	15%	15%	0%	8%	**69%**
B - Cloudy	15%	0%	0%	0%	0%	**15%**
C - Raining	0%	8%	0%	8%	0%	**15%**
Total	**46%**	**23%**	**15%**	**8%**	**8%**	**100%**

Note:
1. Weather conditions and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.1.5 Age Group and Gender for F+SI Crashes

Based on the analysis, the age group found to have been involved in the highest number of crashes is 16-25 years followed by 25-30 years. Males were involved in 85 percent of the total F+SI crashes in the County as shown in **Figure 22**. In the County, the 16-25 age group was found to be involved in 23 percent of the F+SI crashes. **Table 12** shows the percentage of age group and the gender of the person involved in F+SI crashes in Del Norte County.

Figure 22: Age Group and Gender involved in F+SI Crashes at Intersections (County)
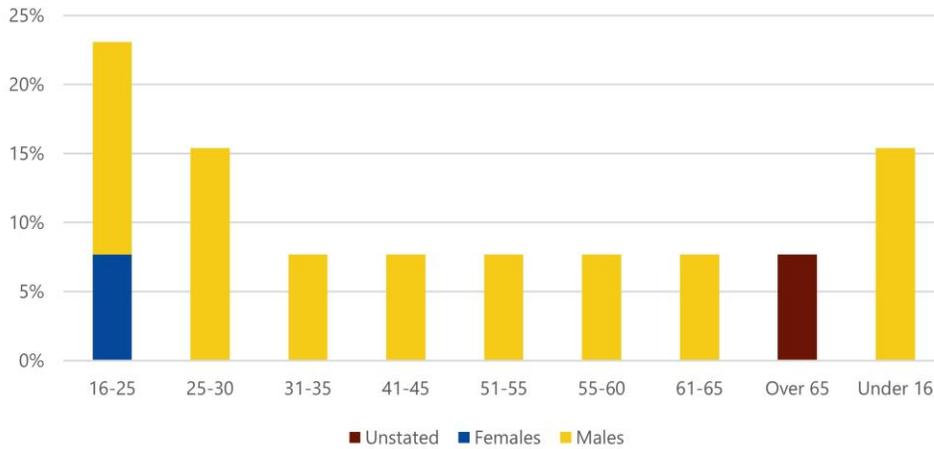
Table 12: Age Group and Gender involved in F+SI Crashes at Intersections (County)

Gender	16-25	26-30	31-35	41-45	51-55	56-60	61-65	Over 65	Under 16	Total
Unstated	0%	0%	0%	0%	0%	0%	0%	8%	0%	**8%**
Females	8%	0%	0%	0%	0%	0%	0%	0%	0%	**8%**
Males	15%	15%	8%	8%	8%	8%	8%	0%	15%	**85%**
Total	**23%**	**15%**	**8%**	**8%**	**8%**	**8%**	**8%**	**8%**	**15%**	**100%**
Note: 1. Age groups with no corresponding crashes were not included in the table. 2. The totals might not match due to variation created by rounding off the percentage.										

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Although males were involved in the majority of the F+SI crashes, females were responsible for a total of 38 percent of all crash severities and eight percent of F+SI crash at intersections countywide. Based on the analysis, it is determined that the age group of 16-25 is prominently responsible for crashes followed by age group 25-30. Major violations involving females are unsafe speed (33 percent), automobile right of way (23 percent), and driving or bicycling under the influence of alcohol or drug (14 percent) in the County as shown in **Figure 23.**

Figure 23: Violations by Females for All Crash Severities at Intersections (County)
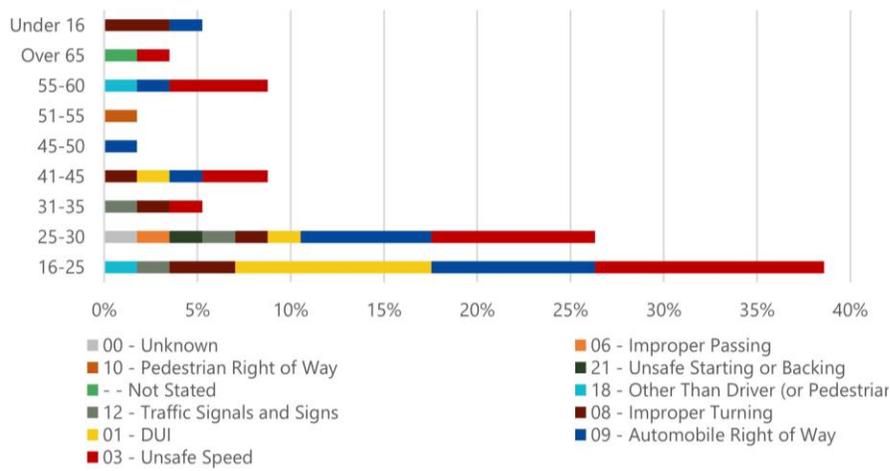
Table 13 represents the percentage of violations by females considering all crash severities, at intersections in the Del Norte County.

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Table 13: Violations by Females for All Crash Severities at Intersections (County)

Primary Collision Factor	16-25	26-30	31-35	41-45	46-50	51-55	56-60	Over 65	Under 16	Total
Not Stated	0%	0%	0%	0%	0%	0%	0%	2%	0%	**2%**
00 - Unknown	0%	2%	0%	0%	0%	0%	0%	0%	0%	**2%**
01 - DUI	11%	2%	0%	2%	0%	0%	0%	0%	0%	**14%**
03 - Unsafe Speed	12%	9%	2%	4%	0%	0%	5%	2%	0%	**33%**
06 - Improper Passing	0%	2%	0%	0%	0%	0%	0%	0%	0%	**2%**
08 - Improper Turning	4%	2%	2%	2%	0%	0%	0%	0%	4%	**12%**
09 - Automobile Right of Way	9%	7%	0%	2%	2%	0%	2%	0%	2%	**23%**
10 - Pedestrian Right of Way	0%	0%	0%	0%	0%	2%	0%	0%	0%	**2%**
12 - Traffic Signals and Signs	2%	2%	2%	0%	0%	0%	0%	0%	0%	**5%**
18 - Other Than Driver (or Pedestrian)	2%	0%	0%	0%	0%	0%	2%	0%	0%	**4%**
21 - Unsafe Starting or Backing	0%	2%	0%	0%	0%	0%	0%	0%	0%	**2%**
Total	**39%**	**26%**	**5%**	**9%**	**2%**	**2%**	**9%**	**4%**	**5%**	**100%**

Note:
1. Primary collision factors and age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

Although males falling in age group 16-25 (22 percent) were responsible for majority of the F+SI crashes followed by age group 25-30 (13 percent), the males falling in the age group of over 65 (14 percent) were observed to engage in violations such as unsafe speed and automobile right-of-way as shown in **Figure 24**. Crashes by the under 16 age group account for four percent of all the crashes by males in the County.

Figure 24: Violations by Males for All Crash Severities at Intersections (County)
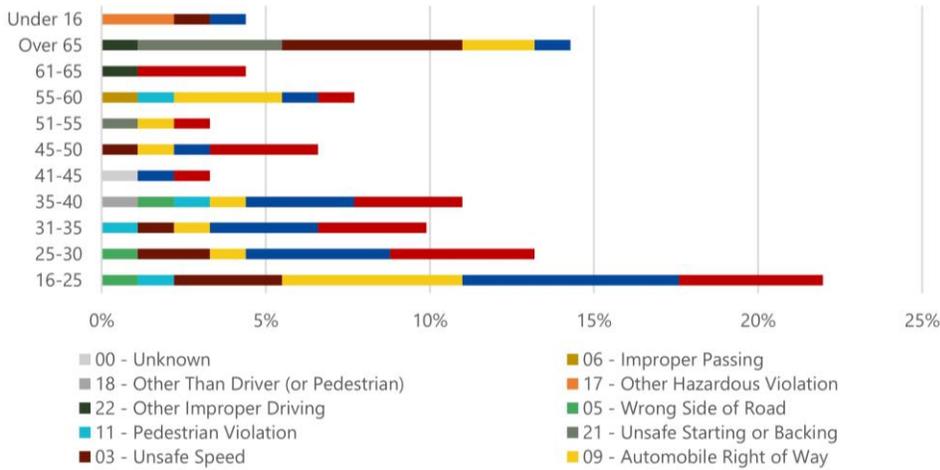
Table 14 represents the percentage of violations by males for all crash severities at intersections in Del Norte County.

Table 14: Violations by Males for All Crash Severities at Intersections (County)

Primary Collision Factor	16-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	Over 65	Under 16	Total
00 - Unknown	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	**1%**
01 - DUI	7%	4%	3%	3%	1%	1%	0%	1%	0%	1%	1%	**23%**
03 - Unsafe Speed	3%	2%	1%	0%	0%	1%	0%	0%	0%	5%	1%	**14%**
05 - Wrong Side of Road	1%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	**3%**
06 - Improper Passing	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	**1%**
08 - Improper Turning	4%	4%	3%	3%	1%	3%	1%	1%	3%	0%	0%	**25%**
09 - Automobile Right of Way	5%	1%	1%	1%	0%	1%	1%	3%	0%	2%	0%	**16%**
11 - Pedestrian Violation	1%	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	**4%**
17 - Other Hazardous Violation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	**2%**
18 - Other Than Driver (or Pedestrian)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	**1%**
21 - Unsafe Starting or Backing	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	0%	**5%**
22 - Other Improper Driving	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	**2%**
Total	**22%**	**13%**	**10%**	**11%**	**3%**	**7%**	**3%**	**8%**	**4%**	**14%**	**4%**	**100%**

Note:
1. Primary collision factors and age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.1.8 Time of Day and Crash Type for F+SI Crashes

F+SI crashes were observed to be prominent in the County between 6:00 to 8:00 a.m. (15 percent), 2:00 to 4:00 p.m. (15 percent), and 6:00 to 8:00 p.m. (15 percent) based on the analysis of the data. As shown in **Figure 25**, broadside and vehicle/pedestrian crashes were prominent during these periods. **Table 15** lists the types of crashes that led to F+SI crashes occurring at various times of day in Del Norte County.

Figure 25: F+SI Crashes at Intersections by Time of Day (County)
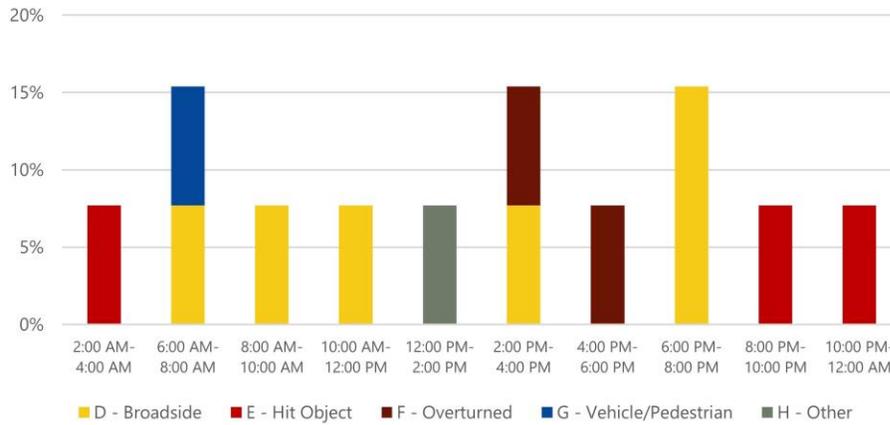
Table 15: F+SI Crashes at Intersections by Time of Day (County)

Time of Day	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
2:00 a.m. - 4:00 a.m.	0%	8%	0%	0%	0%	**8%**
6:00 a.m. - 8:00 a.m.	8%	0%	0%	8%	0%	**15%**
8:00 a.m. - 10:00 a.m.	8%	0%	0%	0%	0%	**8%**
10:00 a.m. - 12:00 p.m.	8%	0%	0%	0%	0%	**8%**
12:00 p.m. - 2:00 p.m.	0%	0%	0%	0%	8%	**8%**
2:00 p.m. - 4:00 p.m.	8%	0%	8%	0%	0%	**15%**
4:00 p.m. - 6:00 p.m.	0%	0%	8%	0%	0%	**8%**
6:00 p.m. - 8:00 p.m.	15%	0%	0%	0%	0%	**15%**
8:00 p.m. - 10:00 p.m.	0%	8%	0%	0%	0%	**8%**
10:00 p.m. - 12:00 a.m.	0%	8%	0%	0%	0%	**8%**
Total	**46%**	**23%**	**15%**	**8%**	**8%**	**100%**

Note:
1. Time periods and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.1.9 Time of Day and Crash Type for All Crashes

Crashes occur throughout the day in the County. As shown in **Figure 26**, the most prominent period for crashes at intersections in the County was between 12:00 p.m. to 6:00 p.m. which recorded a total of 43 percent crashes involving rear end, broadside, and hit object type of crashes.

Figure 26: All Crashes at Intersections by Time of Day (County)
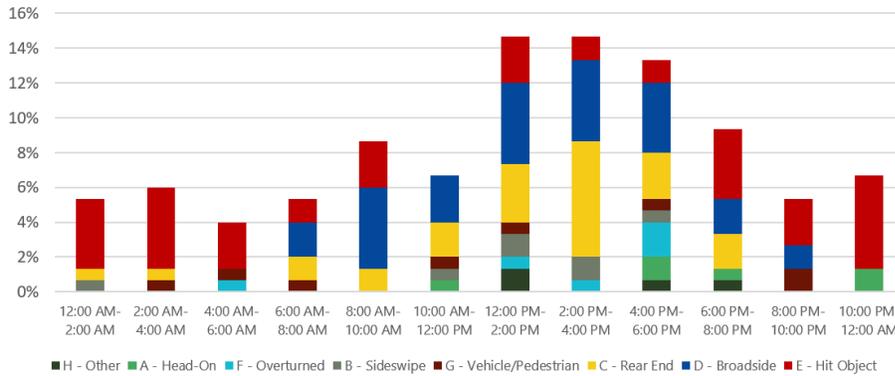
Table 16 lists all crashes that occurred according to the time of day at intersections in the County of Del Norte.

Table 16: All Crashes at Intersections by Time of Day (County)

Time Period	Head-On	Sideswipe	Rear end	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
12:00 a.m. - 2:00 a.m.	0%	1%	1%	0%	4%	0%	0%	0%	**5%**
2:00 a.m. - 4:00 a.m.	0%	0%	1%	0%	5%	0%	1%	0%	**6%**
4:00 a.m. - 6:00 a.m.	0%	0%	0%	0%	3%	1%	1%	0%	**4%**
6:00 a.m. - 8:00 a.m.	0%	0%	1%	2%	1%	0%	1%	0%	**5%**
8:00 a.m. - 10:00 a.m.	0%	0%	1%	5%	3%	0%	0%	0%	**9%**
10:00 a.m. - 12:00 p.m.	1%	1%	2%	3%	0%	0%	1%	0%	**7%**
12:00 p.m. - 2:00 p.m.	0%	1%	3%	5%	3%	1%	1%	1%	**15%**
2:00 p.m. - 4:00 p.m.	0%	1%	7%	5%	1%	1%	0%	0%	**15%**
4:00 p.m. - 6:00 p.m.	1%	1%	3%	4%	1%	2%	1%	1%	**13%**
6:00 p.m. - 8:00 p.m.	1%	0%	2%	2%	4%	0%	0%	1%	**9%**
8:00 p.m. - 10:00 p.m.	0%	0%	0%	1%	3%	0%	1%	0%	**5%**
10:00 p.m. - 12:00 a.m.	1%	0%	0%	0%	5%	0%	0%	0%	**7%**
Total	**4%**	**5%**	**21%**	**26%**	**33%**	**4%**	**5%**	**3%**	**100%**

Note:
1. Time periods and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.2 County of Del Norte Data Analysis for Roadways Crashes

This section analyzes all the crashes that have occurred at roadway segments in the County of Del Norte. The analysis considers factors such as crash type, violation factor, lighting conditions, weather conditions, age and gender of the person involved, and the time of day in which the crash occurred. It was observed that driving or bicycling under the influence of alcohol or drugs, unsafe speed, and improper turning were the most prominent violation factors within the County that led to F+SI crashes along the roadways.

The collision trends for crashes occurring at County roadways are shown in **Figure 27.** An overview of the top collision attributes for crashes occurring at roadways is presented in **Figure 28.**

Figure 27: Collision Trends at County Roadways
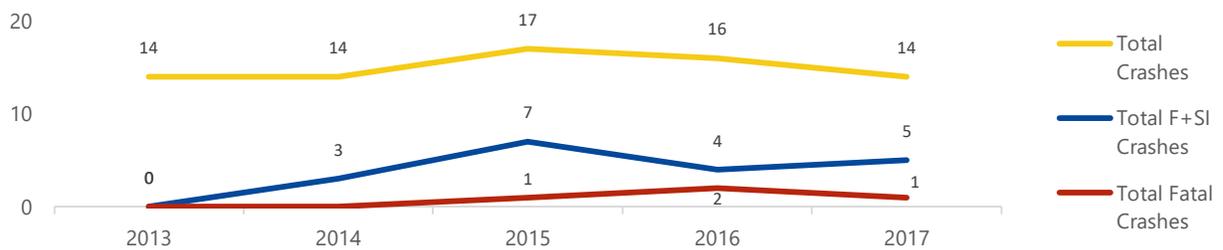
Figure 28: Top Collision Attributes at County Roadways

Violation	Crash Type	Lighting	Weather	Age & Gender
53% of F+SI crashes on roadways were a result of DUI violation.	53% of F+SI crashes on roadways resulted in hit object crash type.	68% of F+SI crashes on roadways occurred during dusk or nighttime.	42% of F+SI crashes on roadways occurred during cloudy and rainy weather.	53% of F+SI crashes on County roadways occurred due to16-25 year old males.

4.2.1 Violation Category and Crash Type

Driving or bicycling under the influence of alcohol or drugs (53 percent), unsafe speeds (21 percent), and improper turning (11 percent) were the most commonly occurring primary violation factors responsible for F+SI crashes within the County of Del Norte as shown in **Figure 29**. These violations resulted in hit objects, overturned and vehicle/pedestrian type of crashes. **Table 17** lists the primary collision factors for F+SI crashes on roadways in Del Norte County.

Figure 29: Primary Collision Factors for F+SI Crashes on Roadway (County)
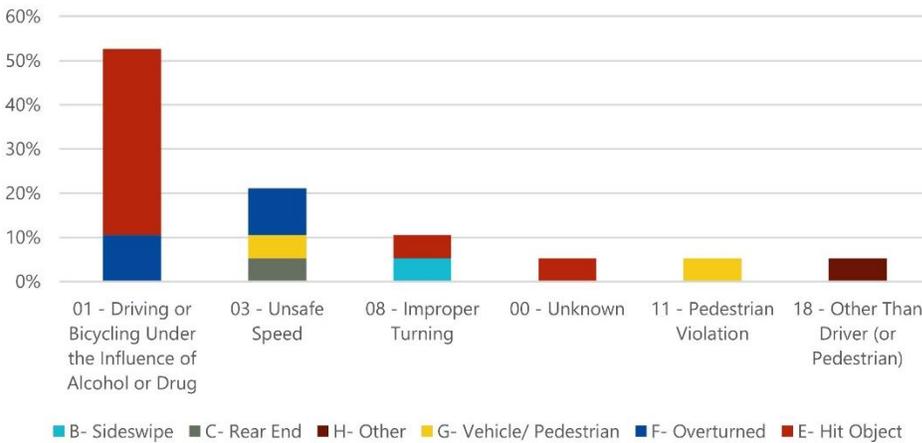
Table 17: Collision Factors for F+SI Crashes on Roadways (County)

Primary Collision Factor	Sideswipe	Rear end	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
00 - Unknown	0%	0%	5%	0%	0%	0%	**5%**
01 - DUI	0%	0%	42%	11%	0%	0%	**53%**
03 - Unsafe Speed	0%	5%	0%	11%	5%	0%	**21%**
08 - Improper Turning	5%	0%	5%	0%	0%	0%	**11%**
11 - Pedestrian Violation	0%	0%	0%	0%	5%	0%	**5%**
18 - Other Than Driver (or Pedestrian)	0%	0%	0%	0%	0%	5%	**5%**
Total	**5%**	**5%**	**53%**	**21%**	**11%**	**5%**	**100%**

Note:
1. Primary collision factors and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.2.2 Crash Type and Severity

This section analyzes the types of crashes occurring and the resulting level of severity. The crash type shown in **Figure 30**, considers all crash severities for the County. Vehicle/pedestrian crashes resulted in three percent fatal crashes along the County roadways. Hit object crashes resulted in three percent fatal crashes and 11 percent severe injury crashes in the County. It was observed that sideswipe (one percent), rear end (one percent), and overturned (five percent) crashes resulted in severe injuries for the County. **Table 18** lists the crash type for all crash severities on roadways in the County.

Figure 30: Crash Type for All Crash Severities on Roadways (County)
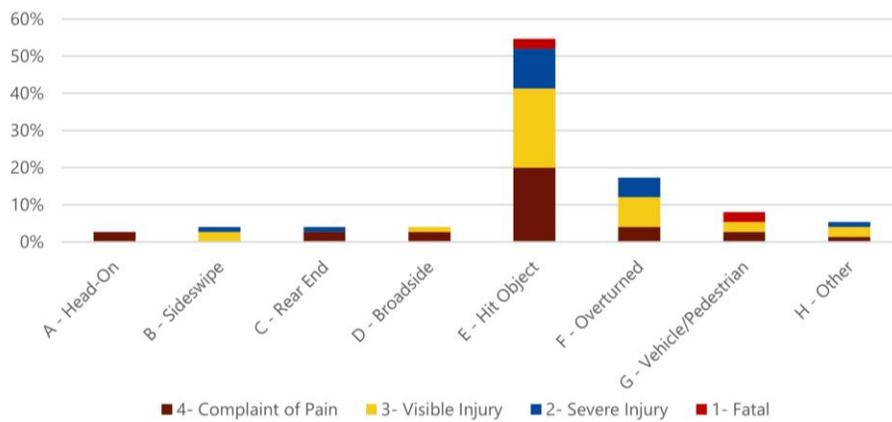
Table 18: Crash Type for All Crash Severities on Roadways (County)

Type of Crash	Fatal	Severe Injury	Visible Injury	Complaint of Pain	Total
A - Head-On	0%	0%	0%	3%	**3%**
B - Sideswipe	0%	1%	3%	0%	**4%**
C - Rear End	0%	1%	0%	3%	**4%**
D - Broadside	0%	0%	1%	3%	**4%**
E - Hit Object	3%	11%	21%	20%	**55%**
F - Overturned	0%	5%	8%	4%	**17%**
G - Vehicle/Pedestrian	3%	0%	3%	3%	**8%**
H - Other	0%	1%	3%	1%	**5%**
Total	**5%**	**20%**	**39%**	**36%**	**100%**

Note: The totals might not match due to variation created by rounding off the percentage.

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4.2.3 Lighting Condition and Crash Type

A total of 32 percent crashes occurred during daylight, 11 percent during dusk or dawn, 11 percent occurred in the dark in areas with street lights, and 11 percent occurred in the dark in areas with no street lights at County roadways as shown in **Figure 31.** The percent of F+SI crashes according to the lighting conditions on roadways in Del Norte County are listed in **Table 19.**

Figure 31: Lighting Conditions for F+SI Crashes on Roadways (County)
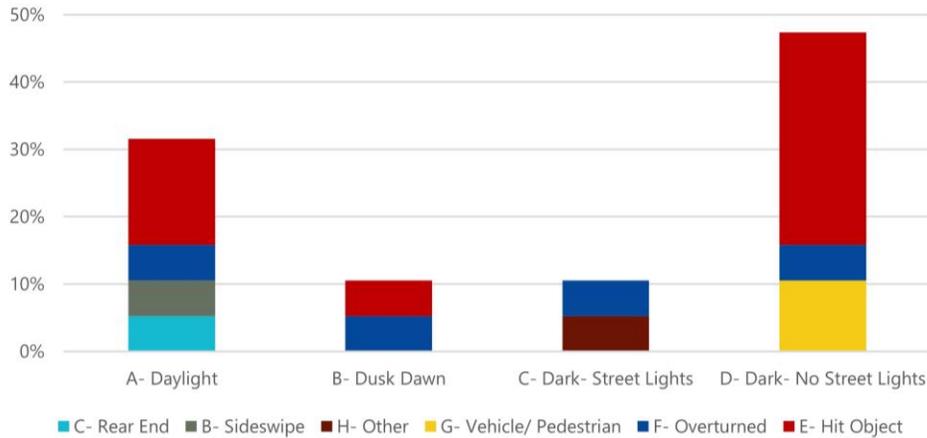
Table 19: Lighting Conditions for F+SI Crashes on Roadways (County)

Lighting Condition	Sideswipe	Rear End	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
A- Daylight	5%	5%	16%	5%	0%	0%	**32%**
B- Dusk Dawn	0%	0%	5%	5%	0%	0%	**11%**
C- Dark- Street Lights	0%	0%	0%	5%	0%	5%	**11%**
D- Dark- No Street Lights	0%	0%	32%	5%	11%	0%	**47%**
Total	**5%**	**5%**	**53%**	**21%**	**11%**	**5%**	**100%**
Note: 1. Lighting conditions and crash types with no corresponding crashes were not included in the table. 2. The totals might not match due to variation created by rounding off the percentage.							

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4.2.4 Weather Condition and Crash Type

A total of 53 percent crashes occurred during clear weather conditions, 37 percent crashes occurred during cloudy weather conditions, 5 percent crashes occurred during rainy weather conditions and 5 percent during other weather conditions as shown in **Figure 32.** The major type of crashes that occurred during cloudy and rainy weather are sideswipe, hit object, overturned, and vehicle/pedestrian. The type of weather condition during the occurrence of fatal or severe injury crashes on roadways in Del Norte County are listed in **Table 20**.

Figure 32: Weather Conditions for F+SI Crashes on Roadways (County)
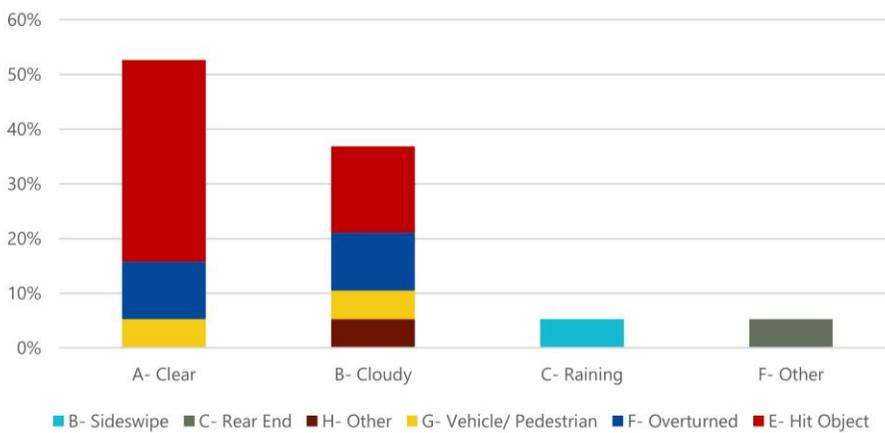
Table 20: Weather Conditions for F+SI Crashes on Roadways (County)

| Weather Condition	Sideswipe	Rear End	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
A- Clear	0%	0%	37%	11%	5%	0%	**53%**
B- Cloudy	0%	0%	16%	11%	5%	5%	**37%**
C- Raining	5%	0%	0%	0%	0%	0%	**5%**
F- Other	0%	5%	0%	0%	0%	0%	**5%**
Total	**5%**	**5%**	**53%**	**21%**	**11%**	**5%**	**100%**
Note: 1. Weather conditions and crash types with no corresponding crashes were not included in the table. 2. The totals might not match due to variation created by rounding off the percentage.							

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4.2.5 Age Group and Gender for F+SI Crashes

Based on the analysis, the age group found to have been involved in the highest number of crashes on County roadways is 16-25 (58 percent). Males were involved in 89 percent of the total F+SI crashes in the County as shown in **Figure 33**. In the County, the 16-25 age group was found to be involved in 58 percent of the F+SI crashes. **Table 21** lists the age group and gender of the individuals involved in F+SI crashes on roadways in Del Norte County.

Figure 33: Age Group and Gender Responsible for F+SI Crashes on Roadways (County)
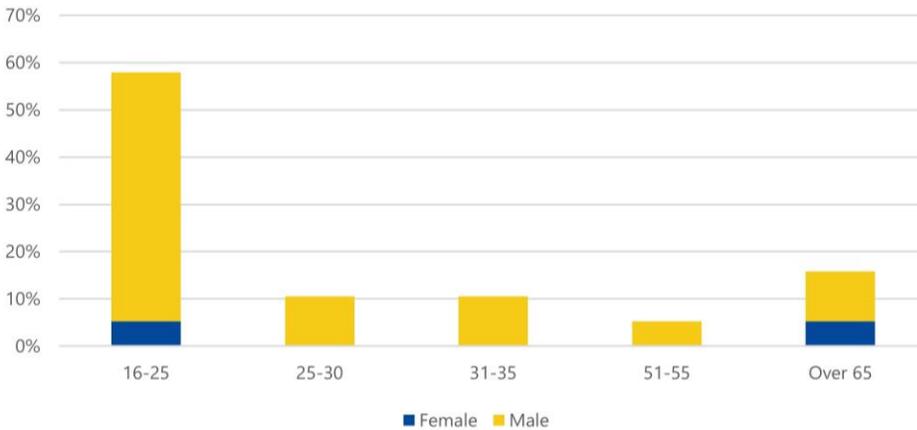
Table 21: Age Group and Gender Responsible for F+SI Crashes on Roadways (County)

Gender	16-25	26-30	31-35	51-55	Over 65	Total
Females	5%	0%	0%	0%	5%	**11%**
Males	53%	11%	11%	5%	11%	**89%**
Total	**58%**	**11%**	**11%**	**5%**	**16%**	**100%**

Note:
1. Age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.2.5.1 Age Group and All Crashes for Females

Although males were involved in the majority of the F+SI crashes, females were responsible for 17 percent of all crash severities and 11 percent of F+SI crashes along roadways countywide. The age group of 16-25 (54 percent) is prominently involved in crashes followed by age group over 65 (23 percent) in the County. Major violations by females in the County involve improper turning (31 percent) and driving or bicycling under the influence of alcohol or drug (23 percent) as shown in **Figure 34**. **Table 22** lists the violation factors of crashes in Del Norte County that involved females, according to their age group.

Figure 34: Violations by Females for All Crash Severities on Roadways (County)
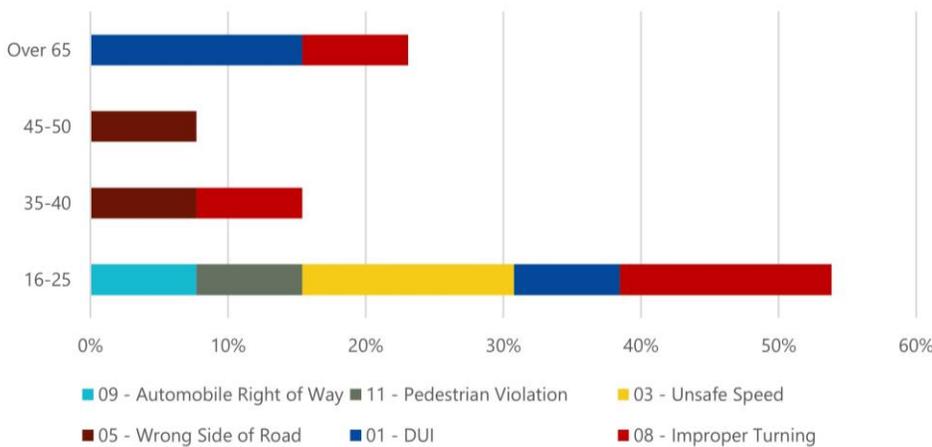
Table 22: Violations by Females for All Crash Severities on Roadways (County)

Primary Collision Factor	16-25	36-40	46-50	Over 65	Total
01 - DUI	8%	0%	0%	15%	**23%**
03 - Unsafe Speed	15%	0%	0%	0%	**15%**
05 - Wrong Side of Road	0%	8%	8%	0%	**15%**
08 - Improper Turning	15%	8%	0%	8%	**31%**
09 - Automobile Right of Way	8%	0%	0%	0%	**8%**
11 - Pedestrian Violation	8%	0%	0%	0%	**8%**
Total	**54%**	**15%**	**8%**	**23%**	**100%**

Note:
1. Primary collision factors and age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.2.5.2 Age Group and All Crashes for Males

Although males falling in age group 16-25 (52 percent) were responsible for majority of the F+SI crash, the males falling in the age group of over 65 (21 percent) were observed to engage in violations such as improper turning and driving or bicycling under the influence of alcohol or drug when considering crashes of all severities in the County as shown in **Figure 35**. Violations by males for all crash severities on roadways in Del Norte County are listed in **Table 23.**

Figure 35: Violations by Males for All Crash Severities on Roadways (County)
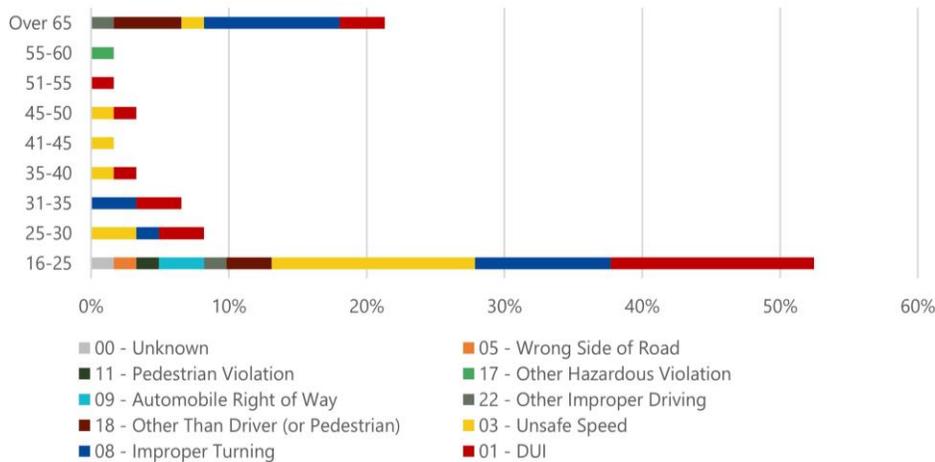
Table 23: Violations by Males for All Crash Severities on Roadways (County)

| Primary Collision Factor	16-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	Over 65	Total
00 - Unknown	2%	0%	0%	0%	0%	0%	0%	0%	0%	**2%**
01 - DUI	15%	3%	3%	2%	0%	2%	2%	0%	3%	**30%**
03 - Unsafe Speed	15%	3%	0%	2%	2%	2%	0%	0%	2%	**25%**
05 - Wrong Side of Road	2%	0%	0%	0%	0%	0%	0%	0%	0%	**2%**
08 - Improper Turning	10%	2%	3%	0%	0%	0%	0%	0%	10%	**25%**
09 - Automobile Right of Way	3%	0%	0%	0%	0%	0%	0%	0%	0%	**3%**
11 - Pedestrian Violation	2%	0%	0%	0%	0%	0%	0%	0%	0%	**2%**
17 - Other Hazardous Violation	0%	0%	0%	0%	0%	0%	0%	2%	0%	**2%**
18 - Other Than Driver (or Pedestrian)	3%	0%	0%	0%	0%	0%	0%	0%	5%	**8%**
22 - Other Improper Driving	2%	0%	0%	0%	0%	0%	0%	0%	2%	**3%**
Total	**52%**	**8%**	**7%**	**3%**	**2%**	**3%**	**2%**	**2%**	**21%**	**100%**

Note:
1. Primary collision factors and age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.2.8 Time of Day and Crash Type for F+SI Crashes

F+SI crashes were observed to be prominent in the County between 8:00 p.m. to 10:00 p.m. (26 percent) as shown in **Figure 36.** Crashes such as hit object, overturned, and vehicle/pedestrian crashes were observed to occur during these hours. **Table 24** lists the percentage of F+SI crashes on roadways in Del Norte County by time of day.

Figure 36: F+SI Crashes on Roadways by Time of Day
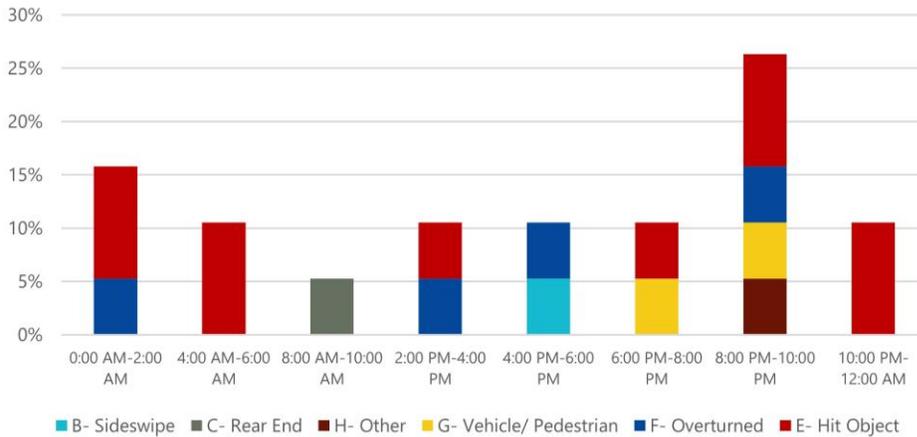
Table 24: F+SI Crashes on Roadways by Time of Day (County)

Time Period	Sideswipe	Rear End	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total (%)
0:00 a.m. - 2:00 a.m.	0%	0%	11%	5%	0%	0%	**16%**
4:00 a.m. - 6:00 a.m.	0%	0%	11%	0%	0%	0%	**11%**
8:00 a.m. - 10:00 a.m.	0%	5%	0%	0%	0%	0%	**5%**
2:00 p.m. - 4:00 p.m.	0%	0%	5%	5%	0%	0%	**11%**
4:00 p.m. - 6:00 p.m.	5%	0%	0%	5%	0%	0%	**11%**
6:00 p.m. - 8:00 p.m.	0%	0%	5%	0%	5%	0%	**11%**
8:00 p.m. - 10:00 p.m.	0%	0%	11%	5%	5%	5%	**26%**
10:00 p.m. - 12:00 a.m.	0%	0%	11%	0%	0%	0%	**11%**
Total	**5%**	**5%**	**53%**	**21%**	**11%**	**5%**	**100%**
Note: 1. Time periods and crash types with no corresponding crashes were not included in the table. 2. The totals might not match due to variation created by rounding off the percentage.							

4.2.9 Time of Day and Crash Type for All Crashes

The peak period for crashes considering all crash severities in the County was determined to be between 2:00 p.m. and 4:00 p.m. (15 percent), involved hit object crashes as shown in **Figure 37**. Crashes of all severities on roadways by the time of day in Del Norte County are listed in **Table 25.**

Figure 37: All Crashes on Roadways by Time of Day
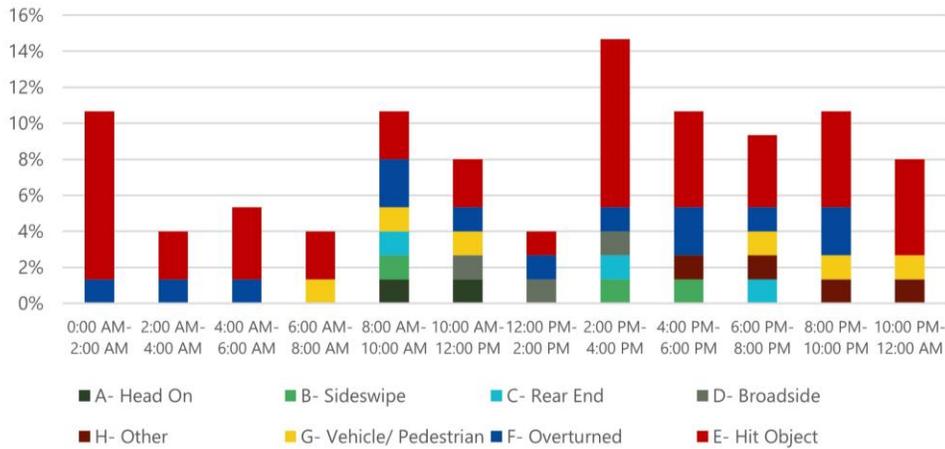
Table 25: All Crashes on Roadways by Time of Day (County)

Time Period	Head On	Sideswipe	Rear End	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
0:00 a.m. - 2:00 a.m.	0%	0%	0%	0%	9%	1%	0%	0%	**11%**
2:00 a.m. - 4:00 a.m.	0%	0%	0%	0%	3%	1%	0%	0%	**4%**
4:00 a.m. - 6:00 a.m.	0%	0%	0%	0%	4%	1%	0%	0%	**5%**
6:00 a.m. - 8:00 a.m.	0%	0%	0%	0%	3%	0%	1%	0%	**4%**
8:00 a.m. - 10:00 a.m.	1%	1%	1%	0%	3%	3%	1%	0%	**11%**
10:00 a.m. - 12:00 p.m.	1%	0%	0%	1%	3%	1%	1%	0%	**8%**
12:00 p.m. - 2:00 p.m.	0%	0%	0%	1%	1%	1%	0%	0%	**4%**
2:00 p.m. - 4:00 p.m.	0%	1%	1%	1%	9%	1%	0%	0%	**15%**
4:00 p.m. - 6:00 p.m.	0%	1%	0%	0%	5%	3%	0%	1%	**11%**
6:00 p.m. - 8:00 p.m.	0%	0%	1%	0%	4%	1%	1%	1%	**9%**
8:00 p.m. - 10:00 p.m.	0%	0%	0%	0%	5%	3%	1%	1%	**11%**
10:00 p.m. - 12:00 a.m.	0%	0%	0%	0%	5%	0%	1%	1%	**8%**
Total	**3%**	**4%**	**4%**	**4%**	**55%**	**17%**	**8%**	**5%**	**100%**

Note:
1. Time periods and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.3 City of Crescent City Data Analysis for Intersections Crashes

This section analyzes all the crashes that have occurred at intersections. The analysis considers crash attributes including crash type, violation factor, lighting conditions, weather conditions, age and gender of the person involved, and the time of day in which the crash occurred, to assist in understanding the influence of all these attributes on the occurrence of crashes. From this analysis, it was found that improper turning and automobile right of way were the prominent violation factors that led to F+SI crashes at intersections in the City.

The collision trends for crashes occurring at City intersections are shown in **Figure 38.** An overview of the top collision attributes for crashes occurring at intersections is presented in **Figure 39.**

Figure 38: Collision Trends at City Intersections
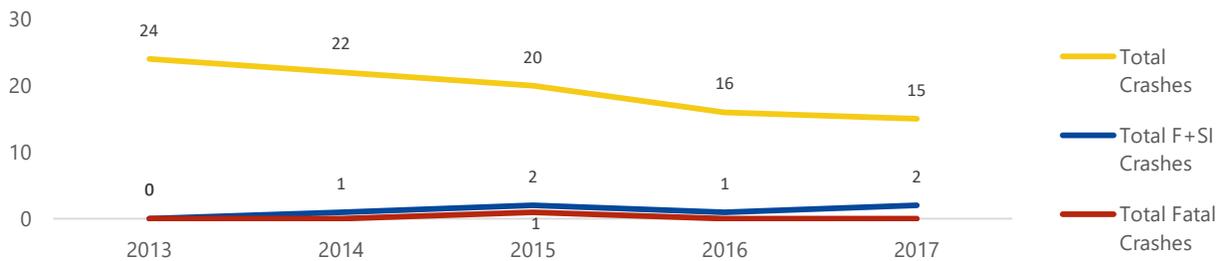
Figure 39: Top Collision Attributes at City Intersections

Violation	Crash Type	Lighting	Weather	Age and Gender
33% of F+SI crashes at intersections were a result of improper turning.	66% of F+SI crashes at intersections resulted in broadside crash type.	50% of F+SI crashes at intersections occurred during nighttime.	50% of F+SI crashes at intersections occurred during cloudy and rainy weather.	83% of F+SI crashes on City intersections occurred due to males under 16 to the age of 60.

4.3.1 Violation Factor and Crash Type

Improper turning (34 percent) was the most prominent violation factor in the City which resulted in broadside (17 percent) and overturned (17 percent) crash types as shown in **Figure 40.** These violations resulted in broadside, overturned, and vehicle/pedestrian type of crashes. **Table 26** presents the percentage of primary collision factors of the observed F+SI crashes at intersections in the City of Crescent City.

Figure 40: Primary Collision Factors for F+SI Crashes at Intersections (City)
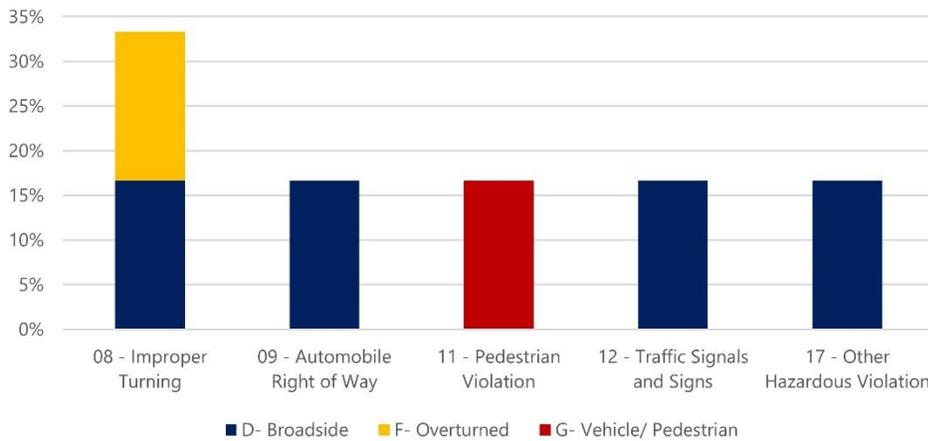
Table 26: Primary Collision Factors for F+SI Crashes at Intersections (City)

Primary Collision Factor	Broadside	Overturned	Vehicle/Pedestrian	Total
08 - Improper Turning	17%	17%	0%	**34%**
09 - Automobile Right of Way	17%	0%	0%	**17%**
11 - Pedestrian Violation	0%	0%	17%	**17%**
12 - Traffic Signals and Signs	17%	0%	0%	**17%**
17 - Other Hazardous Violation	17%	0%	0%	**17%**
Total	**67%**	**17%**	**17%**	**100%**

Note:
1. Primary collision factors and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.3.2 Crash Type and Severity

This section analyzes the types of crashes occurring and the resulting level of severity. The crash type distribution shown in **Figure 41**, considers all crash severities for the City. Broadside crashes resulted in four percent F+SI crashes for the City. It was also observed that vehicle/pedestrian (one percent) and overturned (one percent) crashes led to severe injuries in the City. **Table 27** represents the percentage of crash types and the resulting severity of the crashes at intersections in Crescent City.

Figure 41: Crash Type for All Crash Severities at Intersections (City)
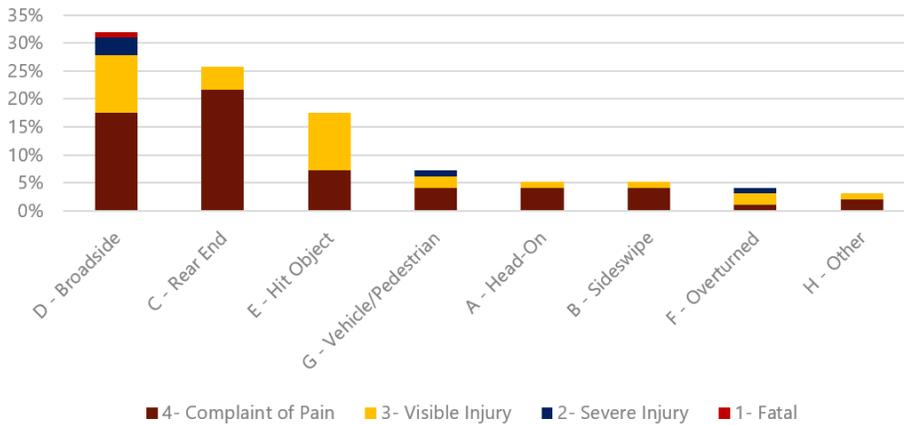
Table 27: Crash Type for All Crash Severities at Intersections (City)

Crash Type	Fatal	Severe Injury	Visible Injury	Complaint of Pain	Total
A - Head-On	0%	0%	1%	4%	**5%**
B - Sideswipe	0%	0%	1%	4%	**5%**
C - Rear End	0%	0%	4%	22%	**26%**
D - Broadside	1%	3%	10%	18%	**32%**
E - Hit Object	0%	0%	10%	7%	**18%**
F - Overturned	0%	1%	2%	1%	**4%**
G - Vehicle/Pedestrian	0%	1%	2%	4%	**7%**
H - Other	0%	0%	1%	2%	**3%**
Total	**1%**	**5%**	**32%**	**62%**	**100%**

Note: The totals might not match due to variation created by rounding off the percentage.

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4.3.3 Lighting Condition and Crash Type

A total of 50 percent crashes occurred during daylight, 33 percent occurred in the dark in areas with street light and 17 percent occurred in the dark in areas with no street lights at City intersections as shown in **Figure 42**. The percentage of crashes with lighting conditions and the resulting crash type for Crescent City has been listed in **Table 28.**

Figure 42: Lighting Condition for F+SI Crashes at Intersections (City)
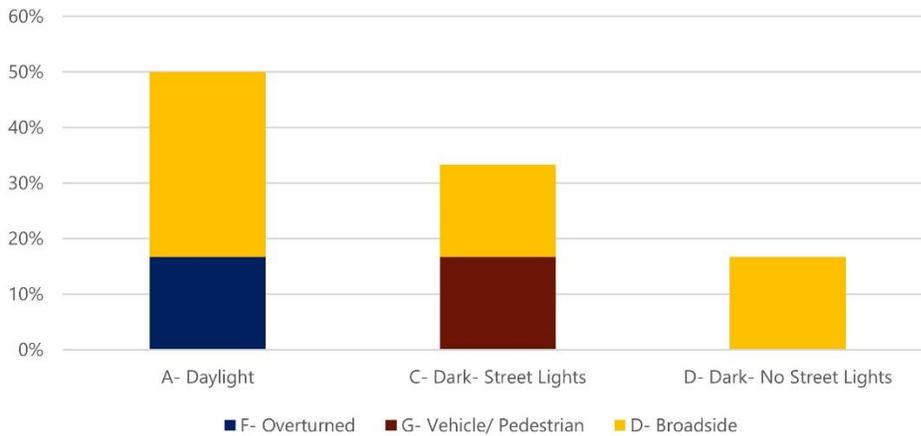
Table 28: Lighting Condition for F+SI Crashes at Intersections (City)

Lighting Condition	Broadside	Overturned	Vehicle/ Pedestrian	Total
A- Daylight	33%	17%	0%	**50%**
C- Dark- Street Lights	17%	0%	17%	**33%**
D- Dark- No Street Lights	17%	0%	0%	**17%**
Total	**67%**	**17%**	**17%**	**100%**
Note: 1. Lighting conditions and crash types with no corresponding crashes were not included in the table. 2. The totals might not match due to variation created by rounding off the percentage.				

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4.3.4 Weather Condition and Crash Type

A total of 50 percent crashes occurred during clear weather conditions, 33 percent of the crashes occurred during cloudy weather conditions, and 17 percent of the crashes occurred during rainy weather conditions as shown in **Figure 43**. The major type of crashes that occurred during cloudy and rainy weather were broadside and vehicle/pedestrian. The percentage of the kind of weather conditions and the resultant crash types for F+SI crashes at intersections for Crescent City have been listed in **Table 29.**

Figure 43: Weather Conditions for F+SI Crashes at Intersections (City)
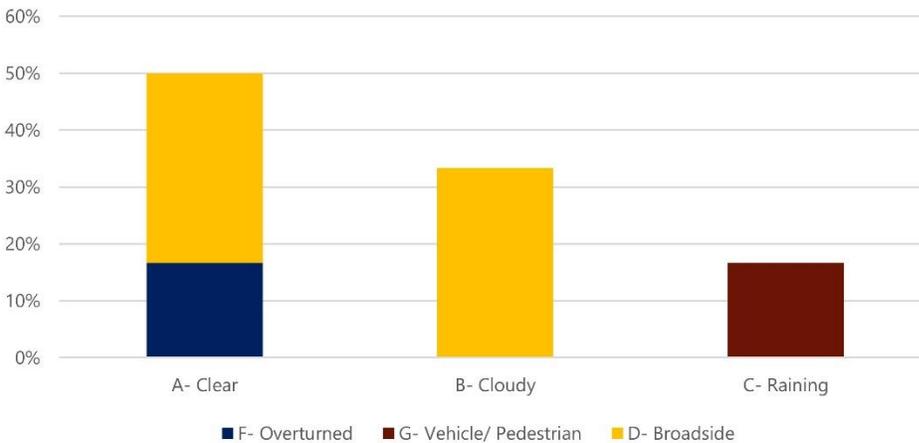
Table 29: Weather Conditions for F+SI Crashes at Intersections (City)

Weather Condition	Broadside	Overturned	Vehicle/ Pedestrian	Total
A- Clear	33%	17%	0%	**50%**
B- Cloudy	33%	0%	0%	**33%**
C- Raining	0%	0%	17%	**17%**
Total	**67%**	**17%**	**17%**	**100%**

Note:
1. Weather conditions and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.3.5 Age Group and Gender for F+SI Crashes

Based on the analysis, males falling in all age groups from under 16 to 55-60 were equally responsible for F+SI crashes at City intersections as shown in **Figure 44**. Each age group accounted for 17 percent of the F+SI crashes. **Table 30** shows the percentage by age group and gender of persons involved in F+SI crashes in Crescent City.

Figure 44: Age Group and Gender involved in F+SI Crashes at Intersections (City)
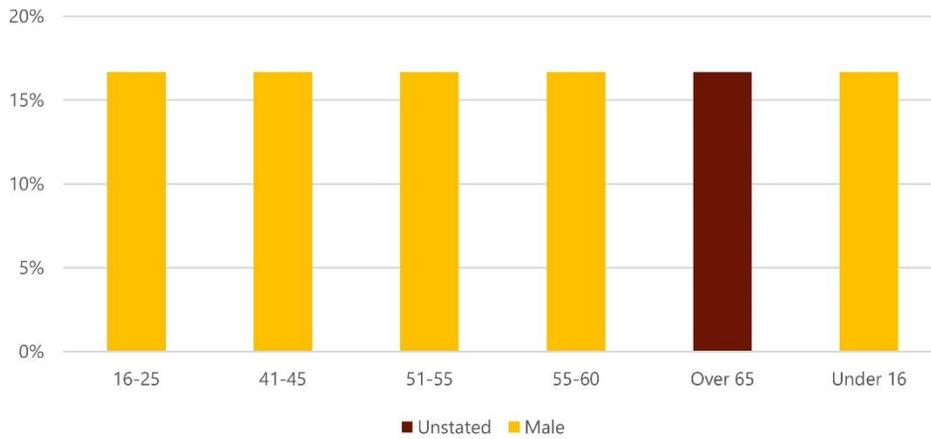
Table 30: Age Group and Gender involved in F+SI Crashes at Intersections (City)

Gender	16-25	41-45	51-55	56-60	Over 65	Under 16	Total
Unstated	0%	0%	0%	0%	17%	0%	**17%**
Males	17%	17%	17%	17%	0%	17%	**83%**
Total	**17%**	**17%**	**17%**	**17%**	**17%**	**17%**	**100%**

Note:
1. Age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.3.5.1 Age Group and All Crashes for Females

Females were responsible for 51 percent of all crash severities at City intersections. The major violations by females were unsafe speed (44 percent), automobile right-of-way (28 percent), and improper turning (eight percent) as shown in **Figure 45**. The age group of 16-25 (38 percent) was prominently involved in crashes followed by the age group of 25-30 (26 percent) in the City. **Table 31** represents the percentage of violations by females considering all crash severities at intersections in Crescent City.

Figure 45: Violations by Females for All Crash Severities at Intersections
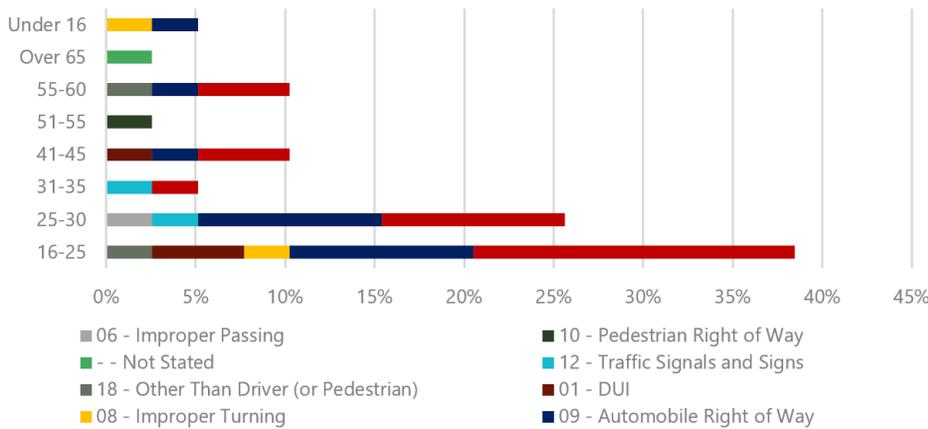
Table 31: Violations by Females for All Crash Severities at Intersections (City)

Primary Collision Factor	16-25	26-30	31-35	41-45	51-55	56-60	Over 65	Under 16	Total
Not Stated	0%	0%	0%	0%	0%	0%	3%	0%	**3%**
01 - DUI	5%	0%	0%	3%	0%	0%	0%	0%	**8%**
03 - Unsafe Speed	18%	10%	3%	5%	0%	5%	0%	0%	**44%**
06 - Improper Passing	0%	3%	0%	0%	0%	0%	0%	0%	**3%**
08 - Improper Turning	3%	0%	0%	0%	0%	0%	0%	3%	**8%**
09 - Automobile Right of Way	10%	10%	0%	3%	0%	3%	0%	3%	**28%**
10 - Pedestrian Right of Way	0%	0%	0%	0%	3%	0%	0%	0%	**3%**
12 - Traffic Signals and Signs	0%	3%	3%	0%	0%	0%	0%	0%	**5%**
18 - Other Than Driver (or Pedestrian)	3%	0%	0%	0%	0%	3%	0%	0%	**5%**
Total	**38%**	**26%**	**5%**	**10%**	**3%**	**10%**	**3%**	**5%**	**100%**

Note:
1. Primary collision factors and age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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Although males falling in age group 16-25 (23 percent) were responsible for the majority of F+SI crashes, the males falling in the age group of over 65 (15 percent) were observed to engage in violations such as unsafe speed, automobile right-of-way, and unsafe starting and backing when considering crashes of all severities in the City as shown in **Figure 46**. Crashes by under 16 age group account for three percent of the crashes in the City.

Figure 46: Violations by Males for All Crash Severities at Intersections
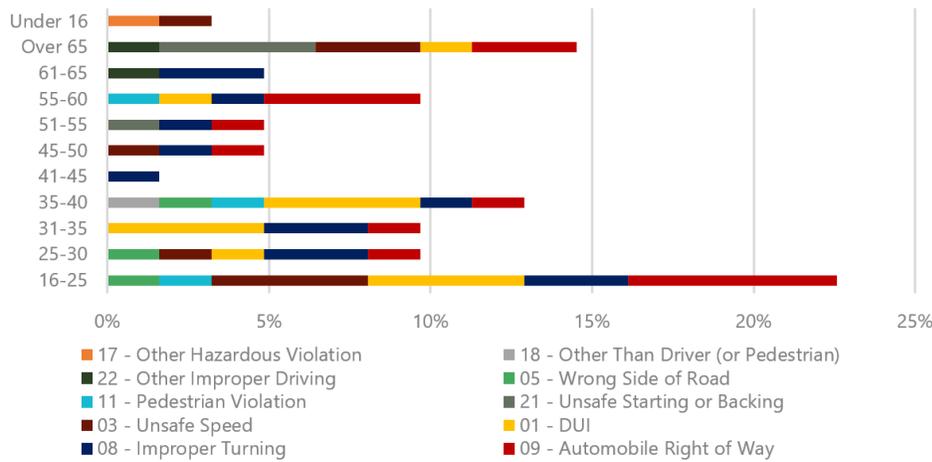
Table 32 represents percentage of violations by males for all crash severities at intersections in Crescent City.

Table 32: Violations by Males for All Crash Severities at Intersections (City)

Primary Collision Factor	16-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	Over 65	Under 16	Total
00 - Unknown	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	**2%**
01 - DUI	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	**2%**
03 - Unsafe Speed	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	**2%**
05 - Wrong Side of Road	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	**3%**
08 - Improper Turning	2%	2%	0%	2%	0%	0%	0%	0%	0%	0%	0%	**5%**
09 - Automobile Right of Way	2%	0%	0%	2%	0%	0%	0%	2%	0%	0%	0%	**5%**
11 - Pedestrian Violation	0%	0%	0%	0%	0%	0%	2%	0%	0%	5%	0%	**6%**
17 - Other Hazardous Violation	5%	2%	0%	0%	0%	2%	0%	0%	0%	3%	2%	**13%**
18 - Other Than Driver (or Pedestrian)	5%	2%	5%	5%	0%	0%	0%	2%	0%	2%	0%	**19%**
21 - Unsafe Starting or Backing	3%	3%	3%	2%	2%	2%	2%	2%	3%	0%	0%	**21%**
22 - Other Improper Driving	6%	2%	2%	2%	0%	2%	2%	5%	0%	3%	0%	**23%**
Total	**23%**	**10%**	**10%**	**13%**	**3%**	**5%**	**5%**	**10%**	**5%**	**15%**	**3%**	**100%**

Note:
1. Primary collision factors and age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.3.8 Time of Day and Crash Type for F+SI Crashes

As shown in **Figure 47**, in the City of Crescent City, F+SI crashes were observed to occur most prominently from 6:00 a.m. to 10:00 a.m. (33 percent) primarily involving broadside (67 percent) crashes. **Table 33** lists the types of crashes that led to F+SI crashes occurring at various times of day in Crescent City.

Figure 47: F+SI Crashes at Intersections by Time of Day (City)
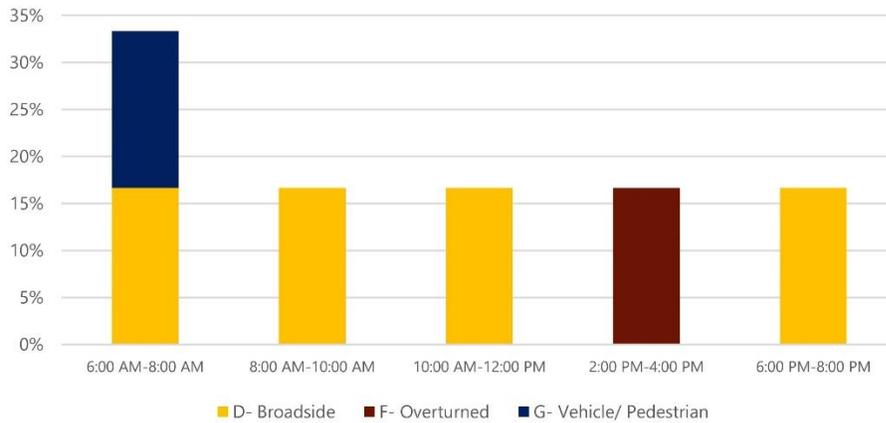
Table 33: F+SI Crashes at Intersections by Time of Day (City)

Time of Day	Broadside	Overturned	Vehicle/ Pedestrian	Total
6:00 a.m. - 8:00 a.m.	17%	0%	17%	**33%**
8:00 a.m. - 10:00 a.m.	17%	0%	0%	**17%**
10:00 a.m. - 12:00 p.m.	17%	0%	0%	**17%**
2:00 p.m. - 4:00 p.m.	0%	17%	0%	**17%**
6:00 p.m. - 8:00 p.m.	17%	0%	0%	**17%**
Total	**67%**	**17%**	**17%**	**100%**

Note:
1. Time periods and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.3.9 Time of Day and Crash Type for All Crashes

As shown in **Figure 48** the majority of the crashes occurred between 10:00 a.m. and 12:00 p.m. for the City when considering crashes of all severities. 20 percent of all crashes in the City were observed to occur during these hours prominently involving rear end, broadside, and hit object type crashes.

Figure 48: All Crashes at Intersections by Time of Day (City)

Table 34 lists all crashes that occurred according to the time of day in Crescent City.

Table 34: All Crashes at Intersections by Time of Day (City)

Time Period	Head-On	Sideswipe	Rear end	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Other	Total
0:00 a.m. - 2:00 a.m.	0%	1%	1%	0%	3%	0%	0%	0%	**5%**
2:00 a.m. - 4:00 a.m.	0%	0%	0%	0%	0%	0%	1%	0%	**1%**
4:00 a.m. - 6:00 a.m.	0%	0%	0%	0%	2%	0%	0%	0%	**2%**
6:00 a.m. - 8:00 a.m.	0%	0%	2%	3%	0%	0%	1%	0%	**6%**
8:00 a.m. - 10:00 a.m.	0%	0%	1%	6%	1%	0%	0%	0%	**8%**
10:00 a.m. - 12:00 p.m.	0%	0%	2%	4%	0%	0%	1%	0%	**7%**
12:00 p.m. - 2:00 p.m.	0%	1%	4%	5%	1%	1%	1%	1%	**14%**
2:00 p.m. - 4:00 p.m.	0%	2%	9%	5%	2%	1%	0%	0%	**20%**
4:00 p.m. - 6:00 p.m.	2%	1%	4%	4%	2%	2%	1%	1%	**18%**
6:00 p.m. - 8:00 p.m.	1%	0%	2%	2%	3%	0%	0%	1%	**9%**
8:00 p.m. - 10:00 p.m.	0%	0%	0%	2%	2%	0%	2%	0%	**6%**
10:00 p.m. - 12:00 a.m.	2%	0%	0%	0%	1%	0%	0%	0%	**3%**
Total	**5%**	**5%**	**26%**	**32%**	**18%**	**4%**	**7%**	**3%**	**100%**

Note:
1. Time periods and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.4 City of Crescent City Data Analysis for Roadways Crashes

This section analyzes all the crashes that have occurred on roadway segments. The analysis considers factors such as the crash type, violation factor, lighting conditions, weather conditions, age and gender of the person involved and the time of day in which the crash occurred. It was observed that unsafe speed, improper turning, and pedestrian violation were the prominent violation factors that led to F+SI crashes along roadways within the City.

The collision trends for crashes occurring on City roadways are shown in **Figure 49.** An overview of the top collision attributes for crashes occurring on roadways is presented in **Figure 50.**

Figure 49: Collision Trends on City Roadways
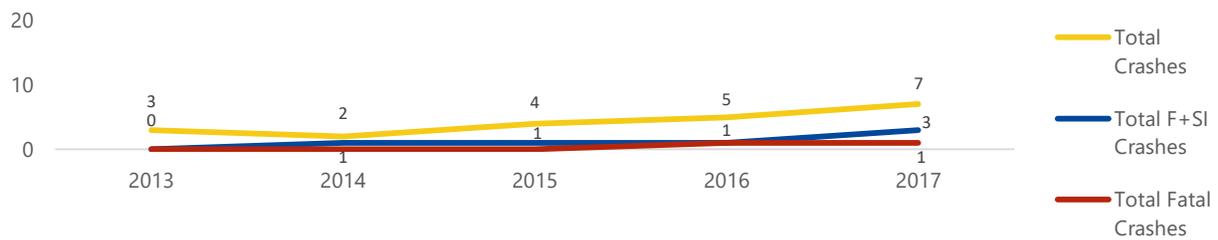
Figure 50: Top Collision Attributes on City Roadways

Violation	Crash Type	Lighting	Weather	Age and Gender
66% of F+SI crashes on roadways were a result of improper turning and unsafe speed.	66% of F+SI crashes resulted in hit object and vehicle/ pedestrian crash type.	67% of F+SI crashes on roadways occurred during nighttime.	67% of F+SI crashes on roadways occurred during cloudy and rainy weather.	50% of F+SI crashes on City roadways occurred due to 16-25 year old males.

4.4.1 Violation Category and Crash Type

Improper turning (33 percent) and unsafe speed (33 percent) were the most prominent violation factor within the City of Crescent City as shown in **Figure 51**. These violations resulted in vehicle/pedestrian and hit object type crashes. **Table 35** lists the primary collision factors for F+SI crashes on roadways in Crescent City.

Figure 51: Primary Collision Factors for F+SI Crashes on Roadways (City)
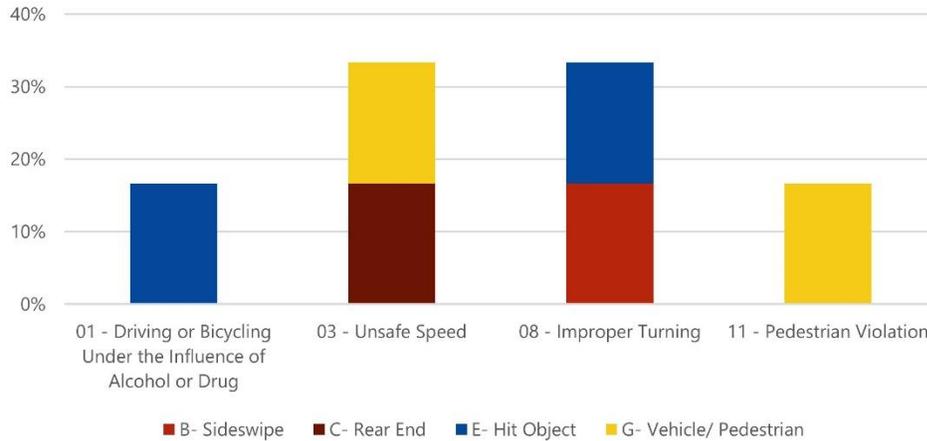
Table 35: Primary Collision Factors for F+SI Crashes on Roadways (City)

Primary Collision Factor	Sideswipe	Rear end	Hit Object	Vehicle/ Pedestrian	Total
01 - DUI	0%	0%	17%	0%	**17%**
03 - Unsafe Speed	0%	17%	0%	17%	**33%**
08 - Improper Turning	17%	0%	17%	0%	**33%**
11 - Pedestrian Violation	0%	0%	0%	17%	**17%**
Total	**17%**	**17%**	**33%**	**33%**	**100%**

Note:
1. Primary collision factors and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.4.2 Crash Type and Severity

This section analyzes the types of crashes occurring and the resulting level of severity. The crash type shown in the chart below **Figure 52**, considers all crash severities for the City. Vehicle/pedestrian (ten percent) crashes resulted in fatal crashes along City roadways. It was observed that hit object (ten percent), sideswipe (five percent) and rear end (five percent) crashes resulted in severe injuries in the City. **Table 36** lists the crash type for all crash severities on roadways in Crescent City.

Figure 52: Crash Type for All Crash Severities on Roadways (City)
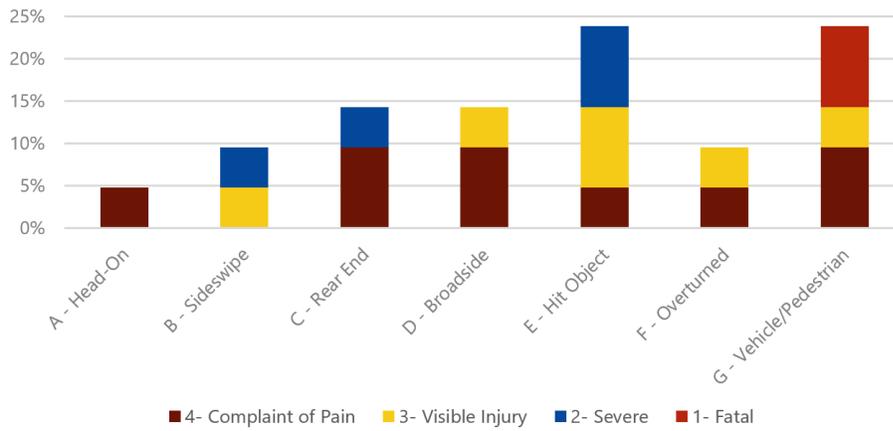
Table 36: Crash Type for All Crash Severities on Roadways (City)

Type of Crash	Fatal Crash	Severe Injury	Visible Injury	Complaint of Pain	Total
A - Head-On	0%	0%	0%	5%	**5%**
B - Sideswipe	0%	5%	5%	0%	**10%**
C - Rear End	0%	5%	0%	10%	**14%**
D - Broadside	0%	0%	5%	10%	**14%**
E - Hit Object	0%	10%	10%	5%	**24%**
F - Overturned	0%	0%	5%	5%	**10%**
G - Vehicle/Pedestrian	10%	0%	5%	10%	**24%**
Total	**10%**	**19%**	**29%**	**43%**	**100%**

Note: The totals might not match due to variation created by rounding off the percentage.

4.4.3 Lighting Condition and Crash Type

A total of 33 percent of crashes occurred during daylight, and 67 percent occurred in the dark in areas with no street lights at City roadways as shown in **Figure 53.** The percent of F+SI crashes according to the lighting conditions on roadways in Crescent City are listed in **Table 37.**

Figure 53: Lighting Conditions for F+SI Crashes on Roadways (City)
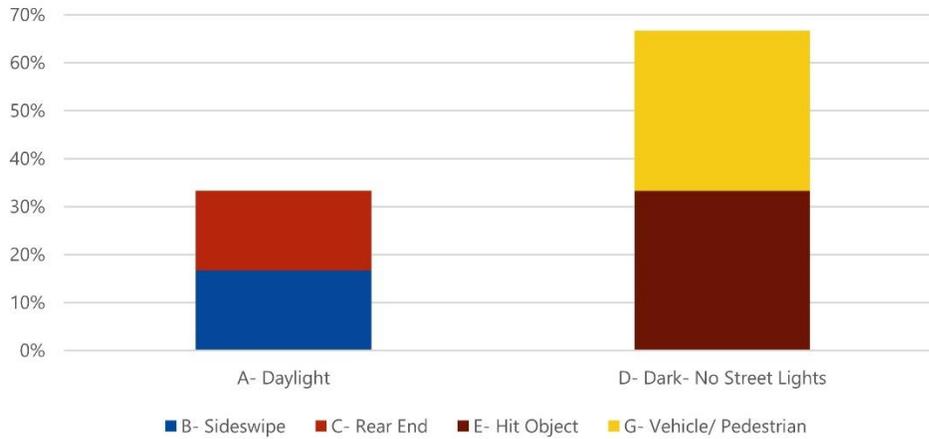
Table 37: Lighting Conditions for F+SI Crashes on Roadways (City)

Lighting Condition	Sideswipe	Rear End	Hit Object	Vehicle/ Pedestrian	Total
A- Daylight	17%	17%	0%	0%	**33%**
D- Dark- No Street Lights	0%	0%	33%	33%	**67%**
Total	**17%**	**17%**	**33%**	**33%**	**100%**

Note:
1. Lighting conditions and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.4.4 Weather Condition and Crash Type

A total of 17 percent crashes occurred during clear weather conditions, 50 percent crashes occurred during cloudy weather conditions, 17 percent crashes occurred during rainy weather conditions and 17 percent crashes occurred during other weather conditions as shown in **Figure 54**. The primary type of crashes that occurred during cloudy and rainy weather are sideswipe, hit object, and vehicle/pedestrian. The type of weather conditions during F+SI crashes on roadways for Crescent City are listed in **Table 38**.

Figure 54: Weather Conditions for F+SI Crashes on Roadways (City)
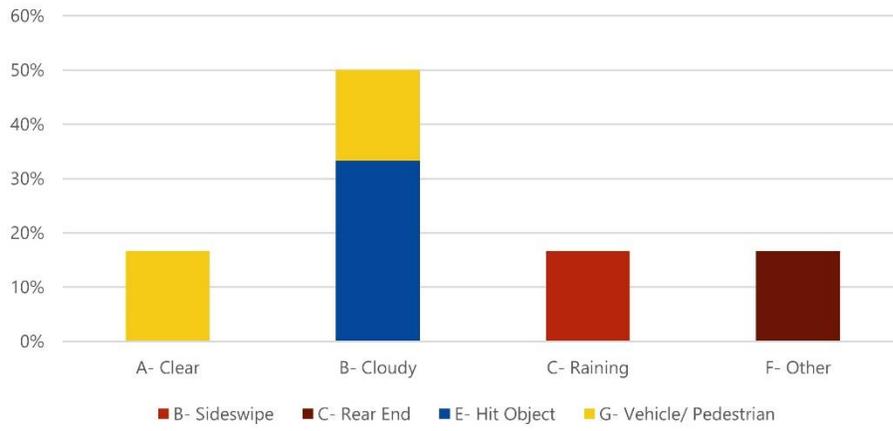
Table 38: Weather Conditions for F+SI Crashes on Roadways (City)

Lighting Condition	Sideswipe	Rear End	Hit Object	Vehicle/ Pedestrian	Total
A- Clear	0%	0%	0%	17%	**17%**
B- Cloudy	0%	0%	33%	17%	**50%**
C- Raining	17%	0%	0%	0%	**17%**
F- Other	0%	17%	0%	0%	**17%**
Total	**17%**	**17%**	**33%**	**33%**	**100%**

Note:
1. Weather conditions and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.4.5 Age Group and Gender for F+SI Crashes

Based on the analysis, the most prominent age group involved in crashes on roadways is 16-25 (67 percent) for the City as shown in **Figure 55**. Males were involved in 83 percent of the F+SI crashes along City roadways and females were involved in 17 percent crashes along roadways. **Table 39** lists the age group and gender of the individuals involved in F+SI crashes on roadways in Crescent City.

Figure 55: Age Group and Gender Responsible for F+SI Crashes on Roadways (City)
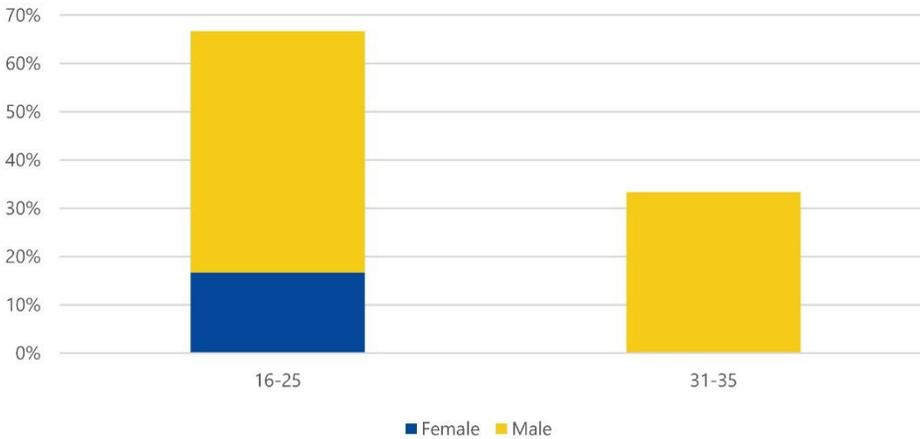
Table 39: Age Group and Gender Responsible for F+SI Crashes on Roadways (City)

| Gender	16-25	31-35	Total
Females	17%	0%	**17%**
Males	50%	33%	**83%**
Total	**67%**	**33%**	**100%**
Note: 1. Age groups with no corresponding crashes were not included in the table. 2. The totals might not match due to variation created by rounding off the percentage.			

4.4.5.1 Age Group and All Crashes for Females

Female drivers were involved in 24 percent of all crashes that occurred in the City roadways. The major violation by females was pedestrian violations (40 percent) as shown in **Figure 56**. The age group of 16-25 accounted for 60 percent of the crashes in the City. **Table 40** lists the violation factors of crashes in Crescent City that involved females, according to their age group.

Figure 56: Violations by Females for All Crash Severities on Roadways (City)
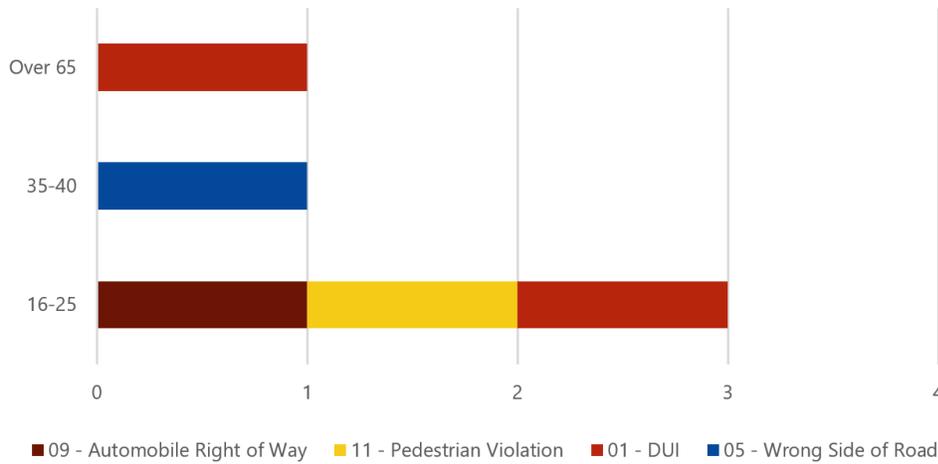
Table 40: Violations by Females for All Crash Severities on Roadways (City)

Primary Collision Factor	16-25	36-40	46-50	Total
01 - DUI	20%	0%	0%	**20%**
05 - Wrong Side of Road	20%	0%	0%	**20%**
09 - Automobile Right of Way	20%	0%	0%	**20%**
11 - Pedestrian Violation	0%	20%	20%	**40%**
Total	**60%**	**20%**	**20%**	**100%**

Note:
1. Primary collision factors and age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.4.5.2 Age Group and All Crashes for Males

In the City, males falling in the age group 16-25 (69 percent) were involved in the highest number of crashes as shown in **Figure 57.** Improper turning was the most prominent violation by male drivers accounting for 31 percent of all crashes followed by unsafe speed (25 percent). **Table 41** lists the violations by males for all crash severities on roadways in Crescent City.

Figure 57: Violations by Males for All Crash Severities on Roadways (City)
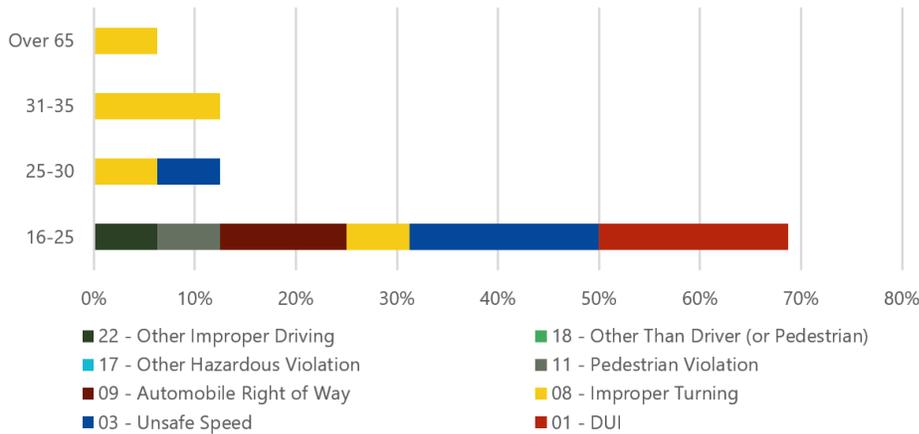
Table 41: Violations by Males for All Crash Severities on Roadways (City)

Primary Collision Factor	16-25	26-30	31-35	Over 65	Total
01 - DUI	19%	0%	0%	0%	**19%**
03 - Unsafe Speed	19%	6%	0%	0%	**25%**
08 - Improper Turning	6%	6%	13%	6%	**31%**
09 - Automobile Right of Way	13%	0%	0%	0%	**13%**
11 - Pedestrian Violation	6%	0%	0%	0%	**6%**
22 - Other Improper Driving	6%	0%	0%	0%	**6%**
Total	**69%**	**13%**	**13%**	**6%**	**100%**

Note:
1. Primary collision factors and age groups with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

4.4.8 Time of Day and Crash Type for F+SI Crashes

Crashes in the City were spread throughout day and involved crashes such as sideswipe (17 percent), rear end (17 percent), hit object (33 percent) and vehicle/ pedestrian (33 percent) as shown in **Figure 58**. **Table 42** lists the percentage of F+SI crashes on roadways in Crescent City by the time of day.

Figure 58: F+SI Crashes on Roadways by Time of Day
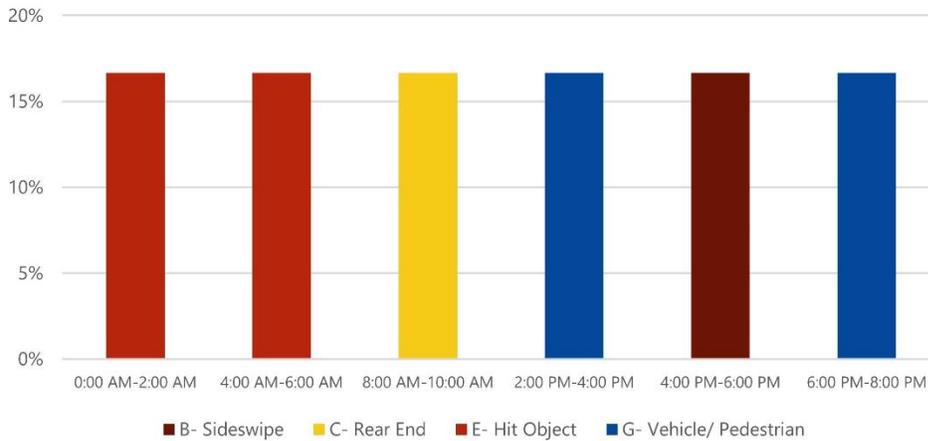
Table 42: F+SI Crashes on Roadways by Time of Day (City)

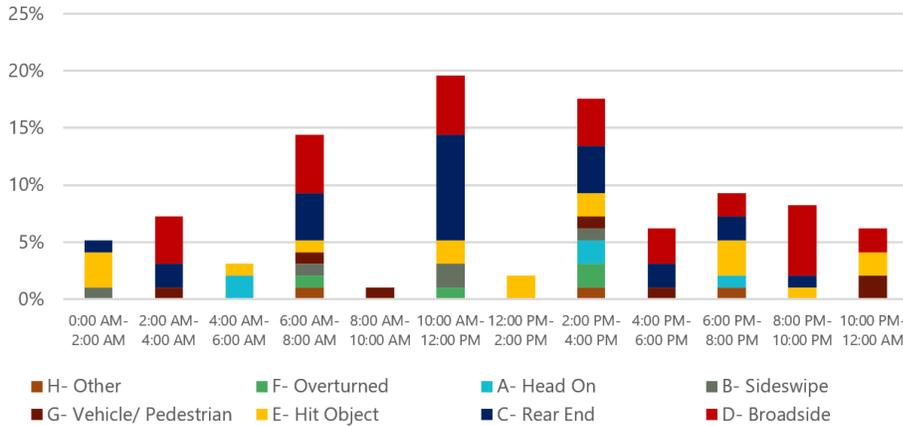| Time Period	Sideswipe	Rear End	Hit Object	Vehicle/ Pedestrian	Total (%)
0:00 a.m. - 2:00 a.m.	0%	0%	17%	0%	**17%**
4:00 a.m. - 6:00 a.m.	0%	0%	17%	0%	**17%**
8:00 a.m. - 10:00 a.m.	0%	17%	0%	0%	**17%**
2:00 p.m. - 4:00 p.m.	0%	0%	0%	17%	**17%**
4:00 p.m. - 6:00 p.m.	17%	0%	0%	0%	**17%**
6:00 p.m. - 8:00 p.m.	0%	0%	0%	17%	**17%**
Total	**17%**	**17%**	**33%**	**33%**	**100%**

Note:
1. Time periods and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

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4.4.9 Time of Day and Crash Type for All Crashes

As shown in **Figure 59** the majority of crashes occurred between 10:00 a.m. and 12:00 p.m. for the City when considering crashes of all severities. A total of 19 percent of all crashes in the City were observed to occur during these hours prominently involving vehicle/pedestrian, overturned, broadside, and head on type crashes.

Figure 59: All Crashes on Roadways by Time of Day
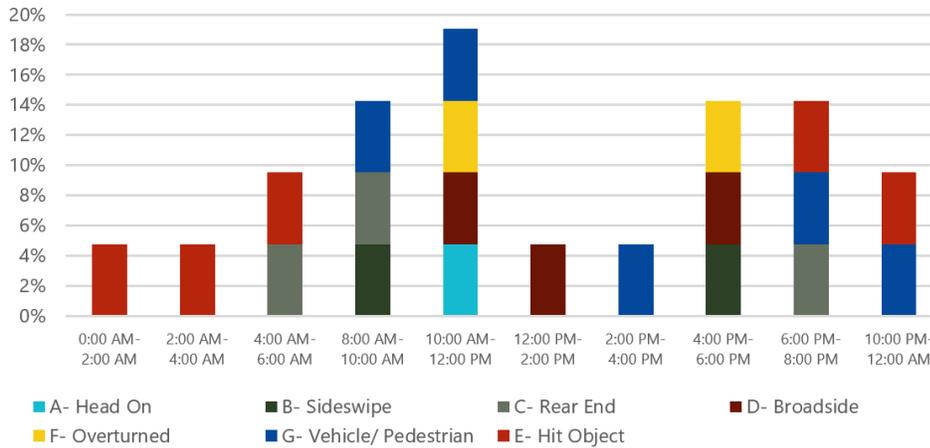
Table 43 lists percentage of all crashes on roadways by time of day in Crescent City.

Table 43: All Crashes on Roadways by Time of Day (City)

Time Period	Head On	Sideswipe	Rear End	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	Total
0:00 a.m. - 2:00 a.m.	0%	0%	0%	0%	5%	0%	0%	**5%**
2:00 a.m. - 4:00 a.m.	0%	0%	0%	0%	5%	0%	0%	**5%**
4:00 a.m. - 6:00 a.m.	0%	0%	5%	0%	5%	0%	0%	**10%**
8:00 a.m. - 10:00 a.m.	0%	5%	5%	0%	0%	0%	5%	**14%**
10:00 a.m. - 12:00 p.m.	5%	0%	0%	5%	0%	5%	5%	**19%**
12:00 p.m. - 2:00 p.m.	0%	0%	0%	5%	0%	0%	0%	**5%**
2:00 p.m. - 4:00 p.m.	0%	0%	0%	0%	0%	0%	5%	**5%**
4:00 p.m. - 6:00 p.m.	0%	5%	0%	5%	0%	5%	0%	**14%**
6:00 p.m. - 8:00 p.m.	0%	0%	5%	0%	5%	0%	5%	**14%**
10:00 p.m. - 12:00 a.m.	0%	0%	0%	0%	5%	0%	5%	**10%**
Total	**5%**	**10%**	**14%**	**14%**	**24%**	**10%**	**24%**	**100%**

Note:
1. Time periods and crash types with no corresponding crashes were not included in the table.
2. The totals might not match due to variation created by rounding off the percentage.

5. HIGH-RISK CORRIDORS AND INTERSECTIONS

5.1 Methodology

This chapter describes the identification of high-risk corridors and intersections within the County of Del Norte and City of Crescent City using network screening methods from the Highway Safety Manual (HSM). High-risk corridors and intersections are the facilities that are responsible for F+SI crashes. To identify high-risk facilities throughout the County's roadway network, a spatial analysis was performed using both crash data and roadway network data. The project team extracted F+SI crashes for a five year period and analyzed the data. Among 32 F+SI crashes, 13 occurred at intersections and 19 occurred on roadway segments between 2013 and 2017.

Network screening, as described in the HSM, is the process of identifying and ranking sites from most likely to least likely to reduce the number of crashes by implementing a countermeasure. For intersections, the F+SI crashes that were identified as intersection-related were associated with their nearest intersections. Additional reviews were conducted to make sure that the "Primary Road" and "Secondary Road" of crashes were consistent with the street names of intersection approaches. Due to the unavailability of ADT at the study segments, the crash rate for each intersection was calculated using the formula below:

$$R = C/N$$

where,

R = Crash rate for the intersection expressed as crashes per year,

C = Total number of intersection-related F+SI crashes in the study period, and

N = Number of years of data.

High-risk roadway segments were identified using the sliding window screening method where a 0.3-mile long window conceptually moves along each corridor/street in increments of 0.1 miles using the street GIS layer obtained from Caltrans District Data. Windows shorter than 0.3 miles may exist when the length of a street is less than 0.3 miles or not divisible to 0.3 miles. Five years of F+SI crashes that were non-

intersection-related were associated with each window in ArcGIS based on their spatial relationship and street names. Due to the lack of ADT data along the study segments, the crash rate for each window was calculated using the formula below:

$$R = C/(N \times L)$$

where,

R = Crash rate for the road segment expressed as crashes per year per mile,

C = Total number of F+SI crashes in the study period,

N = Number of years of data, and

L = Length of the roadway segment in miles.

5.2 High-Risk Intersection Network Screening

Based on the calculated crash rates, the intersections with F+SI crash histories in the County of Del Norte are listed in **Table 44**. As each intersection had only one F+SI crash, the crash rate for all the intersection stands the same at 0.2.

Table 44: High-Risk Intersections (County)

Primary Road	Secondary Road	Crash Rate
Childs Avenue	El Dorado Street	0.2
El Dorado Street	Cooper Avenue	0.2
Northcrest Drive	Harding Avenue	0.2
Washington Boulevard	Northcrest Drive	0.2
Elk Valley Road	Iowa Street	0.2
Elk Valley Road	South Bend Avenue	0.2
Railroad Avenue	Fern Lane	0.2
Lake Earl Drive	Younkers Avenue	0.2
Lower Lake Road	Silva Road	0.2

The location of these intersections are mapped in **Figure 60.**

Figure 60: F+SI Intersection Crash Rates (County)
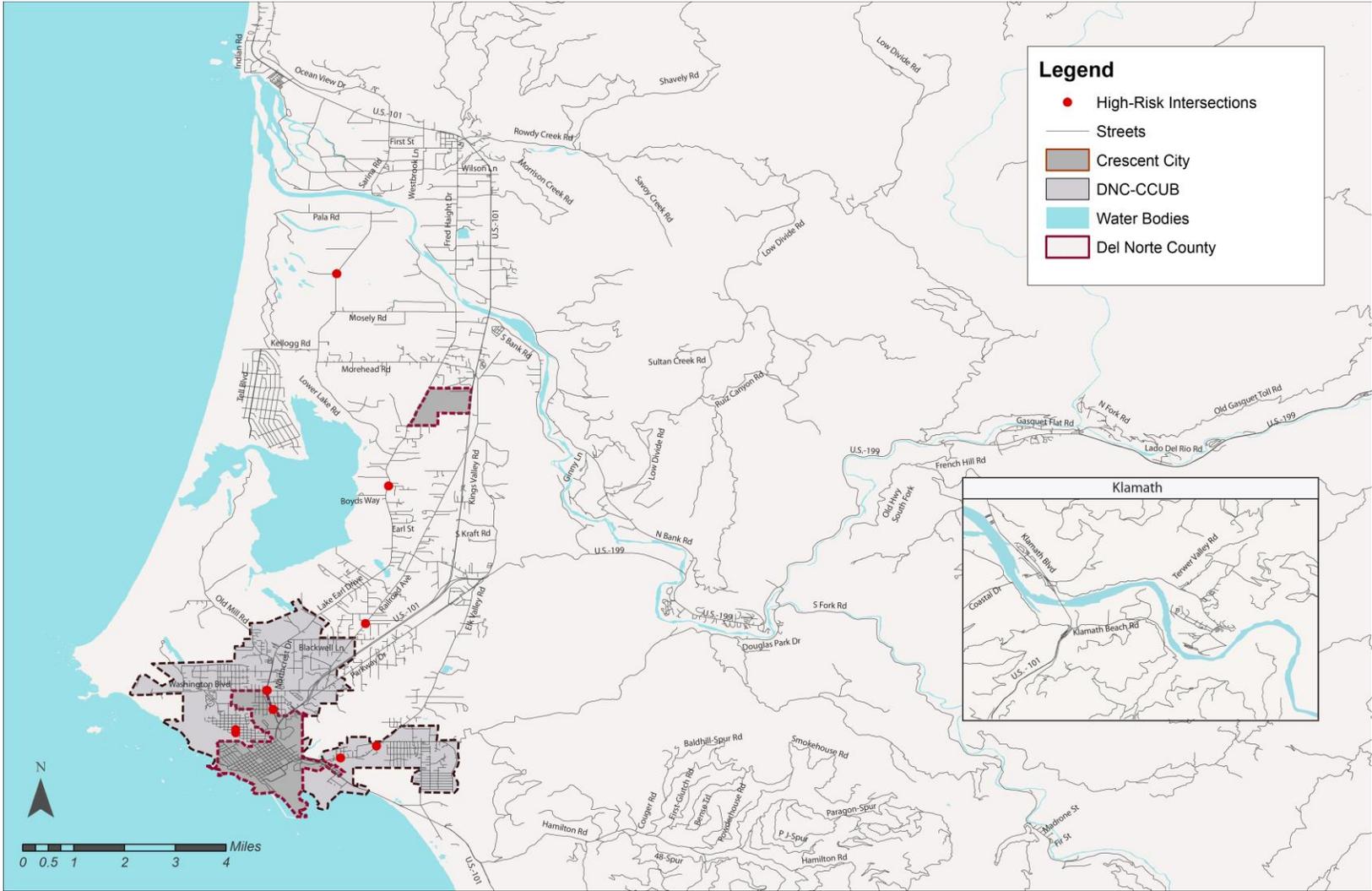
Based on the calculated crash rates, the intersections with F+SI crash histories in the City of Crescent City are listed in **Table 45.** As each intersection had only one F+SI crash, the crash rate for all the intersection stands the same at 0.2.

Table 45: High-Risk Intersections (City)

Primary Road	Secondary Road	Crash Rate
Childs Avenue	El Dorado Street	0.2
El Dorado Street	Cooper Avenue	0.2
Northcrest Drive	Harding Avenue	0.2
Washington Boulevard	Northcrest Drive	0.2
Elk Valley Road	Iowa Street	0.2
Elk Valley Road	South Bend Avenue	0.2

The location of these intersections are mapped in **Figure 61.**

Figure 61: F+SI Intersection Crash Rates (City)
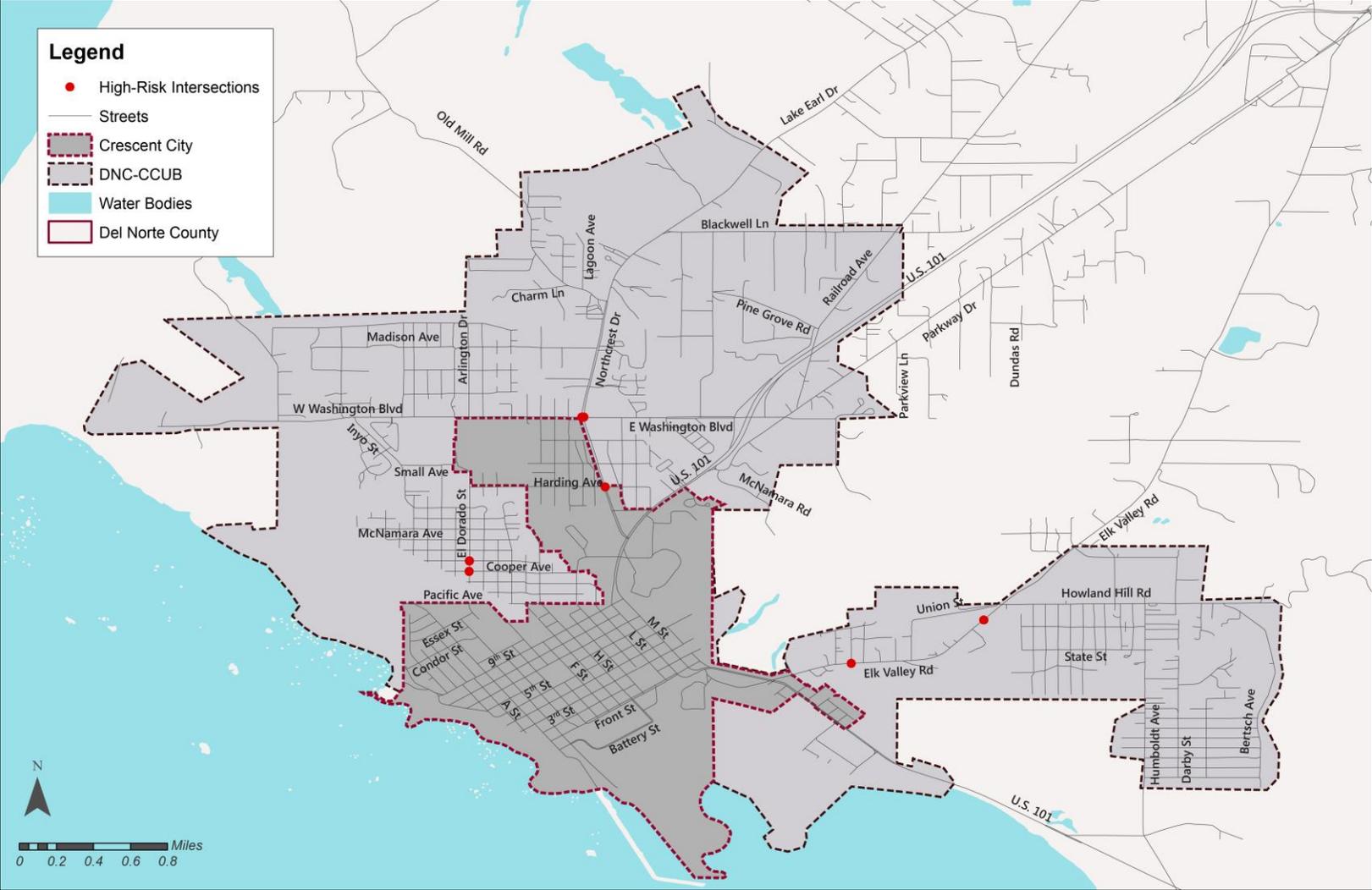
5.3 High-Risk Corridor Network Screening

Based on the calculated crash rates, the roadway segment windows with F+SI crash histories were ranked for the County and the top high-risk segments are listed in **Table 46.**

Table 46: High-Risk Roadway Segments (County)

Street Name	From	To	Crash Rate
Summer Lane	Washington Boulevard	0.3 miles North of Washington Boulevard	2.07
Lower Lake Road	Lake Earl Drive	0.3 miles West of Lake Earl Drive	1.99
Sarina Road	First Street	0.3 miles South of First Street	1.99
Washington Boulevard	0.2 miles East of Dale Rupert Road	0.57 miles of Dale Rupert Road	1.99
Elk Valley Road	State Street	0.3 miles North of State Street	1.99
Fred Haight Drive	0.05 miles West of U.S.-101	0.35 miles West of U.S.-101	1.99
Parkway Drive	Village Drive	0.3 miles South of Village Drive	1.99
Klamath Boulevard	Klamath Circle	0.3 miles South of Klamath Circle	1.99
Low Divide Road	North Bank Road	0.3 miles East of North Bank Road	1.99
Low Divide Road	1.5 miles East of North Bank Road	1.8 miles East of North Bank Road	1.99
Kings Valley Road	0.1 miles North of South Kraft Road	0.2 miles South of South Kraft Road	1.99
Northcrest Drive	Old Mill Road	0.3 miles North of Old Mill Road	1.99
Blake Road	Terwer Riffle Road	End of Blake Road	0.95

These locations were mapped for the County of Del Norte as shown in **Figure 62**.

Figure 62: F+SI Roadway Segment Crash Rates (County)
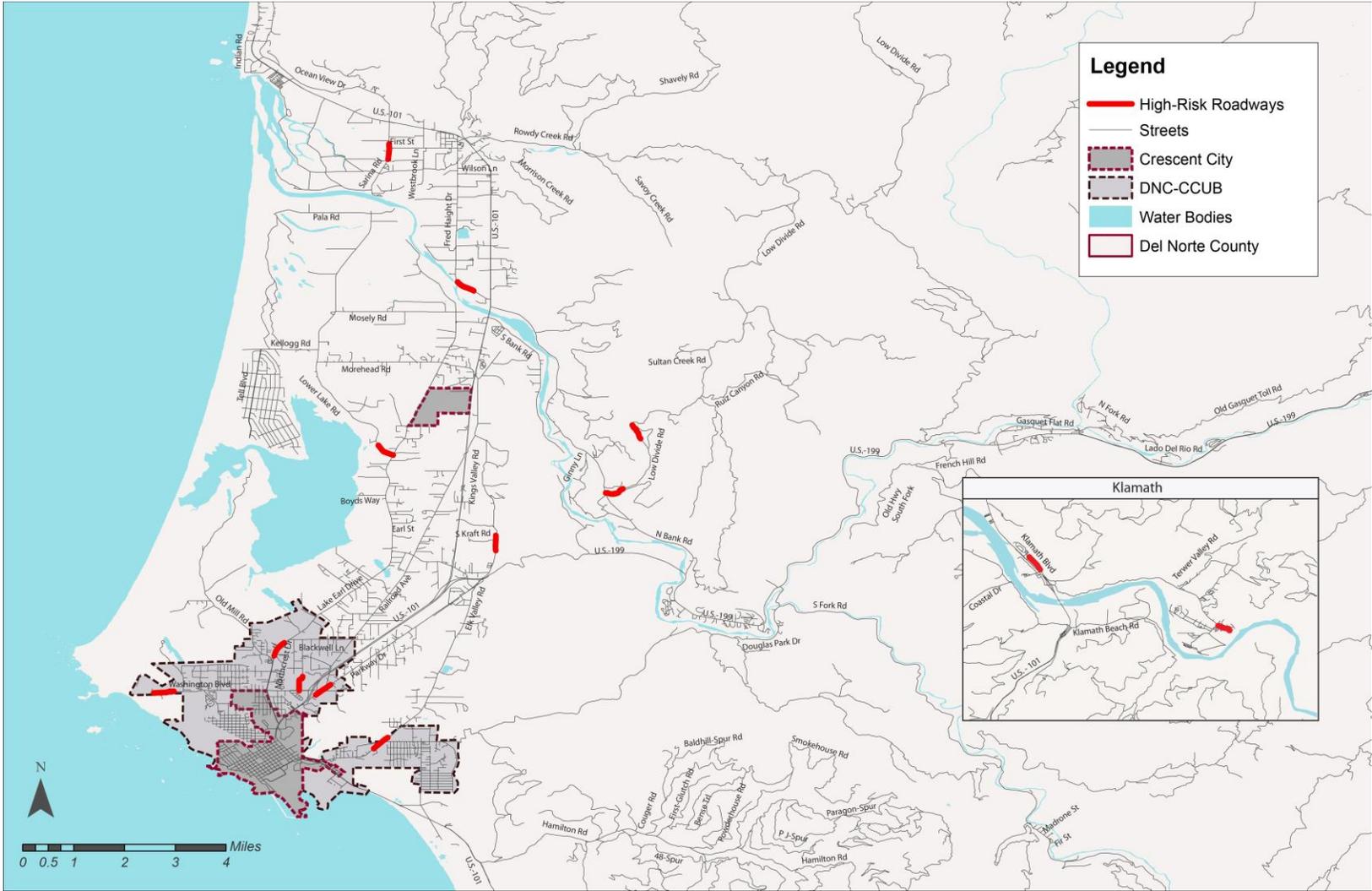
Legend
High-Risk Roadways
Streets
Crescent City
DNC-CCUB
Water Bodies
Del Norte County

Klamath

Based on the calculated crash rates, the roadway segment windows with F+SI crash histories were ranked for the City and the top high-risk segments are listed in **Table 47.**

Table 47: High-Risk Roadway Segments (City)

Street Name	From	To	Crash Rate
Summer Lane	Washington Boulevard	0.3 miles North of Washington Boulevard	2.07
Washington Boulevard	0.2 miles East of Dale Rupert Road	0.57 miles of Dale Rupert Road	1.99
Elk Valley Road	State Street	0.3 miles North of State Street	1.99
Parkway Drive	Village Drive	0.3 miles South of Village Drive	1.99
Northcrest Drive	Old Mill Road	0.3 miles North of Old Mill Road	1.99

These locations were mapped for the City of Crescent City as shown in **Figure 63.**

Figure 63: F+SI Roadway Segment Crash Rates (City)

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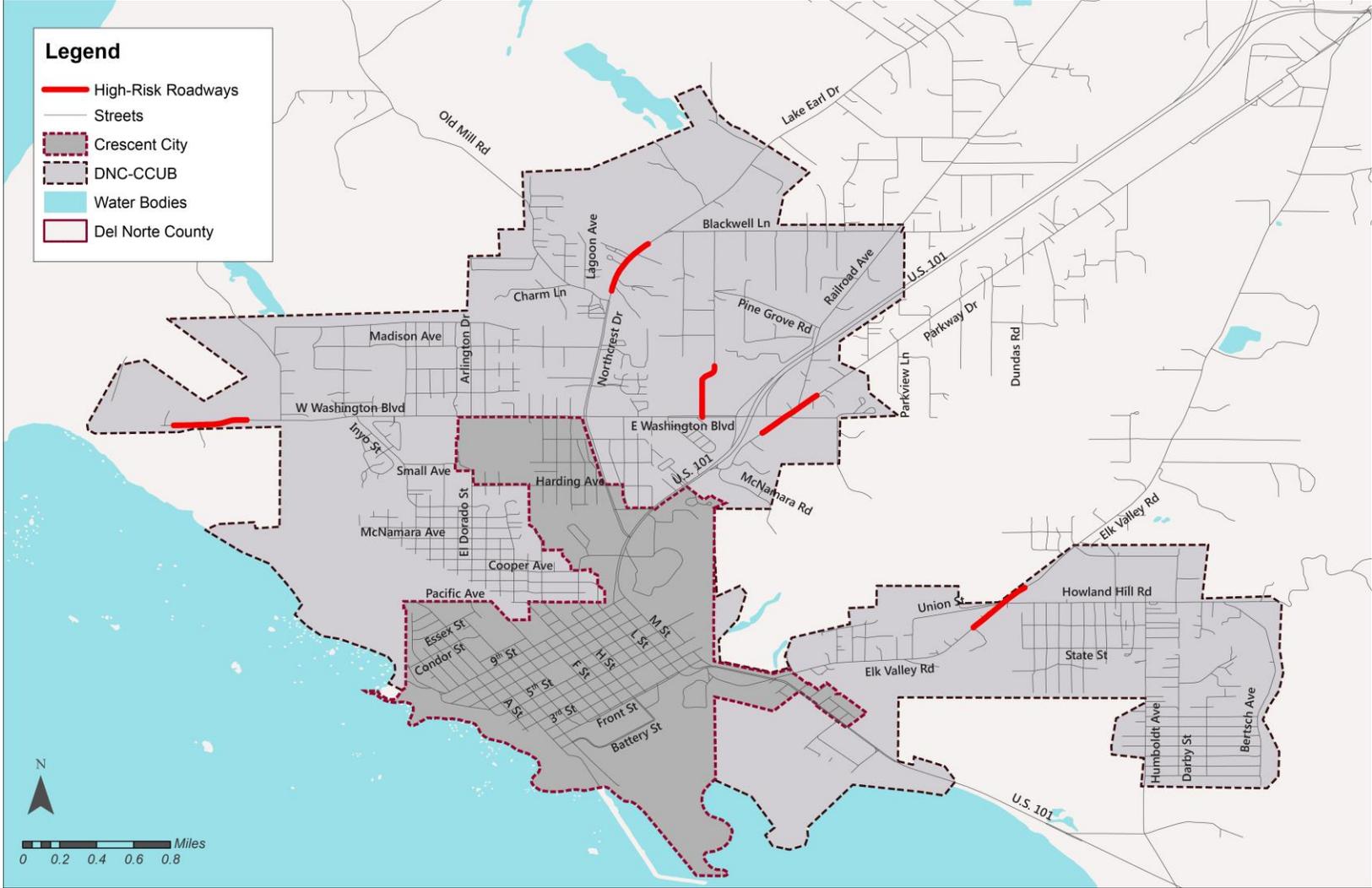
5.4 Field Assessment

The field assessment was conducted to observe traffic and driving behaviors, and infrastructure deficiencies at high-risk intersections and roadway segments as obtained from crash rate analysis. The project team conducted field surveys from 1:30 p.m. to 5:30 p.m. on Monday, January 14, 2019, and on Tuesday, January 15, 2019, from 8:30 a.m. to 12:30 p.m. Detailed field assessment cut sheet stating observations and potential treatments are included as **Appendix A**. Field images in the cut sheets were taken by the project team during the survey. The intersection and roadway segments surveyed are listed below.

Intersections

- Elk Valley Road and Iowa Street
- Elk Valley Road and South Bend Avenue
- Lake Earl Drive and Younkers Avenue
- Lower Lake Road and Silva Road
- El Dorado Street and Cooper Avenue
- El Dorado Street and Childs Avenue
- Railroad Avenue and Fern Lane
- Washington Boulevard and Northcrest Drive
- Northcrest Drive and Harding Avenue

Roadway Segments

- Klamath Boulevard, from Klamath Circle to 0.3 miles South
- Blake Road, from Terwer Riffle Road to the end of Blake Road
- Elk Valley Road, from State Street to 0.3 miles North
- Low Divide Road, from North Bank Road to 0.3 miles East
- Low Divide Road, from 1.5 miles East of North Bank road and 1.8 miles East of North Bank Road
- Fred Haight Drive, from 0.05 miles to 0.35 miles west of US 101
- Sarina Road, from First Street to 0.3 miles South
- Kings Valley Road, from 0.1 miles North to 0.2 miles South of South Kraft Drive
- Lower Lake Road, from Lake Earl Drive to 0.3 miles West

- Northcrest Drive, from Old Mill Road to 0.3 miles North

  - Washington Boulevard, from 0.27 miles to 0.57 miles East of Dale Rupert Road

  - Parkway Drive, from Village Drive to 0.3 miles South

  - Summer Lane, from Washington Boulevard to 0.3 miles North

6. COMMUNITY AND STAKEHOLDER OUTREACH

Community outreach and engagement is an integral part of roadway safety. Inclusive and collaborative discussions help in the development of effective solutions and builds community support for the implementation of safety projects. Similarly, stakeholders provide knowledge that can be utilized to assess the challenges in implementing these safety projects. For the purpose of this SSAR, feedback from Commonplace was reviewed, a project website was created, and a community workshop was conducted along with an online survey. It should be noted that schools were not consulted during the development of this report.

6.1 Community Input from Commonplace

Commonplace is a website created by the Del Norte Local Transportation Commission which enables the community to directly submit their inputs regarding roadway safety issues. The website, which was launched two years ago, allows the community members to mark their concerns on an interactive map with the opportunity to add detailed comments. Information from the website which was analyzed in this section was accessed on November 7, 2018. Traffic signs and signals were the major concern of the community (16 percent) followed by unsafe speed (15 percent) and more bike lanes (15 percent). Community inputs gathered from Commonplace are presented in **Figure 64.** Inputs from the community are listed in **Table 48.**

Figure 64: Community Input from Commonplace

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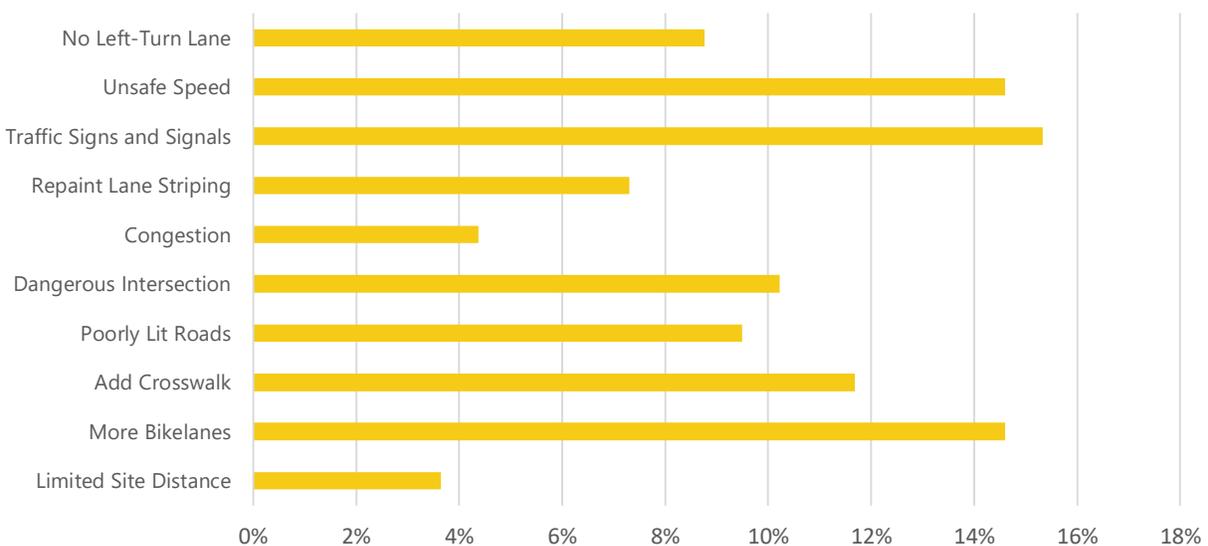
Concern	Responses
No Left-Turn Lane	9%
Unsafe Speed	15%
Traffic Signs and Signals	16%
Repaint Lane Striping	7%
Congestion	4%
Dangerous Intersection	10%
Poorly Lit Roads	9%
Add Crosswalk	12%
More Bikelanes	15%
Limited Site Distance	3%

Figure 65 presents the areas of concern received through community input on the Commonplace website.
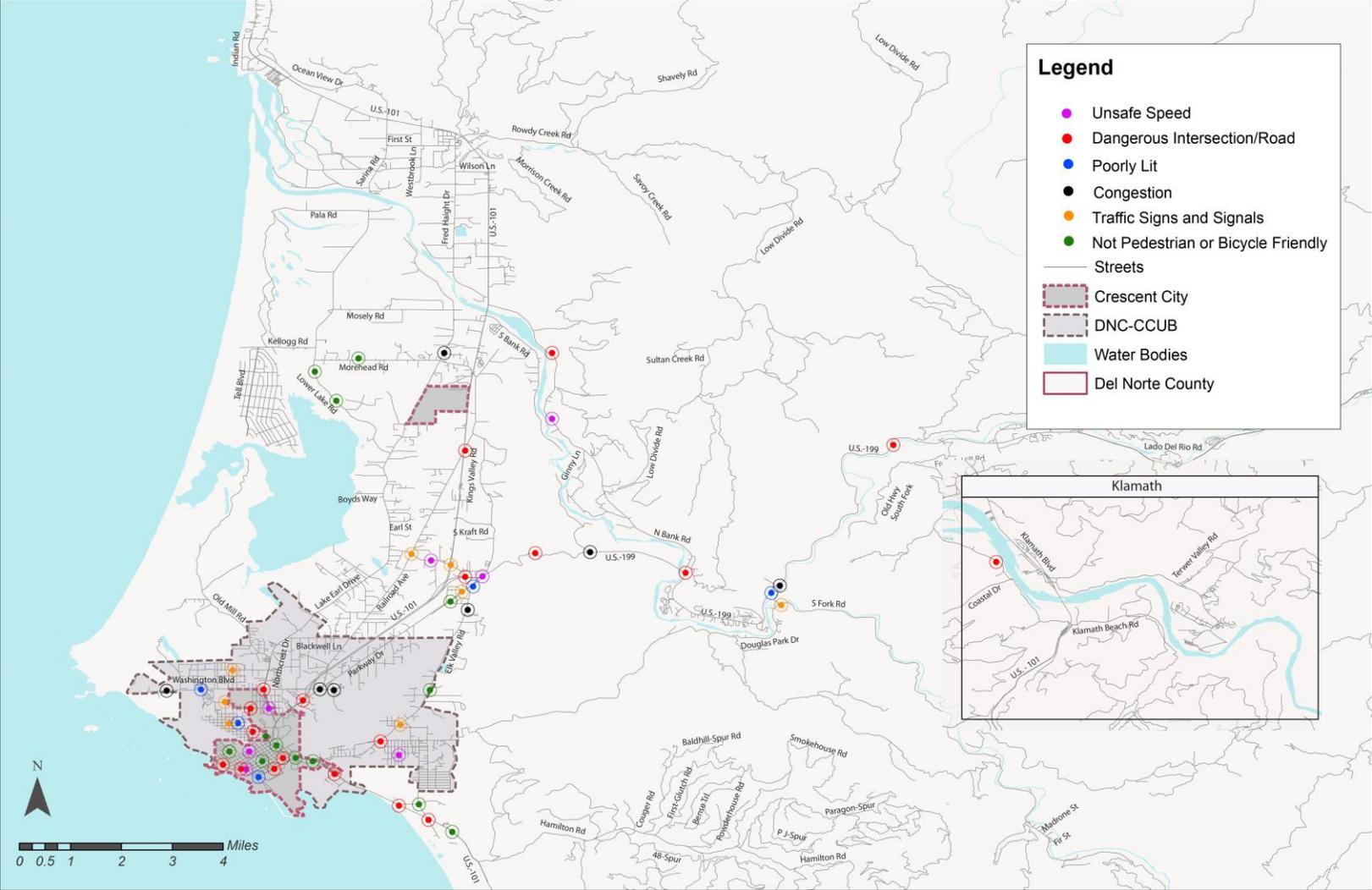
6.2 Project Website

The Del Norte Safety Report website was created to provide information about the SSAR to the community. The website was divided into four sections: overview, events, updates, and feedback. Information regarding events, updates, and deliverables on the project are provided on the website. The website provides a 24/7 SSAR information conduit, with opportunity for the general public to learn and assist with roadway safety in the Del Norte region.
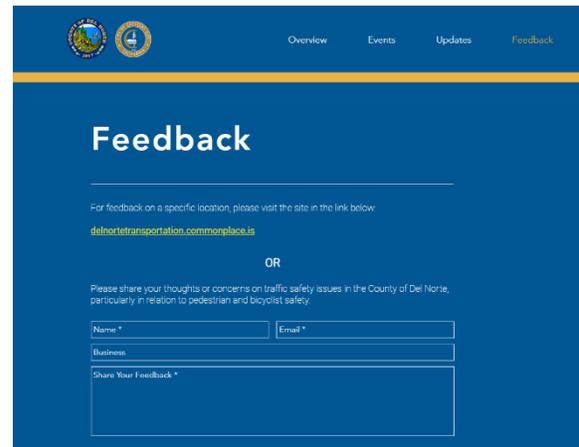
6.3 Roadway Safety Workshop

A Roadway Safety workshop was held on May 1st, 2019 at 981 H Street, Suite 100 in Crescent City. The purpose of the workshop was to present compiled data and obtain input regarding infrastructure deficiencies and unsafe locations. The Roadway Safety Workshop was conducted in two identical sessions. Each session started with a presentation to brief the community regarding ongoing safety improvement efforts by the City and County, and concluded with members of the community posting their concerns on several workshop boards that included maps, collision statistics, and potential countermeasures. The workshop familiarized the project team with several locations that have safety concerns identified by the members of the community. A list of suggested location for improvement obtained through the workshop is presented in **Table 49.**

Table 49: Areas of Concern (Workshop)

Areas of Concern	Locations		
	County of Del Norte	**DNC-CCUB**	**City of Crescent City**
Lower Speeds		• Pebble Beach Drive	• Pebble Beach Drive
Improve Ingress/Egress		• Exit from Martin Ranch to Roundabout	• Entry and Exit to Starbucks, Home Depot and Fairgrounds • Entry and Exit to Walmart
Install Roundabout		• Washington Boulevard and SB on/off ramp • Washington Boulevard and Parkway Drive	
Install/Improve Sidewalks	• Elk Valley Road • Along U.S.-101	• Pebble Beach Drive • Humboldt Street and Sand Mine Avenue • Elk Valley Road • Along U.S.-101	• Pebble Beach Drive • Elk Valley Road
Install/Improve Crosswalks	• Bird Watching at Lower Lake Road	• Cooper Street • Macken Street	• L Street and M Street • Pacific Street and H Street
Install/Improve Bike Lanes	• Elk Valley Road	• Elk Valley Road	• Elk Valley Road
Improve Law Enforcement			• 9th Street and J Street Liquor Store
Fix Sight Distance/Blind Curve/ Clear bushes		• Summer Lane • Old Mill Road and Harmony Lane	• Essex Street on SE Corners • Gainard Street and 9th Street
Other Concerning Areas	• Elk Valley Road	• Elk Valley Road	• Pine Grove Elementary School Zone • Elk Valley Road • Pacific Street and Meridian Avenue

6.4 Online Community Survey

An online survey comprised of nine questions was conducted to collect community input regarding roadway safety. The survey was made live to the community for their input on March 21st, 2019 and was closed on May 15th, 2019. A total of 40 responses were recorded during this period, out of which 33 (83 percent) were residents of the County or City, three (eight percent) were business owners in the County or City, eight (20 percent) worked in (not necessarily for) the County or City, and five (13 percent) commuted through the County or City. The survey revealed that the most widely used mode of transportation to shop, work, and run errands was driving (97 percent). A summary of key takeaways from the survey are presented below. A detailed report of the survey results is attached in the **Appendix B.**

6.2.1 Most Likely Time Periods of Commuting (Online Survey)

The most likely time period that the survey respondents are on the road are 4:00 P.M.-6:00 P.M. (29 responses) closely followed by 12:00 P.M.-2:00 P.M. (28 responses) as shown in **Figure 66**.

Figure 66: Most Likely Time Periods of Commuting (Online Survey)
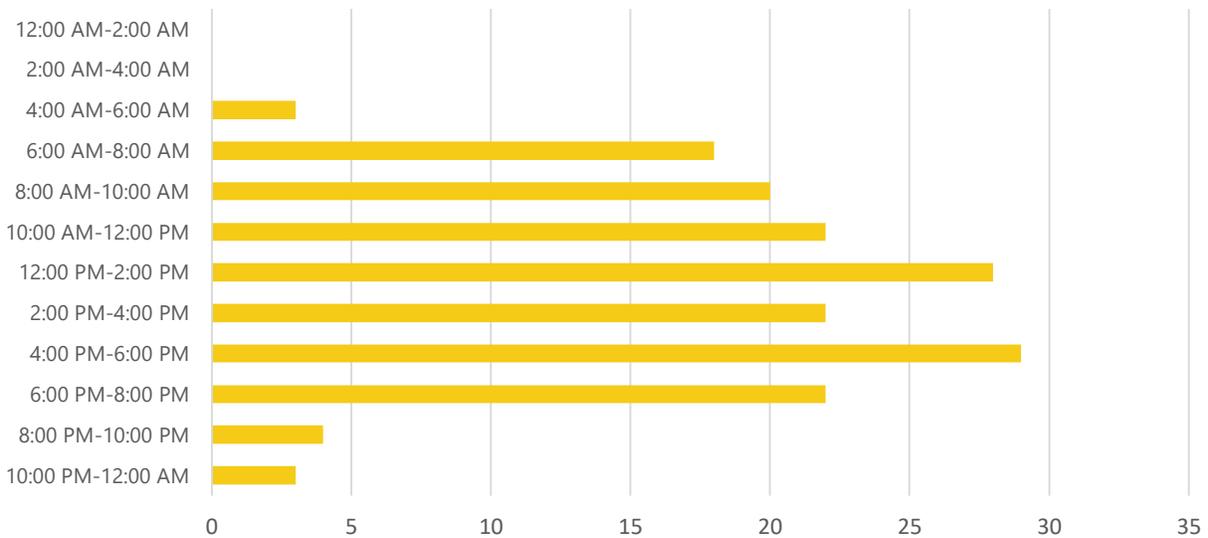
The responses for this category are listed in **Table 50.**

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Table 50: Time Periods Survey Respondents are most likely on the Road

Time Period	Number of Responses
4:00 a.m. - 6:00 a.m.	3
6:00 a.m. - 8:00 a.m.	18
8:00 a.m. - 10:00 a.m.	20
10:00 a.m. - 12:00 p.m.	22
12:00 p.m. - 2:00 p.m.	28
2:00 p.m. - 4:00 p.m.	22
4:00 p.m. - 6:00 p.m.	29
6:00 p.m. - 8:00 p.m.	22
8:00 p.m. - 10:00 p.m.	4
10:00 p.m. - 12:00 a.m.	3

6.2.2 Primary Safety Concerns (Online Survey)

Inadequate sidewalks (21 responses) was the most concerning safety issue for survey respondents closely followed by vehicle speeding (19 responses) as shown in **Figure 67**.

Figure 67: Primary Safety Concerns of Survey Respondents
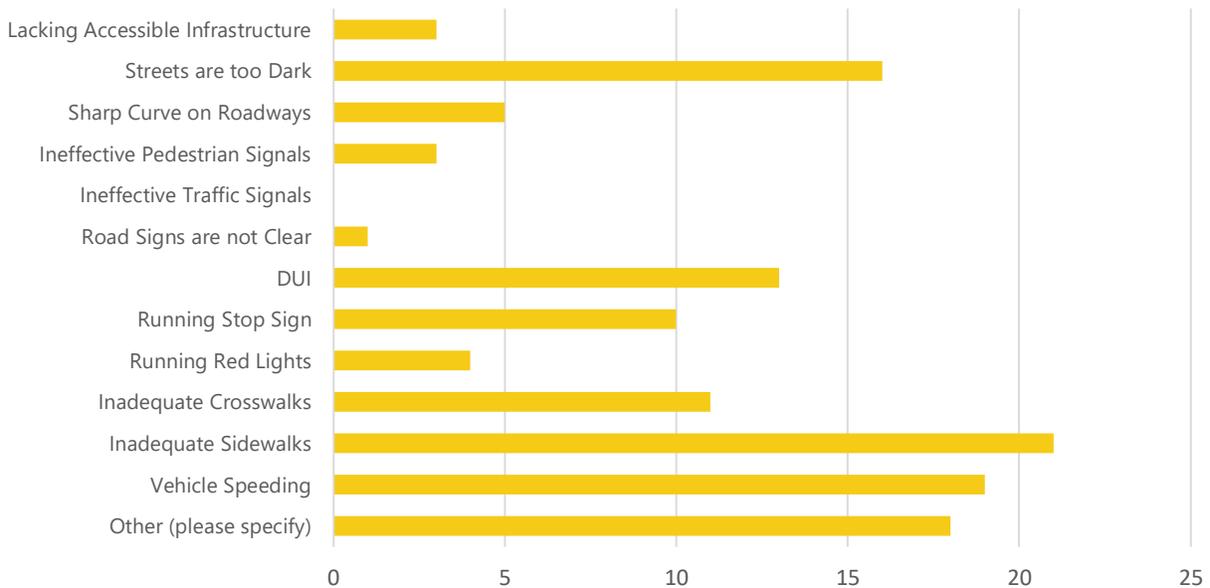
Primary safety concerns responses from the survey are listed in **Table 51.**

Table 51: Primary Safety Concerns (Online Survey)

Safety Issue	Number of Responses
Vehicle Speeding	19
Inadequate Sidewalks	21
Inadequate Crosswalks	11
Running Red Lights	4
Running Stop Sign	10
DUI	13
Road Signs are not Clear	1
Ineffective Traffic Signals	0
Ineffective Pedestrian Signals	3
Sharp Curve on Roadways	5
Streets are too Dark	16
Lacking Accessible Infrastructure	3
Other	18

6.2.3 Areas of Concern (Online Survey)

The survey responses highlighted key issues which also came to light through crash analysis. Most residents and business owners in Del Norte County drive to their respectively locations. Unsafe speed and streets being too dark are issues which lead to crashes in the County. Crescent City with its downtown, beaches, and several amenities is a preferred location to walk and bike but residents feel unsafe to engage in such activities due to deficient infrastructure. A list of suggested location for improvement obtained through online survey is presented in **Table 52**.

The feedback gathered from the community was utilized to review feasible and implementable countermeasures, and establish project priorities which would help alleviate the safety issues brought to light through the workshop and online survey.

Table 52: Areas of Concern (Online Survey)

Areas of Concern	Locations		
	County of Del Norte	**DNC-CCUB**	**City of Crescent City**
Lower Speeds	• Parkway Drive • Elk Valley Cross Road • Elk Valley Road • Hwy 199 at Hiouchi • Hwy 199 at 101	• Parkway Drive • Elk Valley Road • State Street • Washington Blvd	• Front Street • Elk Valley Road
Install More Signage	• US 101 from Hwy 199 to Oregon Border • US 101 from Crescent City to Last Chance Grade	• State Street	
Install Roundabout	• US 101 and Sand Mine Road • US 101 and Elk Valley Road		
Install Sidewalks	• Northcrest Drive between Harding Avenue and Washington Boulevard • Hwy 101 between CAL Fire and Two Guys • Parkway Drive • Humboldt Road • Kings Valley Road to Fort Dick Market • Redwood School	• Pebble Beach Drive • Parkway Drive • Humboldt Road • Howland Hill Road	• Northcrest Drive • I Street between7th Street and 9th Street • 8th Street between I Street and K Street • Pebble Beach Drive
Widen Pavement	• Dr Fine Bridge • Wonder Stump Road • Alder Road • Lakeview Drive • Railroad Avenue	• Railroad Avenue	
Install All Way Stop Control	• Fred Haight Drive and Wilson Lane • Terwer Riffle Road and Starwein Road		

Areas of Concern	Locations		
	County of Del Norte	DNC-CCUB	City of Crescent City
Install Intersection Control	• Wilson Avenue and US 101	• Burtschell Street and US 101	
Upgrade Crosswalks	• A Street and 9th Street • Elk Valley Road	• Cooper Street And Meridian Street • Cooper Street and Hwy 101 • Elk Valley Road State Street	• Near Safeway Elk Valley Road
Install Lighting	• Elk Valley Road • Lake Earl Drive	• Howland Hill Road • Northcrest Drive • Elk Valley Road • Bertsch Avenue	• Front Street • Pebble Beach Drive • Northcrest Drive • Elk Valley Road • 9th Street
Install Bike Lanes	• Alder Rd • Lakeview Drive • Railroad Ave	• Railroad Avenue	
Fix Potholes	• Elk Valley Road	• Inyo Street • Washington Boulevard • Elk Valley Road	• Front Street • Harding Avenue • Elk Valley Road • 8th Street
Improve Law Enforcement	• Parkway Drive • Redwood Elementary School Zone • Pelican Bay State Prison Visitors	• Pine Grove School Zone • Pebble Beach Drive • Cushing Avenue • Dodane Avenue • Darby Street	• Pebble Beach Drive • South Beach • Safeway
Fix Sight Distance/Blind Curve/ Clear bushes	• Terwer Riffle Road and Starwein Road • US 101 South	• Summer Lane • Cushinng Avenue	

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Areas of Concern	Locations		
	County of Del Norte	DNC-CCUB	City of Crescent City
Install Guardrails	- US 101 - Hwy 199 - Hwy 197		
Other Concerning Areas	- Kings Valley Road & US 101 - Last Chance on US 101 - Log Cabin Diner Tourist Bus Road Blockage in Klamath - Tell Boulevard - Flooding on Sand Mine Road - No shoulder on Hwy 199 between Crescent City going to Gasquet	- Cooper Street and Hwy 101 - Yield to Stop Sign at Washington Boulevard and Parkway Drive - Cooper Avenue at J Street	- Front Street - Downtown - All crossroads between L Street and M Street

7. COUNTERMEASURE SELECTION

Upon the identification of high-risk roadway segments and intersections, the next step was to identify appropriate countermeasures. The Caltrans Local Roadway Safety Manual (LRSM) identifies 85 countermeasures, of which 77 are eligible in the current HSIP call for projects. These 77 countermeasures include 19 applicable for signalized intersections, 20 for unsignalized intersections, and 38 for roadway segments.

The manual also provides the information with respect to potential locations of implementing each countermeasure, the crash type each countermeasure addresses, and the Crash Reduction Factor (CRF) of the each countermeasure. The project team also referenced the Federal Highway Administration Crash Modification Factor (CMF) Clearinghouse and other research papers to gain more insights on CRFs and effectiveness of the countermeasures.

The countermeasure selection process includes two parts – preliminary selection and refinement.

Part 1 - Preliminary Selection. A countermeasure evaluation toolkit was used to generate preliminary countermeasures for the high-risk roadway segments and intersections identified in Chapter 5. This toolkit was developed by the project team based on the detailed information in Caltrans LRSM.

Each countermeasure was coded with a formula that determines the preliminary feasibility of such countermeasure being implemented at a particular high-risk location.

The result generated from the toolkit was reviewed and refined in Part 2.

Part 2 - Refinement. Upon selection of the preliminary countermeasures, the project team performed a thorough review of all high-risk roadway segments and intersections through field observations and aerial imagery reviews. Both crash factors and physical roadway configurations of each location were investigated to ensure necessity and feasibility of the pre-selected countermeasures. The potential countermeasures for each location were then refined based on staff review and community input.

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7.1 Preliminary Selection

The countermeasure toolkit was used to generate preliminarily selected countermeasures for high-risk locations. Results obtained using the countermeasure toolkit are shown in **Table 53** and **Table 54** as the frequency index for the County and City respectively. The countermeasure frequency index provides an overview of countermeasures that made to the initial list for consideration. For example, at the County level, some of the preliminary roadway segment countermeasures include installing edge-line/centerline rumble strips, widening shoulders, improving horizontal alignment, and installing edge-lines and centerlines. At County intersections, preliminary countermeasures include installing HAWK signals, installing crosswalks, installing medians, improving sight distance, installing transverse rumble strips on approaches, upgrading intersection pavement markings, etc. Detailed toolkit results are provided in **Appendix C**.

Table 53: Countermeasure Frequency Index (County)

	Roadway Segment Countermeasures			Intersection Countermeasures	
R35	Install edge-line rumble strips/stripes	45	NS9	Install transverse rumble strips on approaches	11
R26	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	42	NS10	Improve sight distance to intersection (Clear Sight Triangles)	11
R17	Widen shoulder (unpaved)	33	NS13	Create directional median openings to allow (and restrict) left-turns and u-turns (NS.I.)	11
R18	Pave existing shoulder	33	NS17	Install pedestrian crossing at uncontrolled locations (new signs and markings only)	11
R34	Install centerline rumble strips/stripes	33	NS18	Install pedestrian crossing at uncontrolled locations (with enhanced safety features)	11
R16	Widen shoulder (paved)	30	NS19	Install pedestrian signal or HAWK	11
R19	Improve horizontal alignment (flatten curves)	30	NS5	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	7
R1	Add segment lighting	27	NS6	Upgrade intersection pavement markings (NS.I.)	7
R4	Install Guardrail	27	NS3	Install signals	5
R5	Install impact attenuators	27	NS8	Install flashing beacons as advance warning (NS.I.)	5
R6	Flatten side slopes	27	NS11	Improve sight distance to intersection (Clear Sight Triangles)	5
R22	Improve curve superelevation	27	NS20	Improve pavement friction (High Friction Surface Treatments)	5
R28	Install curve advance warning signs	27	NS1	Add intersection lighting (NS.I.)	3
R29	Install curve advance warning signs (flashing beacon)	27	NS2	Convert to all-way STOP control (from 2-way or Yield control)	3
R31	Install delineators, reflectors and/or object markers	27	NS4B	Convert intersection to roundabout (from stop or yield control on minor road)	3
R32	Install edge-lines and centerlines	27	NS16	Install raised medians / refuge islands (NS.I.)	3
R21	Improve horizontal and vertical alignments	26	NS4A	Convert intersection to roundabout (from all way stop)	2
R10	Install median (flush)	25	NS7	Install Flashing Beacons at Stop-Controlled Intersections	1
R27	Install chevron signs on horizontal curves	20	NS12	Install raised median on approaches (NS.I.)	1
R24	Improve pavement friction (High Friction Surface Treatments)	15	NS14	Install right-turn lane (NS.I.)	0

Table 54: Countermeasure Frequency Index (City)

	Roadway Segment Countermeasures			Intersection Countermeasures	
R34	Install centerline rumble strips/stripes	17	NS9	Install transverse rumble strips on approaches	4
R35	Install edge-line rumble strips/stripes	17	NS10	Improve sight distance to intersection (Clear Sight Triangles)	4
R26	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	15	NS13	Create directional median openings to allow (and restrict) left-turns and u-turns (NS.I.)	4
R1	Add segment lighting	12	NS17	Install pedestrian crossing at uncontrolled locations (new signs and markings only)	4
R10	Install median (flush)	12	NS18	Install pedestrian crossing at uncontrolled locations (with enhanced safety features)	4
R17	Widen shoulder (unpaved)	12	NS19	Install pedestrian signal or HAWK	4
R18	Pave existing shoulder	12	S19	Install pedestrian countdown signal heads	2
R31	Install delineators, reflectors and/or object markers	12	S20	Install pedestrian crossing (S.I.)	2
R24	Improve pavement friction (High Friction Surface Treatments)	11	S21	Install advance stop bar before crosswalk (Bicycle Box)	2
R21	Improve horizontal and vertical alignments	10	NS16	Install raised medians / refuge islands (NS.I.)	2
R16	Widen shoulder (paved)	9			
R19	Improve horizontal alignment (flatten curves)	9			
R23	Convert from two-way to one-way traffic	9			
R36	Install bike lanes	9			
R38	Install pedestrian crossing (with enhanced safety features)	9			
R39	Install raised pedestrian crossing	9			
R42	Install pedestrian median fencing on approaches	9			
R11	Install acceleration/ deceleration lanes	8			
R4	Install Guardrail	6			
R5	Install impact attenuators	6			

7.2 Refinement

Upon preliminary selection, a comprehensive review was conducted to validate the feasibility of the preliminary countermeasures. It was conducted through field observations to understand the physical suitability and necessity of each countermeasure. At this stage of refinement, the project team incorporated staff feedback by performing a manual countermeasure screening. The staff feedback was in accordance with jurisdictional planning goals and guiding principles. The refinement of countermeasures presented in this section is subject to capture the most systemic countermeasures. **Table 55** and **Table 56** shows the refined countermeasures for roadway segments and intersections respectively. The countermeasures presented in the tables are combined for the County and City. Any of the countermeasures listed in these tables can be applied to locations with similar safety issues. For example, the countermeasures listed for the intersection of Railroad Avenue and Fern Lane can be applied to the intersection of Highway 199 and Walker Road as these intersections have similar characteristics. Apart from systemic safety improvements throughout the County and City, spot improvements can also be conducted using the mentioned countermeasures depending on the location type and crash patterns.

Table 55: Refined Countermeasure (High-Risk Roadway Segments)

#	Name	Collisions	Collision Type	Violations	Potential HSIP Countermeasure		Additional Countermeasures	Location
1	Klamath Boulevard: From Klamath Circle to 0.3 miles South	1 Severe Injury 1 Visible Injury	Hit Object, Other	DUI, Other than Driver	• R1- Add segment lighting • R21- Improve horizontal and vertical alignments • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R27- Install chevron signs on horizontal curves • R31- Install delineators, reflectors and/or object markers		• Advanced warning signs • RRFB at certain locations • Additional speed limit signs	County
2	Blake Road: From Terwer Riffle Road and End of Blake Road	1 Severe Injury	Hit Object	DUI	• R1- Add segment lighting • R10- Install median (flush) • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R31- Install delineators, reflectors and/or object markers		• Object markers Pavement upgrade Speed limit signs	County
3	Elk Valley Road: From State Street to 0.3 miles North	1 Severe Injury 1 Complaint of Pain	Overturned, Sideswipe	Improper Turning	• R16- Widen shoulder (paved) • R17- Widen shoulder (unpaved) • R19- Improve horizontal alignment (flatten curves) • R24- Improve pavement friction (High Friction Surface Treatments) • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)		• T-intersection warning sign • Intersection improvement (bulb outs)	DNC-CCUB
4	Low Divide Road: From North Bank Road to 0.3 miles East	1 Severe Injury	Hit Object	DUI	• R4- Install Guardrail • R6- Flatten side slopes • R16- Widen shoulder (paved) • R17- Widen shoulder (unpaved) • R19- Improve horizontal alignment (flatten curves) • R20- Flatten crest vertical curve • R21- Improve horizontal and vertical alignments	• R22- Improve curve superelevation • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R27- Install chevron signs on horizontal curves • R28- Install curve advance warning signs • R29- Install curve advance warning signs (flashing beacon) • R32- Install edge-lines and centerlines	• Sign inventory • Edge-line and centerline striping	County
5	Low Divide Road: From 1.5 miles East of North Bank Road to 1.8 miles East of North Bank Road	1 Severe Injury	Overturned	DUI	• R4- Install Guardrail • R6- Flatten side slopes • R16- Widen shoulder (paved) • R17- Widen shoulder (unpaved) • R19- Improve horizontal alignment (flatten curves) • R20- Flatten crest vertical curve • R21- Improve horizontal and vertical alignments	• R22- Improve curve superelevation • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R27- Install chevron signs on horizontal curves • R28- Install curve advance warning signs • R29- Install curve advance warning signs (flashing beacon) • R32- Install edge-lines and centerlines	• Pavement upgrade • Sign inventory • Guardrail Assessment • Edge-line and centerline striping	County
6	Fred Haight Drive: From 0.05 miles to 0.35 miles west of U.S.-101	1 Severe Injury	Overturned	DUI	• R1- Add segment lighting • R4- Install Guardrail • R5- Install impact attenuators • R6- Flatten side slopes • R10- Install median (flush) • R16- Widen shoulder (paved) • R17- Widen shoulder (unpaved) • R19- Improve horizontal alignment (flatten curves) • R21- Improve horizontal and vertical alignments	• R22- Improve curve superelevation • R25- Provide Tapered Edge for Pavement Edge Drop-off • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R27- Install chevron signs on horizontal curves • R28- Install curve advance warning signs • R29- Install curve advance warning signs (flashing beacon) • R31- Install delineators, reflectors and/or object markers • R32- Install edge-lines and centerlines	• Bike lane as per Del Norte Active Transportation Plan Pavement Delineation Sign survey and installation	County
7	Sarina Road: From First Street to 0.3 miles South	1 Severe Injury	Hit Object	DUI	• R1- Add segment lighting • R5- Install impact attenuators • R16- Widen shoulder (paved) • R17- Widen shoulder (unpaved) • R18- Pave existing shoulder	• R19- Improve horizontal alignment (flatten curves) • R22- Improve curve superelevation • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R31- Install delineators, reflectors and/or object markers • R32- Install edge-lines and centerlines	• Bike lane as per Del Norte Active Transportation Plan • Edge lines • Pavement delineation and installation	County

#	Name	Collisions	Collision Type	Violations	Potential HSIP Countermeasure		Additional Countermeasures	Location
8	Kings Valley Road: From 0.1 miles North of South Kraft Road to 0.2 miles South of South Kraft Road	1 Severe Injury	Hit Object	DUI	• R1- Add segment lighting • R16- Widen shoulder (paved) • R17- Widen shoulder (unpaved) • R24- Improve pavement friction (High Friction Surface Treatments) • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R31- Install delineators, reflectors and/or object markers			County
9	Lower Lake Road: From Lake Earl Drive to 0.3 miles west of Lake Earl Drive	1 Severe Injury	Overturned	Unsafe Speed	• R4- Install Guardrail • R6- Flatten side slopes • R7- Flatten side slopes and remove guardrail • R16- Widen shoulder (paved) • R17- Widen shoulder (unpaved) • R19- Improve horizontal alignment (flatten curves)	• R22- Improve curve superelevation • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R28- Install curve advance warning signs • R29- Install curve advance warning signs (flashing beacon) • R30- Install dynamic/variable speed warning signs	• Speed survey • Ball-bank reading • Sign survey	County
10	North Crest Drive: From Old Mill Road to 0.3 miles North	1 Severe Injury 1 Complaint of Pain	Rear End	Unsafe Speed	• R10- Install median (flush) • R21- Improve horizontal and vertical alignments • R24- Improve pavement friction (High Friction Surface Treatments) • R30- Install dynamic/variable speed warning signs		• Relocate school speed sign • Advanced curve warning sign	DNC-CCUB
11	Washington Boulevard: From 0.2 miles East of Dale Rupert Road to 0.57 miles East	2 Severe Injury	Hit Object	DUI, Improper Turning	• R10- Install median (flush) • R16- Widen shoulder (paved) • R17- Widen shoulder (unpaved) • R21- Improve horizontal and vertical alignments • R24- Improve pavement friction (High Friction Surface Treatments) • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R31- Install delineators, reflectors and/or object markers		• Centerline and edge-line upgrade	DNC-CCUB
12	Parkway Drive: From Village Drive to 0.3 miles South	1 Fatality	Vehicle Pedestrian	Unsafe Speed	• R1- Add segment lighting • R10- Install median (flush) • R17- Widen shoulder (unpaved) • R18- Pave existing shoulder • R23- Convert from two-way to one-way traffic • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R31- Install delineators, reflectors and/or object markers	• R34- Install centerline rumble strips/stripes • R35- Install edge-line rumble strips/stripes • R36- Install bike lanes • R38- Install pedestrian crossing (with enhanced safety features) • R39- Install raised pedestrian crossing • R42- Install pedestrian median fencing on approaches	• Complete street • Speed survey and sign upgrade	DNC-CCUB
13	Summer Lane: From Washington Boulevard to 0.3 miles North	1 Fatality	Vehicle Pedestrian	Unsafe Speed	• R10- Install median (flush) • R26- Install/Upgrade signs with new fluorescent sheeting (regulatory or warning) • R30- Install dynamic/variable speed warning signs • R31- Install delineators, reflectors and/or object markers R36- Install bike lanes • R38- Install pedestrian crossing (with enhanced safety features)		• Complete street • Speed limit sign • Edge-line	DNC-CCUB

Table 56: Refined Countermeasure (High-Risk Intersections)

#	Name	Collisions	Collision Type	Violations	Potential HSIP Countermeasure	Additional Countermeasures	Location
1	Elk Valley Road and Iowa Street	1 Severe Injury 1 Visible Injury	Hit Object, Overturned	DUI, Improper Turning	• NS10- Improve sight distance to intersection (Clear Sight Triangles) • NS19- Install pedestrian signal or HAWK	• T-intersection warning sign • Pavement striping (stop bar)	DNC-CCUB
2	Elk Valley Road and South Bend Avenue	1 Severe Injury	Broadside	Improper Turning	• NS2- Convert to all-way STOP control (from 2-way or Yield control) • NS4B- Convert intersection to roundabout (from stop or yield control on minor road) • NS5- Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs • NS6- Upgrade intersection pavement markings (NS.I.) • NS8- Install flashing beacons as advance warning (NS.I.) • NS10- Improve sight distance to intersection (Clear Sight Triangles) • NS11- Improve sight distance to intersection (Clear Sight Triangles) • NS12- Install raised median on approaches (NS.I.) • NS13- Create directional median openings to allow (and restrict) left-turns and u-turns (NS.I.) • NS18- Install pedestrian crossing at uncontrolled locations (with enhanced safety features) • NS19- Install pedestrian signal or HAWK	• T-intersection warning sign	DNC-CCUB
3	Lake Earl Drive and Younkers Avenue	1 Fatality	Broadside	Automobile Right of Way	• NS2- Convert to all-way STOP control (from 2-way or Yield control) • NS5- Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs • NS6- Upgrade intersection pavement markings (NS.I.) • NS8- Install flashing beacons as advance warning (NS.I.) • NS10- Improve sight distance to intersection (Clear Sight Triangles) • NS11- Improve sight distance to intersection (Clear Sight Triangles)	• Advanced T-intersection warning signs • Speed limit signs	County
4	Lower Lake Road and Silva Road	1 Severe Injury	Hit Object	Unsafe Speed	• NS1- Add intersection lighting (NS.I.) • NS10- Improve sight distance to intersection (Clear Sight Triangles) • NS20- Improve pavement friction (High Friction Surface Treatments)	• Curve warning sign • Guardrail assessment	County
5	El Dorado Street and Cooper Avenue	1 Fatality	Broadside	Automobile Right of Way	• NS1- Add intersection lighting (NS.I.) • NS4A- Convert intersection to roundabout (from all way stop) • NS5- Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs • NS8- Install flashing beacons as advance warning (NS.I.) • NS16- Install raised medians / refuge islands (NS.I.) • NS17- Install pedestrian crossing at uncontrolled locations (new signs and markings only) • NS18- Install pedestrian crossing at uncontrolled locations (with enhanced safety features) • NS20- Improve pavement friction (High Friction Surface Treatments)	• Edge-line on Cooper Avenue	DNC-CCUB
6	El Dorado Street and Childs Avenue	1 Severe Injury	Broadside	Traffic Signs and Signals	• NS4A- Convert intersection to roundabout (from all way stop) • NS5- Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs • NS7- Install Flashing Beacons at Stop-Controlled Intersections • NS8- Install flashing beacons as advance warning (NS.I.) • NS10- Improve sight distance to intersection (Clear Sight Triangles) • NS11- Improve sight distance to intersection (Clear Sight Triangles) • NS16- Install raised medians / refuge islands (NS.I.) • NS17- Install pedestrian crossing at uncontrolled locations (new signs and markings only) • NS18- Install pedestrian crossing at uncontrolled locations (with enhanced safety features)\ • NS19- Install pedestrian signal or HAWK • NS20- Improve pavement friction (High Friction Surface Treatments)	• Edge-line and centerline on Childs Avenue	DNC-CCUB
7	Railroad Avenue and Fern Lane	1 Fatality 1 Severe Injury	Broadside	DUI, Improper Turning	• NS2- Convert to all-way STOP control (from 2-way or Yield control) • NS4B- Convert intersection to roundabout (from stop or yield control on minor road) • NS5- Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs • NS6- Upgrade intersection pavement markings (NS.I.) • NS8- Install flashing beacons as advance warning (NS.I.) • NS10- Improve sight distance to intersection (Clear Sight Triangles) • NS11- Improve sight distance to intersection (Clear Sight Triangles) • NS18- Install pedestrian crossing at uncontrolled locations (with enhanced safety features) • NS19- Install pedestrian signal or HAWK	• Advanced T-intersection warning signs • Stop limit lines	County

#	Name	Collisions	Collision Type	Violations	Potential HSIP Countermeasure	Additional Countermeasures	Location
8	Washington Boulevard and Northcrest Drive	1 Severe Injury 1 Visible Injury 11 Complaint of Pain	Broadside, Head on, Sideswipe, Rear end	DUI, Improper Turning	• S2- Improve signal hardware: lenses, back-plates, mounting, size, and number • S3- Improve signal timing (coordination, phases, red, yellow, or operation) • S4- Provide Advanced Dilemma Zone Detection for high speed approaches • S7- Convert signal to mast arm (from pedestal-mounted) • S8- Install raised pavement markers and striping (Through Intersection) • S9- Install flashing beacons as advance warning (S.I.) • S11- Improve pavement friction (High Friction Surface Treatments) • S18- Convert intersection to roundabout (from signal) • S19- Install pedestrian countdown signal heads • S20- Install pedestrian crossing (S.I.) • S21- Install advance stop bar before crosswalk (Bicycle Box)	• Improve signal phasing • Pavement striping	DNC-CCUB, City
9	Northcrest Drive and Harding Avenue	1 Severe Injury	Vehicle Pedestrian Collision	Pedestrian Violation	• S3- Improve signal timing (coordination, phases, red, yellow, or operation) • S8- Install raised pavement markers and striping (Through Intersection) • S11- Improve pavement friction (High Friction Surface Treatments) • S18- Convert intersection to roundabout (from signal) • S19- Install pedestrian countdown signal heads • S20- Install pedestrian crossing (S.I.) • S21- Install advance stop bar before crosswalk (Bicycle Box)	• Improve signal phasing • Pavement striping	DNC-CCUB, City

7.3 Education and Enforcement

The statewide average rate in California for fatality as a result of driving under the influence of alcohol and/or drugs was 21 percent for the years 2013-2016. The number of fatalities due to DUI data was obtained from California Highway Patrol (CHP) through the Office of Traffic Safety (OTS). The data on the total number of fatalities in California was obtained from TIMS. DUI data for 2017 was not available. The rate of fatality due to DUI in Del Norte County for the time period of 2013-2016 was one percent. Although the fatality rate due to DUI does not seem alarming, there were 13 severe injuries crashes that involved alcohol. The rate of severe injuries due to DUI in the County was observed to be seven percent. A total of 43 crashes due to DUI were reported in Del Norte County between 2013-2016. The rate of all crashes due to DUI was observed to be 23 percent in the County including both incorporated and unincorporated areas.

The number of crashes due to DUI can be brought down through education and law enforcement. Educational campaigns are a great way to spread awareness. Educational campaigns can be conducted with the help of social media, mass media and local organizations such as schools, hospitals, churches, etc. Strengthening law enforcement in areas where DUI cases are observed frequently and increasing the number of arrests due to DUI can also help in reducing the cases of DUI in the County.

8. BEST PRACTICES FOR INTERSECTION AND ROADWAY SAFETY TREATMENTS

The information presented in this section was referenced from AASHTO's *A Policy on Geometric Design of Highways and Streets* (2011 edition), *PEDSAFE* (2004 edition), the *Intersection Safety* and *Road Diet (Roadway Reconfiguration)* Section on the FHWA website, and the *Unsignalized Intersection Improvement Guide* website.

8.1 Uncontrolled Intersections

Intersections with no form of traffic control are called uncontrolled intersections. Motorists approaching the intersection should have sufficient time to be able to see potentially conflicting vehicles and stop before reaching the intersection.

Pros of uncontrolled intersection:

- There is no cost involved with uncontrolled intersections.
- Pedestrians and bicyclist are comfortable crossing such intersections as the traffic volumes are assumed to be very low, and pedestrians and bicyclists have the right-of-way.

Cons of uncontrolled intersections:

- Motorists have to slow down and be alert at uncontrolled intersections.
- Clear sight distance are required at uncontrolled intersections to provide motorists the time to react to conflicting traffic present at or approaching the intersection. The length of the legs of the sight triangle at uncontrolled intersection vary with approach speed, number of lanes, size of intersection etc. *A policy on Geometric Design of Highways and Streets* by AASHTO can be referred to determine the length of the leg of sight triangle based on the above mentioned variables.
- Are unsafe at locations with moderate traffic volume.
- Right-of-way confusion may arise with motorists on multiple approaches at intersection.
- Motorists may be unaware of uncontrolled intersections.

8.2 Yield Control Intersections

With the use of yield control, drivers from a minor road are permitted to enter or cross a major road without stopping. Under this control, drivers on each approach controlled by a YIELD sign are required to reduce their speed to concede the right-of-way to vehicles and non-motorists in the intersection.

Pros of yield controlled intersection:

- Does not delay traffic significantly but alerts the motorists approaching a major road from a minor road.
- Establishes a right-of-way for vehicles on major road over minor road approach reducing delay.

Cons of uncontrolled intersections:

- In comparison with uncontrolled intersections, yield controlled intersections have associated sign installation costs.
- Sight distance required for a motorist to yield to conflicting traffic is more than sight distance required for stop controlled intersections. The length of the legs of the sight triangle at yield controlled intersection vary with approach speed, number of lanes, size of intersection etc. *A policy on Geometric Design of Highways and Streets* by AASHTO can be referred to determine the length of the leg of sight triangle based on the above mentioned variables.
- Pedestrians and bicyclists are hesitant to cross the intersection till the vehicle approaching the major road from the minor road comes to a stop.

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8.3 Unwarranted Stop Control Intersections

Stop sign only permits the motorist from a minor or major road to enter or join another major road after completely stopping. Stop signs should only be placed if they meet a Manual on Uniform Traffic Control Devices (MUTCD) warrant. Unwarranted stop signs are frequently violated and can create a negative impact of the traffic pattern.

Pros of unwarranted stop controlled intersection are as follows:

- Inexpensive form of traffic control in comparison with signalized intersections or roundabouts.
- Stops one or more traffic approaches which aids pedestrian/bicycle crossing and imparts a sense of security to pedestrians and bicyclists.
- Establishes an orderly right-of-way for vehicles at intersections.
- All-way stop control can reduce the severity of crashes at intersections.
- Stop signs can be utilized as an interim measure during construction or upgrade of roadway infrastructure.

Cons of unwarranted stop controlled intersection are as follows:

- Additional delay is created due to a stop controlled intersection.
- Drivers have been observed to speed past intersections to make up for the time lost at the stop sign.
- Stop signs neither reduce speed on roadways nor do they act as traffic calming devices.
- Drivers have been observed to practice a rolling stop instead of a complete stop at locations with higher stop signs.
- All-way stop controlled intersection result in more crashes due to confusion in yielding right-of-way to vehicles at the intersection.

8.4 Pedestrian Crossing Signs and Markings

Pedestrian crossing signs and markings can be installed at signalized locations and uncontrolled locations where issues related to pedestrian safety are noted.

Pros of pedestrian crossing signs and markings are as follows:

- Marked crosswalks help designate the right-of-way for motorists to yield to pedestrians.
- The use of high visibility crosswalks such as ladder, continental, and zebra help increase the _pedestrian and motorist awareness to the increased exposure at the crossing.
- Marked crosswalks help guide pedestrians along a preferred walking path.
- The approximate installation cost for a regular stripped crosswalk is about $100 and a ladder crosswalk is $300. These costs are cheaper as compared to installing Rectangular Rapid Flash Beacon (RRFB) at pedestrian crossings.

Cons of pedestrian crossing signs and markings are as follows:

- Crosswalk markings should be placed to include ADA ramps so that a wheelchair does not have to leave the crosswalk to access the ramp.
- Crosswalks should ideally be used in conjunction with other safety improvements such as curb extensions to improve pedestrian crossing, particularly on multi-lane roads with average daily traffic (ADT) more than 10,000.
- Warning signs used to supplement the crosswalk markings may get lost in visual clutter and hence must be placed carefully.

8.5 Flashing Beacons at Crosswalks

Rectangular Rapid Flash Beacon (RRFB) is an easy to install, economic pedestrian enhanced safety measure that helps increase motorist yielding to pedestrians crossing the intersection. As per the CA-MUTCD, pedestrian and vehicular volumes are required to warrant the installation of RRFB.

Pros of installing flashing beacons at sidewalks are as follows:

- RRFB flashing beacons have been observed to significantly increase drivers yielding to pedestrians.
- RRFB increase the effectiveness of other intersection safety treatments such as yield or stop signs.
- The cost of installing RRFB is significantly lower as compared to hybrid pedestrian crossing signals and traffic signals.

Cons of installing flashing beacons at sidewalks are as follows:

- Costs of installing flashing beacon is expensive. The cost of installing RRFBs can range from $10,000 to $15,000 as compared to other low cost treatments such as signing and striping.

8.6 Bike Lanes

Bike lanes indicate a preferential or exclusive space for bicycle travel along roadways. Bike lanes are typically designated by striping and/or signing. Colored pavement (e.g. green or red surfaces) is also used in some locations, although it is not yet an accepted MUTCD standard. It is most cost efficient to create bike lanes during street reconstruction, resurfacing or at the time of original construction.

Pros of installing bike lanes are as follows:

- Bike lanes have been found to provide a consistent separation between bicyclists and passing motorists.
- Bike lanes provide an additional buffer between motor vehicles and pedestrians when sidewalks are immediately adjacent to the curb.
- Narrowing of roadway to accommodate bike lanes encourage motor vehicles to maintain lower speeds.
- Adding bike lanes reduce the distance pedestrians must travel to cross automobile lanes.

Cons of installing bike lanes are as follows:

- The cost of installing a bike lane is approximately $5,000 to $50,000 per mile depending on the condition of the pavement, the need to remove and repaint lane lines, the need to adjust signalization, and other factors.
- Care must be taken to minimize the conflict between bicyclists and pedestrians with the application of this treatment.

8.7 Road Diet

A road diet repositions pavement markings to better meet the needs of all road users. A classic road diet converts a four-lane undivided roadway to a three-lane roadway, but there are many other reconfigurations that can be used by local agencies. A road diet can also vary the lane width of a three-lane roadway to better meet the needs of road users.

Pros of implementing road diets are as follows:

- A reduction in the number of through lanes can calm traffic, reduce weaving, reduce the number of lanes for pedestrians to cross, and reduce left-turn conflicts.
- A two-way left-turn lane (TWLTL) may reduce head-on crashes by dividing opposing traffic and reduce rear-end crashes by providing left-turning vehicles their own lane
- Wider shoulders provide recovery room should drivers depart the travel way. They can also provide buses or mail trucks room to pull out of the travel lane, allowing vehicles to pass.
- A road diet can provide a dedicated space for pedestrians, bicyclists, transit facilities, which can increase motorists' recognition that they are using the roadway. Dedicated bicycle/transit lanes and pedestrian refuge islands provide visible cues that can improve motorist awareness.
- Corridors with Average Daily Traffic (ADT) less than 10,000 are great candidates for road diets.

Cons of implementing road diets are as follows:

- Corridors with ADT 10,000-15,000 may require intersection analysis and signal retiming in conjunction with road diet implementation.
- Corridors with ADT 15,000-20,000 may require corridor analysis in conjunction with road diet implementation. Corridors with ADT greater than 20,000 would require a feasibility study.
- The cost of implementing a road diet per mile when included with resurfacing is about $46,000 and about $100,000 without resurfacing. These costs include 20 percent contingency.

It is recommended that the above safety treatments be applied as applicable, and especially at locations with pedestrian generators such as shopping centers, schools, public parks, and other public facilities. It is recommended that road diet be considered on Elk Valley Road, Parkway Drive, Pebble Beach Drive, 9th Street, Front Street, and H Street. The pedestrians and bicycle facility improvements can also be coordinated with the Del Norte Safe Routes to School Project Implementation Plan to help improve roadway safety for children walking or bicycling to schools.

9. SAFETY PROJECT DEVELOPMENT AND PRIORITIZATION

The comprehensive collision analysis, field observations, community input and the feedback obtained from the staff of Del Norte and City of Crescent City determined the need to focus on roadway segments and signalized intersections based on the highest crash concentrations. There is an overall need to upgrade the centerline and edge-line striping along both County and City roadways. The existing pavement marking and striping on most County and City roadways is 4 inches in width whereas the Caltrans Standard Plan requires a width of 6 inches. In addition, the project team observed the edge-line and centerline striping to have deteriorated at several locations. The project team also identified the need to install new or upgrade regulatory and warning signs to reduce the risk of collisions at various locations. The B/C ratios for all the safety projects mentioned in this report were obtained using the HSIP Analyzer provided on the Caltrans website under the HSIP Call for Projects section.

9.1 Safety Projects for the County of Del Norte

9.1.1 Safety Projects for County Intersections

The following countermeasures were finalized for implementation on County intersections:

- S2-Improve signal hardware: lenses, back-plates, mounting, size, and number;
- S19-Install pedestrian countdown signal heads.

To implement these countermeasures, improving signal hardware and installing pedestrian countdown signal heads was identified as a project. There are a total of four signalized intersections maintained by the County. To cover all the signalized intersections in the County including signalized intersections in the incorporated areas, a City and County joint project was proposed in **Section 9.3** of this chapter.

9.1.2 Safety Projects for County Roadways

The following countermeasures were finalized for implementation on County roadways:

- R4-Install Guardrail;
- R26-Install/Upgrade signs with new fluorescent sheeting (regulatory or warning);
- R27-Install chevron signs on horizontal curves; and
- R32-Install edge-lines and centerlines.

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Two projects along with their B/C ratios were developed to implement these countermeasures:

- Pavement delineation upgrade and installing/upgrading regulatory/warning signs;
- Installation of guardrails and chevron signs.

A B/C ratio of 9.8 was obtained for sign and pavement delineation upgrade project. At a preliminary stage of this project, a total of 48 miles along minor arterials, major collectors and minor collectors (as per Caltrans-California Highway System) in the County such as Washington Boulevard, Lake Earl Drive, Parkway Drive, Elk Valley Road, etc. were considered for this project. A detailed study would be required to determine the most suitable locations for the implementation of these safety improvements. The total cost estimate of this project is $6,798,900. The detailed cost estimate is shown in **Table 57.** The cost of the project may vary based on locations determined for safety improvements.

Table 57: Cost Estimate of Sign and Pavement Delineation Upgrade (County)

	Item Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization / Demobilization	LS	1	$100,500	$100,500
2	Construction Signs & Traffic Control	LS	1	$201,500	$201,500
3	SWPP / Erosion Control	LS	1	$201,500	$201,500
4	Remove Existing Edge-line	LF	452,020	$1.50	$678,030
5	Install New Edge-line	LF	452,020	$4.00	$1,808,080
6	Remove Existing Centerline	LF	226,000	$1.50	$339,000
7	Install New Centerline	LF	226,000	$4.00	$904,000
8	Sign Installation and Upgrade	EA	1,200	$250.00	$300,000
	Total				**$4,532,610**
	Contingency				$453,261
	Environmental				$453,000
	PS&E				$680,000
	Construction Engineering				$680,000
	PROJECT TOTAL				**$6,798,900**

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A B/C ratio of 10.1 was obtained for guardrails and chevron signs installation project. This project considers about 32 preliminary locations along mountain roadways in the County such as South Fork Road, North Bank Road, South Bank Road, Low Divide Road, etc. which may require guardrail and/or chevron signs. A detailed Ball-Bank study would be required to determine the most suitable locations for the implementation of these safety improvements. The total cost estimate of this project is $784,800. The detailed cost estimate is shown in **Table 58**. The cost of the project may vary based on locations determined for safety improvements.

Table 58: Cost Estimate of Installation of Guardrails and Chevron Signs (County)

	Item Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization / Demobilization	LS	1	$11,600	$11,600
2	Construction Signs & Traffic Control	LS	1	$23,250	$23,250
3	SWPP / Erosion Control	LS	1	$23,250	$23,250
4	Install Guardrail	LF	8,000	$55.00	$440,000
5	Install Chevron	EA	100	$250.00	$25,000
	Total				**$523,100**
	Contingency				$52,310
	Environmental				$52,300
	PS&E				$78,500
	Construction Engineering				$78,500
	PROJECT TOTAL				**$784,800**

9.2 Safety Projects for the City of Crescent City

9.2.1 Safety Projects for City Intersections

The following countermeasures were finalized for implementation on City intersections:

- S2-Improve signal hardware: lenses, back-plates, mounting, size, and number;
- S19-Install pedestrian countdown signal heads.

To implement these countermeasures, improving signal hardware and installing pedestrian countdown signal heads was identified as a project. There is only one signalized intersection maintained by the City. To cover all the signalized intersections in the County including the signalized intersection in Crescent City, a City and County joint project was proposed in **Section 9.3** of this chapter.

9.2.2 Safety Projects for City Roadways

The following countermeasures were finalized for implementation on City roadways:

- R4-Install Guardrail;
- R26-Install/Upgrade signs with new fluorescent sheeting (regulatory or warning).

To implement these countermeasures, pavement delineation upgrade and installation of regulatory/warning signs was identified as a project. A B/C ratio of 7.1 was obtained for sign and pavement delineation upgrade project. At a preliminary stage of this project, total of seven miles of major collectors and minor arterials (as per Caltrans-California Highway System) in the City such as Washington Boulevard, Pebble Beach Drive, A Street, H Street, 5th Street, 9th Street, etc. were considered for this project. The total cost estimate of this project is $679,600. A detailed study would be required to determine the most suitable locations for the implementation of these safety improvements. The cost estimate for this project is presented in **Table 59.** The cost of the project may vary based on locations determined for safety improvements.

Table 59: Cost Estimate of Sign and Pavement Delineation Upgrade (City)

	Item Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization / Demobilization	LS	1	$10,000	$10,000
2	Construction Signs & Traffic Control	LS	1	$20,000	$20,000
3	SWPP / Erosion Control	LS	1	$20,000	$20,000
4	Remove Existing Edge-line	LF	44,000	$1.50	$66,000
5	Install New Edge-line	LF	44,000	$4.00	$176,000
6	Remove Existing	LF	22,000	$1.50	$33,000
7	Install New Centerline	LF	22,000	$4.00	$88,000
8	Sign Installation and Upgrade	LF	160	$250	$40,000
	Total				**$453,000**
	Contingency				$45,300
	Environmental				$45,300
	PS&E				$68,000
	Construction Engineering				$68,000
	PROJECT TOTAL				**$679,600**

9.3 Safety Projects for the County of Del Norte and City of Crescent City

The following countermeasures were finalized for implementation jointly on County and City intersections:

- S2-Improve signal hardware: lenses, back-plates, mounting, size, and number;
- S19-Install pedestrian countdown signal heads.

To implement these countermeasures, improving signal hardware and installing pedestrian countdown signal heads was identified as a project. To cover all five signalized intersection in the incorporated and unincorporated areas in the County, a City and County joint project was proposed. A B/C ratio of 13.3 was obtained for this project. The total cost estimate of this project is $233,000. The detailed cost estimate is shown in **Table 60.** The cost of the project may vary based on the addition or elimination of items requiring upgrade at the intersections.

Table 60: Cost Estimate of Signal Hardware Upgrade and Installation of Pedestrian Countdown Signal Heads (County and City)

	Item Description	Unit	Quantity	Unit Cost	Total Cost
1	Mobilization / Demobilization	LS	1	$3,500	$3,500
2	Construction Signs & Traffic Control	LS	1	$6,900	$6,900
3	SWPP / Erosion Control	LS	1	$6,900	$6,900
4	Remove and Salvage existing Signal Heads and replace with 12" Signal Heads	EA	14	$1,000	$14,000
5	Remove and Salvage existing controller and replace with new controller	EA	5	$7,000	$35,000
6	Furnish and Install Ethernet communication switch at intersection	EA	5	$3,500	$17,500
7	Remove existing pedestrian signal head and furnish and install pedestrian countdown heads	EA	30	$500	$15,000
8	Furnish and install ADA pedestrian push buttons at crosswalks	EA	14	$500	$7,000
	Remove and Salvage existing cabinet and replace with new County Standard cabinet	EA	5	$10,000	$50,000
Total					**$155,800**
Contingency					$15,580
Environmental					$15,600
PS&E					$23,300
Construction Engineering					$23,300
PROJECT TOTAL					**$233,600**

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9.4 Conceptual Design

To help demonstrate the implementation of the proposed safety projects in this SSAR, the project team created conceptual design layouts at example locations. The conceptual designs at example locations for each type of safety project are shown in the figures below. Systemic application of safety projects will include the implementation of the designs conceptualized in these example locations at several locations which might require similar safety improvements. A detailed study would be required for each of the above-mentioned safety projects to determine the locations where the application of the safety improvements would be most appropriate and beneficial.

- Pavement delineation upgrade and installation regulatory/warning signs, **Figure 68**:
  Sarina Road and First Street
- Installation of guardrails and chevron signs, **Figure 69**:
  South Fork Road
- Signal Hardware Upgrade, **Figure 70**:
  Northcrest Drive and Washington Boulevard
- Roundabout for speeds greater than 35 mph, **Figure 71**:
  Parkway Drive and Washington Boulevard
- Stripped roundabout for speeds 35 mph or less, **Figure 72**:
  Parkway Drive and Washington Boulevard

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CROSS TRAFFIC DOES
NOT STOP SIGN

INSTALL RIGHT
EDGELINE STRIPING

STOP

SARINA RD

INSTALL RIGHT EDGELINE EXTENSION
THROUGH INTERSECTION STRIPING

INSTALL BARRICADE
(TYP)

REMOVE AND SALVAGE EXISTING
YIELD SIGN AND POST

WIDEN CURB RADIUS

CLOSURE OF EXISTING SLIP LANE

EXISTING STOP SIGN AND POST.
PROTECT IN PLACE.

REMOVE AND SALVAGE EXISTING
YIELD SIGN AND POST

INSTALL RIGHT
EDGELINE STRIPING

INSTALL BARRICADE
(TYP)

FIRST ST

N

FIGURE 68A

CROSS TRAFFIC DOES
NOT STOP SIGN

INSTALL RIGHT EDGELINE EXTENSION
THROUGH INTERSECTION STRIPING

SARINA RD

INSTALL RIGHT EDGELINE EXTENSION
THROUGH INTERSECTION STRIPING

STOP

FURNISH AND INSTALL
YIELD SIGN AND POST

REMOVE AND SALVAGE EXISTING
YIELD SIGN AND POST

CLOSURE OF EXISTING EASTBOUND SLIP LANE

REMOVE AND SALVAGE EXISTING
YIELD SIGN AND POST

EXISTING STOP SIGN AND POST.
PROTECT IN PLACE.

FIRST ST

N

FIGURE 68B

GENERAL IMPROVEMENT NOTES:

1. RESTRIPE EXISTING STRIPING TO LATEST CA MUTCD STANDARDS.

LEGEND:

● PROPOSED DELINEATOR

⊣ EXISTING SIGN AND POST

◄ PROPOSED SIGN AND POST

FIGURE 68

EXAMPLE LOCATION

06/12/2019

SOUTH FORK ROAD

TJKM
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INSTALL CHEVRON SIGN AND POST (TYPICAL)

INSTALL GUARDRAIL

S. FORK RD

LEGEND:

□—□ PROPOSED GUARDRAIL

◄ PROPOSED SIGN AND POST

GENERAL IMPROVEMENT NOTES:

1. INSTALL CHEVRON WARNING SIGNS AT 80 FEET O.C. FOR ROADWAY SPEED OF 30 MPH.

N

FIGURE 69

EXAMPLE LOCATION

06/12/2019

NORTHCREST DRIVE & WASHINGTON BOULEVARD

STEADY DEMAND SEQUENCE

PROPOSED PHASE DIAGRAM
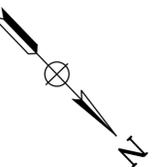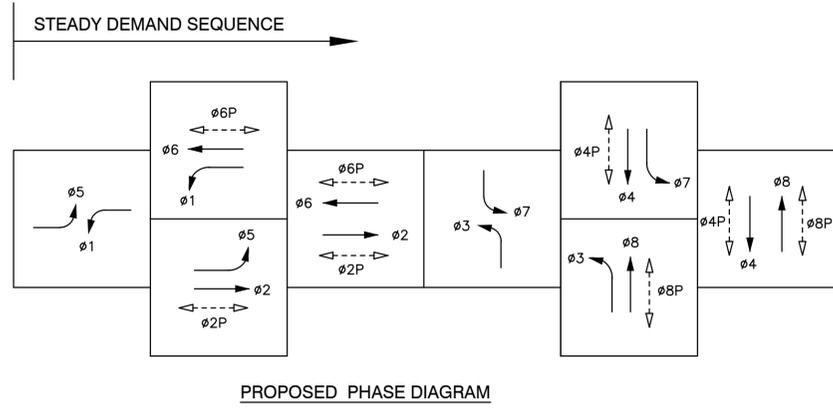
GENERAL IMPROVEMENT NOTES:

1. REPLACE EXISTING 8" SIGNAL HEADS WITH 12" SIGNAL HEADS.

2. REPLACE PEDESTRIAN HEADS WITH COUNTDOWN PEDESTRIAN HEADS.

3. INSTALL BICYCLE AND VEHICLE DETECTION AS PER CITY/COUNTY APPROVAL.

4. INSTALL HIGH VISIBILITY CROSSWALKS WITH LADDER STRIPING.

5. INSTALL ADVANCED STOP BAR STRIPING.

6. INSTALL GREEN BIKE SKIPS.

7. INSTALL BIKE DETECTION PAVEMENT MARKINGS.

LEGEND:

Ⓧ   EXISTING POLE LOCATION

NORTHCREST DR

WASHINGTON BLVD

EXTEND BIKE STRIPING TO CROSSWALK

RECONFIGURE LANE GEOMETRY TO ADD BIKE LANE

RECONFIGURE LANE GEOMETRY TO ADD BIKE LANE

EXTEND BIKE STRIPING TO CROSSWALK

EXTEND BIKE STRIPING TO CROSSWALK

UPGRADE SIGNAL CABINET TO LATEST COUNTY OF DEL NORTE STANDARDS.

UPGRADE SERVICE PEDESTAL TO LATEST COUNTY OF DEL NORTE STANDARDS.

N

FIGURE 70

06/12/2019

WASHINGTON BLVD

PARKWAY DR

INSTALL SIDEWALK

INSTALL SIDEWALK

INSTALL SIDEWALK

INSTALL SIDEWALK

PEDESTRIAN RAMPS (TYPICAL AT ALL CROSSWALKS)

BICYCLIST RAMPS (TYPICAL)

N

FIGURE 71

EXAMPLE LOCATION

06/12/2019

TJKM
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LEGEND:

● PROPOSED DELINEATOR

INSTALL SIDEWALK

WASHINGTON BLVD

INSTALL SIDEWALK

INSTALL SIDEWALK

INSTALL SIDEWALK

PEDESTRIAN RAMPS (TYPICAL
AT ALL CROSSWALKS)

DOMED CENTRAL ISLAND
WITH AN ANTI-SKID SURFACE

PARKWAY DR

BICYCLIST RAMPS (TYPICAL)

N

NOTE: CONCEPTUAL PLAN IS FOR SPEEDS OF 35 MPH OR LESS.

FIGURE 72

EXAMPLE LOCATION

06/12/2019
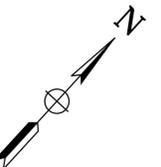
9.5 SSAR Implementation and Follow-Up Evaluations

The implementation of SSAR requires safety studies to determine the locations where the application of the safety improvements would be most beneficial. The cost of conducting safety studies is included in the Preliminary Engineering (PE) of each of the safety projects mentioned in this report. To implement the safety projects through HSIP funding, local agencies are required to follow implementation procedures as mentioned in Chapter 5 of the *Systemic Safety Analysis Report Program (SSARP) Guidelines.* Typical procedures for Federal-aid projects can be found in the *Local Assistance Procedures Manual (LAPM)* on the Local Assistance section of the Caltrans website. A flow chart of the required procedures from the *LAPM* and details regarding implementation from the *SSARP Guidelines* are attached in **Appendix D** for reference.

It is recommended that an SSARP follow up be conducted every five years based on the number of crashes and types of crashes reported in the County and City. A two year time period at a minimum is required to gauge the effectiveness of the countermeasures implemented at various locations. If the countermeasures prove to be effective, the implementation of these countermeasures can be extended to new locations where crashes are reported. In case there are new crash patterns that come to light after the implementation of countermeasures, the crash patterns need to be analyzed to understand the cause of the crash.

10. SUMMARY

10.1 County of Del Norte

Based on the five-year crash data from 2013-2017, there were a total of 225 crashes record in the County of Del Norte. The most prevalent crash type of collisions in the County are hit object and broadside collisions. The primary violations for these types of collisions are driving under the influence of alcohol and/or drugs and improper turning. Potential countermeasures obtained for high-risk roadway segments along with thorough field investigations led to the development of two projects for County roadways namely, pavement delineation upgrade and installing/upgrading regulatory/warning signs, and installation of guardrails and chevron signs. The B/C ratio obtained for these projects were 9.8 and 10.1 respectively. Potential countermeasures obtained for high-risk intersections along with thorough field investigations led to the development of signal hardware upgrade and installation of pedestrian countdown signal heads as a project for the intersections of the County and City jointly. The B/C ratio obtained for this project was 13.3.

10.2 City of Crescent City

Based on the five-year crash data from 2013-2017, there were a total of 118 crashes record in the DNC-CCUB (Del Norte County-Crescent City Urban Boundary). The most prevalent crash type of collisions in the City are hit object, vehicle/pedestrian crash and broadside crash. The primary violations for these types of collisions are driving under the influence of alcohol and/or drugs, improper turning and unsafe speed. Potential countermeasures obtained for high-risk roadway segments along with thorough field investigations led to the development of one project for City roadways namely, pavement delineation upgrade and installing/upgrading regulatory/warning signs. The B/C ratio obtained for this projects was 7.1. Potential countermeasures obtained for high-risk intersections along with thorough field investigations led to the development of signal hardware upgrade and installation of pedestrian countdown signal heads as a project for the intersections of the County and City jointly. The B/C ratio obtained for this project was 13.3.

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APPENDIX A – FIELD ASSESSMENT SHEETS

TJKM VISION THAT MOVES YOUR COMMUNITY

INTERSECTION - ELK VALLEY ROAD AND SOUTH BEND AVENUE

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Broadside

Violation Type: Improper Turning

FEATURES

- T-intersection
- One way stop controlled
- Bike lanes on Elk Valley
- Stop bar on S Bend Avenue
- No intersection lighting
- No crosswalk

OBSERVATIONS: This intersection sits on Elk Valley Road with a speed limit of 45-MPH. Two way left turn lane on Elk Valley Road runs through the intersection. Road geometry encourages speeding through the intersection. The land use around this intersection is industrial. Traffic volume was observed to be high.

POTENTIAL TREATMENTS: T- intersection warning, road diet on Elk Valley Road, upgrade pavement markings.

INTERSECTION - ELK VALLEY ROAD AND IOWA STREET

CRASH HISTORY

0 Fatalities
1 Severe Injury
1 Visible Injury
0 Complaint of Pain

Total # Collisions: 2

Collisions Types: Hit Object, Overturned

Violation Type: DUI, Improper Turning

FEATURES

- T-intersection
- One way stop controlled
- Bike lanes on Elk Valley Road
- Stop bar on Iowa Street
- No intersection lighting
- No crosswalk

OBSERVATIONS: This intersection sits on Elk Valley Road with an eastbound speed limit of 45-MPH and westbound speed limit of 35 MPH. Two way left turn lane on Elk Valley Road runs through the intersection. Road geometry encourages speeding through the intersection. The land use around this intersection is residential and institutional. Traffic was observed to be high.

POTENTIAL TREATMENTS: T-intersection warning, road diet on Elk Valley Road, upgraded pavement markings, intersection lighting.

INTERSECTION - LAKE EARL DRIVE AND YOUNKERS AVENUE

CRASH HISTORY

1 Fatalities
0 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Broadside

Violation Type: Automobile Right of Way

FEATURES

- T-intersection
- One way stop controlled
- Bike lanes on Lake Earl Drive
- Stop bar on Yonkers Lane
- No intersection lighting
- No crosswalk

OBSERVATIONS: Southbound Lake Earl Drive curves down to the intersection of Younkers Avenue with very limited sight distance. The land around this intersection is residential. Cars were observed to be speeding down from the curve and past the T-intersection. Traffic volume was observed to be moderate to high.

POTENTIAL TREATMENTS: T-intersection warning sign, speed warning signs, improve pavement friction, intersection lighting.

INTERSECTION - LOWER LAKE ROAD AND SILVA ROAD

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Hit Object

Violation Type: Unsafe Speed

FEATURES

- T-intersection
- Uncontrolled
- No intersection lighting
- Near shallow bridge

OBSERVATIONS: Lower Lake Road meets Silva Road at the end of a curve. Lower Lake Road is only 20 feet wide which makes right turn from Silva Road onto Lower Lake Road difficult with a high possibility of encroaching into the oncoming travel lane. The intersection sits next to a small creek. Land use around this intersection is farmlands. Traffic volume was observed to be low.

POTENTIAL TREATMENTS: Curve Warning sign, speed sign, increase length of guardrail.

INTERSECTION - EL DORADO STREET AND COOPER AVENUE

CRASH HISTORY

1 Fatalities
0 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Broadside

Violation Type: Automobile Right of Way

FEATURES

- All way stop controlled
- Bike lanes on El Dorado Street
- Crosswalks
- No intersection lighting

OBSERVATIONS: This intersection was recently upgraded with pavement markings and new curb ramps. Speed limit at this intersection is 30 MPH. The land use around this intersection is residential. Traffic volume was observed to be moderate to high.

POTENTIAL TREATMENTS: Intersection lighting, edge-line on Cooper Avenue, high visibility crosswalks.

INTERSECTION - EL DORADO STREET AND CHILDS AVENUE

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Broadside

Violation Type: Traffic Signs and Signals

FEATURES

- Two way stop controlled
- Bike lanes on El Dorado Street
- Crosswalks
- No intersection lighting

OBSERVATIONS: This intersection was recently upgraded with pavement markings and new curb ramps. Speed limit on this intersection is 30 MPH. The land use around this intersection is residential. Traffic volume was observed to be moderate to high. Cars were observed to be speeding to Cooper Avenue from Childs Avenue.

POTENTIAL TREATMENTS: Survey speed along El Dorado Street, edge-line and centerline on Childs Avenue, high visibility crosswalks.

INTERSECTION - RAILROAD AVENUE AND FERN LANE

CRASH HISTORY

0 Fatalities
1 Severe Injury
1 Visible Injury
0 Complaint of Pain

Total # Collisions: 2

Collisions Types: Broadside

Violation Type: DUI, Improper Turning

FEATURES

- T-intersection
- One way stop controlled
- Shoulder on Railroad Avenue
- No intersection lighting
- No cross walk

OBSERVATIONS: Fern Lane sits lower than Railroad Avenue limits line of sights for both motorists approaching the intersection from Railroad Avenue and Fern Lane. Traffic as observed to be moderate to high.

POTENTIAL TREATMENTS: T-intersection warning sign, stop pavement markings on Fern Lane.

INTERSECTION - WASHINGTON BOULEVARD AND NORTHCREST DRIVE

CRASH HISTORY

0 Fatalities
1 Severe Injury
1 Visible Injury
11 Complaint of Pain

Total # Collisions: 13

Collisions Types: Head on, Sideswipe, Rear end, Broadside

Violation Type: DUI, Improper Turning

FEATURES

- Signalized
- Four legged
- Mast arm signal
- Crosswalks
- Bike lanes
- Median on Northcrest Drive
- Centerline on Washington Boulevard
- Walk sign present
- Non-ADA ramps

OBSERVATIONS: Washington Boulevard intersects Northcrest Drive at the middle of a long curve. The curve has both horizontal and vertical component which limits the line of sights for northbound and southbound traffic. Speed limit on Northcrest Drive is 40 MPH. Shorter yellow time was observed at some approaches. Crosswalk ramps do not meet ADA standards. Traffic volume at this intersection was observed to be high.

POTENTIAL TREATMENTS: Intersection leveling, medians, bike lane delineation, study signal phasing and timing, object markers for medians, advanced stop bar.

INTERSECTION - NORTHCREST DRIVE AND HARDING AVENUE

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Vehicle Pedestrian Collision

Violation Type: Pedestrian Violation

FEATURES

- Signalized
- Four legged
- Mast arm
- Skewed crosswalks
- Bike lanes on Northcrest Drive
- Median on Northcrest Drive
- Centerline on Harding Avenue
- Walk sign present
- ADA ramps

OBSERVATIONS: The skewed nature of the intersection and the presence of a commercial development on the north-west corner of the intersection limits the line of sights for westbound traffic making right turn on Northcrest Drive. Land use around this intersection is commercial. All corners of the intersection had street lights except the south-west corner. The street light for this corner was placed on the median on the south leg of the intersection. Shorter yellow time was observed for some approaches. Pedestrian countdown signal was observed at this intersection.

POTENTIAL TREATMENTS: Improvement in signal phasing, edge-line on Harding Avenue, advanced stop bar, street light repositioning, bicycle lane markings.

ROADWAY - KLAMATH BOULEVARD, FROM KLAMATH CIRCLE TO 0.3 MILES SOUTH

CRASH HISTORY

0 Fatalities
1 Severe Injury
1 Visible Injury
0 Complaint of Pain

Total # Collisions: 2

Collisions Types: Other, Hit Object

Violation Type: DUI, Other than Driver

FEATURES

- Paved
- Two way divided
- Bike lanes
- On street parking
- Sidewalks
- Raised median
- Striped median

OBSERVATIONS: This segment of Klamath Boulevard was recently upgraded. This two-lane segment has sidewalks on both sides with adequate solar powered street lighting. Surrounding land uses include visitor center, hotels, restaurants, gas station and a public park. The speed limit along this segment is 25 MPH. The speed limit sign was observed only at the north intersection of Klamath Boulevard and Klamath Circle. The two intersections of Klamath Boulevard and Klamath Circle are one way stop controlled. This segment has adequate number of crosswalks but pedestrians might not be visible to approaching traffic due to on-street parking. Traffic volume in this segment was observed to be moderate to low.

POTENTIAL TREATMENTS: Speed limit signs, pedestrian advanced warning signs.

ROADWAY - BLAKE ROAD, FROM TERWER RIFFLE ROAD TO THE END OF BLAKE ROAD

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Hit Object

Violation Type: DUI

FEATURES

- Paved
- Two way undivided
- Horizontal curve
- Vertical Curve

OBSERVATIONS: Blake Road is a narrow road in a rural setting which can safely allow only one way traffic. There are no street lights, striping, shoulders or medians present. This segment is edged mostly by dense vegetation on both sides. This segment might have limited visibility during nighttime. Traffic volume was observed to be low in this segment.

POTENTIAL TREATMENTS: Object marker, speed limit signs.

ROADWAY - LOW DIVIDE ROAD, FROM NORTH BANK ROAD TO 0.3 MILES EAST

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Hit Object

Violation Type: DUI

FEATURES

- Paved
- Two way undivided
- Horizontal curve
- Vertical curve

OBSERVATIONS: This segment of Low Divide Road is 22 feet wide with a speed limit of 20 MPH. The start of Low Divide Road has a "Congested Area" sign along with the speed limit sign. The segment has residential land use on either sides. No street lighting, shoulder, sidewalks, edge-line and centerline were observed along this segment. The segment is curvy and has limited visibility due to dense vegetation along the segment. Traffic volume as observed to be low in this segment.

POTENTIAL TREATMENTS: Sign upgrade, horizontal and vertical alignment improvement, edge-line and centerline striping.

ROADWAY - LOW DIVIDE ROAD, FROM 1.5 MILES EAST OF NORTH BANK ROAD TO 1.8 MILES EAST

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Overturned

Violation Type: DUI

FEATURES

- Worn out pavement or unpaved
- Two way undivided
- Horizontal curve
- Vertical Curve

OBSERVATIONS: This segment of Low Divide Road is 22 feet wide with a speed limit of 20-MPH. No street lighting, shoul-der, sidewalks, edge-line and centerline were observed on this segment. The segment is curvy and has limited visibility due to dense vegetation along the segment. This segment has worn out pavement in some areas and is mostly unpaved. Traffic volume was observed to be low in this segment.

POTENTIAL TREATMENTS: Sign upgrade, horizontal and vertical alignment improvement, edge-line and centerline striping, pavement friction improvement.

ROADWAY - FRED HAIGHT DRIVE, FROM 0.05 MILES TO 0.35 MILES WEST OF US 101

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types:
Overturned

Violation Type: DUI

FEATURES

- Paved
- Two way divided
- Horizontal curve-yes
- Edge line
- Centerline

OBSERVATIONS: This segment of Fred Haight Drive is 27 feet wide with a speed limit of 50 MPH. No street lighting was observed along this segment. There are a few residential establishments along this segment. Edge-line and centerline are worn out in certain parts of the segment. Traffic volume was observed to be low to moderate.

POTENTIAL TREATMENTS: Re-stripe edge-line and centerline, advanced curve warning signs.

ROADWAY - SARINA ROAD, FROM FIRST STREET TO 0.3 MILES SOUTH

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Hit Object

Violation Type: DUI

FEATURES

- Paved
- Two way divided
- Horizontal curve
- Centerline

OBSERVATIONS: This segment of Sarina Road is 24 feet wide with a speed limit of 45 MPH. No street lighting was observed on this segment. The land use in this segment is primarily farmlands. There is a channelizing island for westbound approach. Traffic volume was observed to be low to moderate. There were no edge-lines or shoulder on this segment to keep vehicles from wearing off to the muddy surroundings.

POTENTIAL TREATMENTS: Installing edge-lines, raised channelizing island, improve pavement friction, upgrade signs, widen unpaved shoulder.

ROADWAY - KINGS VALLEY ROAD, FROM 0.1 MILES NORTH TO 0.2 MILES SOUTH OF SOUTH KRAFT DRIVE

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Hit Object

Violation Type: DUI

FEATURES

- Paved
- Two way divided
- Horizontal curve
- Vertical curve
- Edge-line
- Centerline

OBSERVATIONS: This segment of Kings Valley Road is 25 feet wide with a speed limit of 30 MPH. No street lighting was observed on this segment. The land use along this segment is residential. Vertical crest was observed along the segment which limits drivers' visibility of oncoming traffic. Traffic volume was observed to be moderate.

POTENTIAL TREATMENTS: Widen paved shoulder, edge curve warning signs, advanced curve warning signs, flatten vertical crest.

ROADWAY - LOWER LAKE ROAD, FROM LAKE EARL DRIVE TO 0.3 MILES WEST

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types:
Overturned

Violation Type: Unsafe
Speed

FEATURES

- Paved
- Two way divided
- Horizontal curve
- Vertical curve
- Edge-line
- Centerline

OBSERVATIONS: This segment of Lower Lake Road is 20 feet wide with a speed limit of 40 MPH. No street lighting was observed on this segment. The land use in this segment is residential and farmland. A 30 MPH speed advisory was observed for curved segment. This speed on a curve is high given the narrow width of the roadway. Sight distance issue for driveways opening up to the segment was also observed. Traffic volume was observed to be low to moderate.

POTENTIAL TREATMENTS: Speed sign upgrade, widen paved shoulder.

ROADWAY - NORTHCREST DRIVE, FROM OLD MILL ROAD TO 0.3 MILES NORTH

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
1 Complaint of Pain

Total # Collisions: 2

Collisions Types: Rear End

Violation Type: Unsafe Speed

FEATURES

- Paved
- Two way divided
- Bike lane
- Curb
- Horizontal curve
- Edge-line
- Two way left turn lane

OBSERVATIONS: This segment of Northcrest Drive is 55 feet wide with a speed limit of 25 MPH during school hours. No street lighting was observed. The land use is inclusive of elementary school, storage and housing. School zone sign started later than required along the segment. RRFB has been installed at the crosswalk in front of the school (at the end of a horizontal curve on Northcrest Drive). Vehicles were observed to suddenly slow down when RRFB was activated. Two way left turn lane was noticed all along this segment. Traffic volume was observed to be moderate to high.

POTENTIAL TREATMENTS: Update location of school speed sign, segment lighting, painted curb, chevrons, advanced curve warning signs.

ROADWAY - WASHINGTON BOULEVARD, FROM 0.27 MILES TO 0.57 MILES EAST OF DALE RUPERT ROAD

CRASH HISTORY

0 Fatalities
2 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 2

Collisions Types: Hit Object

Violation Type: IDUI, Improper Turning

FEATURES

- Paved
- Two way divided
- Paved shoulder
- Horizontal curve
- Edge-line
- Centerline

OBSERVATIONS: This segment of Washington Boulevard is 40 feet wide with a speed limit of 50 MPH. No street lighting was observed along this segment. The land use in this segment is farmland with livestock, and County offices. A 40-MPH speed advisory was observed for the curved segment. Traffic volume along this segment as observed to be moderate to high.

POTENTIAL TREATMENTS: Speed survey and sign upgrade, upgrade centerline, segment lighting, advanced curve warning sign.

ROADWAY - PARKWAY DRIVE, FROM VILLAGE DRIVE TO 0.3 MILES SOUTH

CRASH HISTORY

1 Fatalities
0 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Vehicle Pedestrian

Violation Type: Pedestrian Violation

FEATURES

- Paved
- Two way divided
- Bike lanes
- Sidewalks on one side
- Shoulder on one side
- Two Way left turn lane

OBSERVATIONS: This segment of Parkway Drive is 42 feet wide with a speed limit of 50 MPH. No street lighting was observed on this segment except at the intersection of Washington Boulevard and Parkway Drive. The land use in this segment is commercial, residential and institutional. Parkway Drive acts as a northbound off ramp for US 101 with high speed traffic through a horizontal curve. Bike lanes were observed at freeway entrance. Crossing distance was measured to be 108 feet on west led of the intersection. Traffic volume at this segment was observed to be high.

POTENTIAL TREATMENTS: Speed survey and sign upgrade, pavement friction improvement, yield control at intersection, delineators for bike lanes, roundabout.

ROADWAY- SUMMER LANE, FROM WASHINGTON BOULEVARD TO 0.3 MILES NORTH

CRASH HISTORY

1 Fatalities
0 Severe Injury
0 Visible Injury
0 Complaint of Pain

Total # Collisions: 1

Collisions Types: Vehicle Pedestrian

Violation Type: Unsafe Speed

FEATURES

- Paved
- Two way divided
- Sidewalks
- Horizontal curve
- Centerline

OBSERVATIONS: This segment of Summer Lane is 44 feet wide with no stated speed limit. No street lighting was observed on this segment at the edge of Walmart parking lot. The land use in this segment is commercial with Walmart as a crucial pedestrian generator. Wide lanes encourage speeding. Traffic volume at this segment was observed to be moderate to high.

POTENTIAL TREATMENTS: Speed sign, road diet to 10-foot wide lanes, edge-line, parking line, flushed median.

ROADWAY - ELK VALLEY ROAD, FROM STATE STREET TO 0.3 MILES NORTH

CRASH HISTORY

0 Fatalities
1 Severe Injury
0 Visible Injury
1 Complaint of Pain

Total # Collisions: 2

Collisions Types:
Overturned, Sideswipe

Violation Type: Improper Turning

FEATURES

- Paved
- Two way divided
- Bike lanes
- Sidewalks
- Horizontal curve
- Two Way Left Turn lane

OBSERVATIONS: This segment of Elk Valley Road is 45 feet wide, with a two way left turn lane and bike lanes on both sides. The land use through the segment is mostly industrial and sparsely residential. There were no crosswalks observed in this section. No street lighting was observed on this segment. Speed limit through this segment is 45 MPH. The 0.3 mile segment ends in a curve and has limited sight distance. Traffic volume was observed to be moderate to high.

POTENTIAL TREATMENTS: Speed survey and sign upgrade, horizontal alignment improvement at curve beginning at Howland Hill Road, curve warning sign, change bike route sign to bike lane sign, bike lane delineators.

APPENDIX B – SURVEY RESPONSES

Disclaimer: The contact information of survey respondents has been removed.

TJKM VISION THAT MOVES YOUR COMMUNITY

#1

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, March 23, 2019 6:15:37 AM
Last Modified:	Saturday, March 23, 2019 6:19:50 AM
Time Spent:	00:04:13
IP Address:	131.150.120.127

Page 1: About the Study

Q1 Which option best describes you: **Respondent skipped this question**

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive, Walk**
Business or Work	**Drive**
Everyday Errands	**Drive, Walk**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

12:00 PM - 2:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

Inadequate Crosswalks,

**People Driving Under the Influence of Alcohol or   ,
Drugs**

**Sharp Curve on   ,
Roadways**

Other (please
specify):
Slick roadways, ponding, narrow roadways with large trucks

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)   **Respondent skipped this question**

Q6 What are the top three locations you would like to see improvements?

Location 1	**Hwy 199**
Location 2	**Dr Fine Bridge**
Location 3	**101/Kings Crossing**

Q7 Please specify the type of improvement you would like to see.

Widened roads and bridges in narrow areas, better grading for drainage and/or surface types/treatments on corners, something to address 101/Kings Crossing intersection safety.

Q8 What age group do you belong to?   **36 - 40**

Q9 Please provide your contact information (Optional)

Email Address

#2

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, March 23, 2019 6:23:14 AM
Last Modified:	Saturday, March 23, 2019 6:39:23 AM
Time Spent:	00:16:09
IP Address:	47.28.59.249

Page 1: About the Study

Q1 Which option best describes you: **Respondent skipped this question**

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive, Walk**
Everyday Errands	**Walk, Bike**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

Inadequate Crosswalks,

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

We need to slow down the traffic. Make walking and biking in a priority in this town. More round about to slow down speeders. Model after Bend Oregon.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Elk valley and 101 at north end of town.**
Location 2	**101 and sand mine. First stop ☐ lower speed through south beach for walkers and bike riders out to crescent beach.**
Location 3	**Stop traffic at front street, going north. Slower safer traffic so people feel safe to walk and ride. Pedestrians first.**

Q7 Please specify the type of improvement you would like to see.

More round abouts, walker /rider friendly paths,

Q8 What age group do you belong to?   **46 - 50**

Q9 Please provide your contact information (Optional)

Name

Email Address

#3

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, March 23, 2019 8:17:59 AM
Last Modified:	Saturday, March 23, 2019 9:01:43 AM
Time Spent:	00:43:44
IP Address:	47.28.22.75

Page 1: About the Study

Q1 Which option best describes you:

Respondent skipped this question

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

12:00 PM - 2:00 PM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

Running Stop Sign,

People Driving Under the Influence of Alcohol or Drugs

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Many people drive well above the posted speed limit. There are several places where no sidewalks exist, so people end up on the shoulder.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Northcrest between Harding & Washington**
Location 2	**Front of Cal Fire and Two Guys Hwy 101 North**
Location 3	**I St. between 7th and 9th & 8th St. between I and K**

Q7 Please specify the type of improvement you would like to see.

Sidewalks installed

Q8 What age group do you belong to?

56 - 60

Q9 Please provide your contact information (Optional)

Name

Email Address

#4

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, March 23, 2019 4:58:47 PM
Last Modified:	Saturday, March 23, 2019 5:00:00 PM
Time Spent:	00:01:13
IP Address:	47.28.49.5

Page 1: About the Study

Q1 Which option best describes you:

Respondent skipped this question

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

12:00 PM - 2:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

People Driving Under the Influence of Alcohol or Drugs

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Respondent skipped this question

Q7 Please specify the type of improvement you would like to see.

Respondent skipped this question

Q8 What age group do you belong to?

21 - 25

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#5

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Wednesday, April 24, 2019 9:26:15 AM
Last Modified:	Wednesday, April 24, 2019 9:41:35 AM
Time Spent:	00:15:20
IP Address:	68.185.2.162

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

12:00 PM - 2:00 PM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Other (please specify):

high volume of traffic in residential through roads/streets

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

I live on Fred Haight Drive, which has become a high speed through road for non-commercial and commercial traffic. There are several residences near the Wilson/Fred Haight intersection. A three way stop at that intersection would significantly reduce the speeding and increase safety.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Fred Haight Drive/Wilson Lane intersection**
Location 2	**Wonder Stump Road**
Location 3	**Parkway**

Q7 Please specify the type of improvement you would like to see.

Location 1. Three way stop at Fred Haight/Wilson intersection. Location 2. Road widening and better visibility. Location 3. Reduced maximum speed.

Q8 What age group do you belong to?

46 - 50

Q9 Please provide your contact information (Optional)

Name

Email Address

#6

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Friday, April 26, 2019 3:08:21 PM
Last Modified:	Friday, April 26, 2019 3:14:19 PM
Time Spent:	00:05:58
IP Address:	24.216.248.146

Page 1: About the Study

Q1 Which option best describes you:

I work in the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Other (please specify):

People not getting over when they are turning

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

It clogs up the roadway especially on 101 south, people turning into the Harbor and onto South Beach. They all stop in the middle of the road and then turn. If they all got over and then turned it would not stop the flow of traffic.

Q6 What are the top three locations you would like to see improvements?

Location 1	**101 South**
Location 2	**Front Street**

Q7 Please specify the type of improvement you would like to see.

Maybe 101 South could use street signs letting people know they need to merge over then turn.

Q8 What age group do you belong to?

**26 -
30**

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#7

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Wednesday, May 01, 2019 2:20:59 PM
Last Modified:	Wednesday, May 01, 2019 2:35:56 PM
Time Spent:	00:14:57
IP Address:	68.185.2.162

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the   , County/City

I work in the   , County/City

I commute through the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine

Business or Work

Drive

Bike

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

4:00 AM - 6:00 AM,

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Inadequate Crosswalks,

Running Stop Sign,

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

through the short daylight hours active living is diminished by absent 4-8 pm lighting,absent sidewalks,limited bike lanes,crosswalks w/o lighting,we need to encourage active living by creating safe wet and dry weather access. also the extreme crown to streets and absent bike lanes are clear deterrents.we should all Yield to Active Living

---

Q6 What are the top three locations you would like to see improvements?

Location 1	**Safe routes to schools and wellness sites**
Location 2	**A st,9th,**
Location 3	**All crosswalks**

Q7 Please specify the type of improvement you would like to see.

Crosswalk lighting effective in darkness with rain motion and solar , reducing crown in bike lanes,requiring obstructed work zones to have flaggers,

---

Q8 What age group do you belong to? **56 - 60**

Q9 Please provide your contact information (Optional)

Name

Email Address

#8

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Wednesday, May 01, 2019 4:22:04 PM
Last Modified:	Wednesday, May 01, 2019 4:33:42 PM
Time Spent:	00:11:38
IP Address:	68.185.2.189

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive, Walk**
Business or Work	**Drive, Walk**
Everyday Errands	**Drive, Walk**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

People Driving Under the Influence of Alcohol or Drugs ,

Lacking Handicap Infrastructure

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Speeding on Pebble Beach Drive combined with inadequate sidewalks and room for pedestrians.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Pebble Beach Drive**
Location 2	**Parkway Drive**
Location 3	**Pine Grove and Redwood Elementary School zones**

Q7 Please specify the type of improvement you would like to see.

Better pedestrian paths, enforcement.

Q8 What age group do you belong to?

**51 -
55**

Q9 Please provide your contact information (Optional)

Name

Email Address

#9

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Thursday, May 02, 2019 12:36:32 PM
Last Modified:	Thursday, May 02, 2019 12:54:02 PM
Time Spent:	00:17:30
IP Address:	68.185.2.162

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the   , County/City

I work in the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

Inadequate Crosswalks,

Other (please specify):

Inadequate or no striping. Directional arrows on roadway at stop lights. Site distance issues at intersections.

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Roadway at Cooper and Hwy 101, going into Starbucks and Home Depot is a mess. People rear ended or almost rear ended turning into Starbucks. Solid white line going into Home Depot. Opposite side of the intersection, at CVS and the Fairgrounds, there is no directional arrows on the ground. Both lanes can go straight at the same time and have to quickly merge over because of the entrance to Home Depot/Starbucks. There are several intersections that have sight distance issues. When pulling out of Walmart onto Summer Lane, people park there cars on the side of Summer Lane and you can't see if people are coming without being in the line of traffic.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Cooper and Meridian needs better crosswalks due to school children crossing the roadway.**
Location 2	**Cooper and Hwy 101 Intersection**
Location 3	**Site distance issues on Summer Lane pulling out of Walmart and other various locations throughout the City and County have issues with sight issues.**

Q7 Please specify the type of improvement you would like to see.

More of the flashing cross walks is areas surrounding the schools. Better signage and lighting on roadways.

Q8 What age group do you belong to?

36 - 40

Q9 Please provide your contact information (Optional)

Name

Email Address

#10

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 1:05:07 PM
Last Modified:	Saturday, May 04, 2019 1:10:56 PM
Time Spent:	00:05:49
IP Address:	47.25.210.3

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the   , County/City

I work in the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive, Bike**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

Other (please specify):

lack of Bike lanes on county roads

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Need bike lanes on alder rd and the surrounding community

Q6 What are the top three locations you would like to see improvements?

Location 1	**Alder rd**
Location 2	**Lakeview dr**
Location 3	**Railroad ave**

Q7 Please specify the type of improvement you would like to see.

Bike lanes/widen road

Q8 What age group do you belong to?   **31 - 35**

Q9 Please provide your contact information (Optional)

Name

Email Address

#11

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 1:50:49 PM
Last Modified:	Saturday, May 04, 2019 1:55:26 PM
Time Spent:	00:04:37
IP Address:	47.28.22.81

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

10:00 AM - 12:00 PM,

2:00 PM - 4:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Running Stop Sign,

Other (please specify):

Pedestrians not crossing safely and bicycles

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Location 1	**Front Street**

Q7 Please specify the type of improvement you would like to see.

Pot hole....

Q8 What age group do you belong to?

Over 65

Q9 Please provide your contact information (Optional)   **Respondent skipped this question**

#12

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 2:01:49 PM
Last Modified:	Saturday, May 04, 2019 2:07:05 PM
Time Spent:	00:05:16
IP Address:	47.28.22.86

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Inadequate Crosswalks,

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Like to see the county add sidewalks and street lights

Q6 What are the top three locations you would like to see improvements?

Location 1	**Front street**
Location 2	**Last chance on 101**

Q7 Please specify the type of improvement you would like to see.

Front street fixed so it's no an embarrassment to our town

Q8 What age group do you belong to?

**26 -
30**

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#13

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 2:14:31 PM
Last Modified:	Saturday, May 04, 2019 2:18:27 PM
Time Spent:	00:03:56
IP Address:	208.54.85.142

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Crosswalks,

Running Red Lights,

People Driving Under the Influence of Alcohol or Drugs

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Location 1	**South Beach**
Location 2	**Pelican Bay Visitors**
Location 3	**Bums by Safeway**

Q7 Please specify the type of improvement you would like to see.

Law Enforcement

Q8 What age group do you belong to?

41 -
45

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#14

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 2:24:25 PM
Last Modified:	Saturday, May 04, 2019 2:29:09 PM
Time Spent:	00:04:44
IP Address:	166.181.254.183

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

10:00 AM - 12:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Location 1	**Front street road needs re paved**
Location 2	**More street lights**
Location 3	**Side walks**

Q7 Please specify the type of improvement you would like to see.

Respondent skipped this question

Q8 What age group do you belong to?

26 - 30

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#15

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 2:24:58 PM
Last Modified:	Saturday, May 04, 2019 2:31:49 PM
Time Spent:	00:06:51
IP Address:	47.28.26.250

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

10:00 AM - 12:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Other (please specify):

Lack of safe areas to pull over if car trouble on HWY 199 from Crescent City to Gasquet. If someone breaks down it is very dangerous!!!

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Dangers of driving HWY 199

Q6 What are the top three locations you would like to see improvements?

Location 1
HWY 199 from Crescent City going to gasquet

Q7 Please specify the type of improvement you would like to see.

Safe side of road to pull over on HWY 199.

Q8 What age group do you belong to?

51 - 55

Q9 Please provide your contact information (Optional)

Name

Email Address

#16

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 2:30:24 PM
Last Modified:	Saturday, May 04, 2019 2:41:38 PM
Time Spent:	00:11:14
IP Address:	50.39.20.235

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM,

8:00 PM - 10:00 PM,

10:00 PM - 12:00AM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Inadequate Crosswalks,

People Driving Under the Influence of Alcohol or   , Drugs

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

n/a

Q6 What are the top three locations you would like to see improvements?

Location 1	**Pedestrian crosswalks around Safeway - cars often don't stop**
Location 2	**Curve at blind 3-way junction of Terwer Riffle & Starwein Rd. needs a 3-way stop. Currently has 1 stop and a yield.**
Location 3	**Tourists going to Tour Thru Tree across from Log Cabin Diner in Klamath (near Hwy 169) often block the entire road - come to a total stop in the road -and there is a blind curve coming from the east without adequate time to stop when going the speed limit. This needs signage telling tourists to not block the road. No kidding.**

Q7 Please specify the type of improvement you would like to see.

See #6

Q8 What age group do you belong to?   **51 - 55**

Q9 Please provide your contact information (Optional)

Name

Email Address

#17

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 3:18:51 PM
Last Modified:	Saturday, May 04, 2019 3:22:15 PM
Time Spent:	00:03:24
IP Address:	47.25.218.73

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive, Walk, Bike**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Running Stop Sign,

People Driving Under the Influence of Alcohol or Drugs

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Respondent skipped this question

Q7 Please specify the type of improvement you would like to see.

Respondent skipped this question

Q8 What age group do you belong to?

56 - 60

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#18

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 4:53:10 PM
Last Modified:	Saturday, May 04, 2019 5:00:22 PM
Time Spent:	00:07:12
IP Address:	131.150.121.156

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the   , County/City

I am a business owner in the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

12:00 PM - 2:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

Sharp Curve on   , Roadways

Other (please specify):
hazards such as trees growing on the edge of roadway and other obstacles that block your line of sight

---

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Speeds are too high on some streets with poor visibility or other factors. Elk Valley Cross rd is a good example. 45 mph with a school, lots of curves and house close to the street line as well as Florence Keller Park.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Elk Valley Cross Rd. and intersection at 101**
Location 2	**S Curve**
Location 3	**intersection at Elk Valley Rd and 101**

Q7 Please specify the type of improvement you would like to see.

Slower speed limits, controlled turns to and from 101, better walkway/sidewalks, more clearly marked turn lanes and directions

Q8 What age group do you belong to?   **Over 65**

Q9 Please provide your contact information (Optional)

Name

Email Address

#19

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 6:23:53 PM
Last Modified:	Saturday, May 04, 2019 6:24:51 PM
Time Spent:	00:00:58
IP Address:	69.110.1.70

Page 1: About the Study

Q1 Which option best describes you: **I commute through the County/City**

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Crosswalks,

Running Stop Sign,

People Driving Under the Influence of Alcohol or Drugs

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)   **Respondent skipped this question**

Q6 What are the top three locations you would like to see improvements?   **Respondent skipped this question**

Q7 Please specify the type of improvement you would like to see.   **Respondent skipped this question**

Q8 What age group do you belong to?

**Over
65**

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#20

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Saturday, May 04, 2019 8:37:57 PM
Last Modified:	Saturday, May 04, 2019 8:40:59 PM
Time Spent:	00:03:02
IP Address:	47.28.27.182

Page 1: About the Study

Q1 Which option best describes you:

**I am a resident of the   ,
County/City**

**I work in the
County/City**

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

2:00 PM - 4:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

**Sharp Curve on   ,
Roadways**

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Location 1	**Hwy 101**
Location 2	**Hwy 199**
Location 3	**Hwy 197**

Q7 Please specify the type of improvement you would like to see.

Guard rails on 199 and 197, 101 needs to be moved off the cliff

Q8 What age group do you belong to?

36 - 40

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#21

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 12:46:03 AM
Last Modified:	Sunday, May 05, 2019 12:48:04 AM
Time Spent:	00:02:01
IP Address:	47.28.27.173

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Running Red Lights,

Running Stop Sign,

People Driving Under the Influence of Alcohol or Drugs

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Respondent skipped this question

Q7 Please specify the type of improvement you would like to see.

Respondent skipped this question

Q8 What age group do you belong to?   **Over 65**

Q9 Please provide your contact information (Optional)   **Respondent skipped this question**

#22

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 12:59:44 AM
Last Modified:	Sunday, May 05, 2019 1:05:52 AM
Time Spent:	00:06:08
IP Address:	47.28.22.86

Page 1: About the Study

Q1 Which option best describes you:

**I am a resident of the   ,
County/City**

**I commute through the
County/City**

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Inadequate Sidewalks,

Running Stop Sign,

Other (please specify):

The huge holes on front street. People speeding around th S curve just to pass and cut in front of us.

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Sidewalks on Humboldt rd. There are brand new sidewalks that lead nowhere and it would be nice to take a safe walk.

Q6 What are the top three locations you would like to see improvements?

Location 1   **Front street**

Location 2   **Front street**

Location 3   **Front street**

Q7 Please specify the type of improvement you would like to see.

The road needs to be redone completely. Putting patches on the holes is only good as a temporary fix. Do it right the first time and it won't have to keep getting patched.

Q8 What age group do you belong to?   **26 -
30**

Q9 Please provide your contact information (Optional)   **Respondent skipped this question**

#23

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 6:35:42 AM
Last Modified:	Sunday, May 05, 2019 6:43:55 AM
Time Spent:	00:08:13
IP Address:	47.28.57.34

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Streets are too Dark,

Lacking Handicap Infrastructure,

Other (please
specify):
Many roads need repair.

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Last Chance Grade needs to be changed to a safer route. I sometimes have to travel for medical care and refuse to go over the last Chance Grade. It is too dangerous.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Last Chance Grade.**
Location 2	**Front Street Crescent City, CA**
Location 3	**All roads needs repair.**

---

44 / 79

Q7 Please specify the type of improvement you would like to see.

Close Last Chance Grade, reroute to a safe place.

Q8 What age group do you belong to?

**Over
65**

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#24

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 7:34:42 AM
Last Modified:	Sunday, May 05, 2019 7:40:10 AM
Time Spent:	00:05:28
IP Address:	47.25.211.211

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

12:00 PM - 2:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Sharp Curve on   **,**
Roadways

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

A

Q6 What are the top three locations you would like to see improvements?

Location 1	**Last chance**
Location 2	**Pebble Beach**
Location 3	**Tell blvd**

Q7 Please specify the type of improvement you would like to see.

Fix it

Q8 What age group do you belong to?

36 - 40

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#25

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 9:26:43 AM
Last Modified:	Sunday, May 05, 2019 9:30:26 AM
Time Spent:	00:03:43
IP Address:	47.28.54.133

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City ,

I commute through the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive, Walk**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Crosswalks,

Running Red Lights,

Ineffective Pedestrian Signals ,

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Often I am unable to see pedestrians until my headlights shine on their feet, and then must swerve to avoid them. This is in areas like Howland Hill, and even some spots on the high way.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Howland Hill**
Location 2	**Northcrest**
Location 3	**Pebble Beach Drive**

Q7 Please specify the type of improvement you would like to see.

Safer crosswalks, street lights

Q8 What age group do you belong to?

16 - 20

Q9 Please provide your contact information (Optional)

Name

#26

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 11:13:50 AM
Last Modified:	Sunday, May 05, 2019 11:21:05 AM
Time Spent:	00:07:15
IP Address:	131.150.121.166

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

12:00 PM - 2:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Elk Valley Rd is really dark at night, there is barely any street lights, no cross walks for pedestrians, and a lot of foot traffic. I constantly find myself worrying about someone walking into the road way and me hitting them due to poor lighting.
On state street, the speed limit should be 15 mph due to all of the unmarked intersection, at least that's what the law states. However we have people constantly driving up and down state st speeding, I believe we need to post a speed limit sign and enforce it.

Q6 What are the top three locations you would like to see improvements?

Location 1	**Elk Valley Rd**
Location 2	**State St**

Q7 Please specify the type of improvement you would like to see.

I would like more lights and maybe some cross walks on Elk Valley Rd, if we had a crosswalk like the one on Washington it'll alert drivers at night with the lights. I would like a speed limit sign posted on State St.

Q8 What age group do you belong to?   **21 - 25**

Q9 Please provide your contact information (Optional)

Name

Email Address

#27

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 11:55:23 AM
Last Modified:	Sunday, May 05, 2019 12:05:41 PM
Time Spent:	00:10:18
IP Address:	66.191.17.80

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine   **Drive**

Business or Work   **Drive**

Everyday Errands   **Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

People Driving Under the Influence of Alcohol or Drugs ,

Other (please specify):

Too narrow roadways, specifically US101 from 199 to the OR border

---

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

I see many cars & trucks not maintaining a lane leading me to believe they are under the influence. Speeding and/or tailgating is also a concern.

Q6 What are the top three locations you would like to see improvements?

Location 1   **US 101 from 199 to the OR border**

Location 2   **US 101 south of Crescent City to Last Chance Grade**

Q7 Please specify the type of improvement you would like to see.

Reductions in speed in some areas; road widening and or medians; more signage

Q8 What age group do you belong to?   **51 -**
                                                              55

Q9 Please provide your contact information (Optional)   **Respondent skipped this question**

#28

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 3:27:04 PM
Last Modified:	Sunday, May 05, 2019 3:39:13 PM
Time Spent:	00:12:09
IP Address:	47.28.28.160

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Other (please specify):

poorly designed intersections. would like to see more use of the downtown so less driving is needed. that increases safety becaues we, then, arent in our cars

---

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

the multiple intersections at 199 with elk valley crossroad, parkway, etc feel dangerous. as well as elk valley xroad and 101. yikes. that stuff feels like some need to be cut off and the remainders redesigned with ingress/egress lanes.

downtown has become a ghost town. it would be nice to see agrocery market down there as an anchor for other businesses as well as easier independent access for the senior residents in the surf hotel.

Q6 What are the top three locations you would like to see improvements?

Location 1   **beginning of 199 at 101**

Location 2   **downtown**

Q7 Please specify the type of improvement you would like to see.

if downtown anchors were provided, more people would use the area and we can walk our errands more easily.

also, something i forgot. hiouchi needs a 50 mph speed limit. older people live out there and pull onto the highway with cars that haven't driven so they enter at 40mph and need a few moments to get up to even 55. lowering that speed limit would save a lot of stress and possibly lives.

Q8 What age group do you belong to?   **51 - 55**

Q9 Please provide your contact information (Optional)   **Respondent skipped this question**

#29

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 6:17:57 PM
Last Modified:	Sunday, May 05, 2019 6:22:06 PM
Time Spent:	00:04:09
IP Address:	174.254.128.140

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine

Drive, Walk, Bike

Business or Work

Drive, Walk, Bike

Everyday Errands

Drive, Walk, Bike

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

4:00 AM - 6:00 AM,

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM,

8:00 PM - 10:00 PM,

10:00 PM - 12:00AM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Streets are too Dark,

Other (please specify):

Potholes and deep manholes

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

All along Washington and north rest also elk valley the man holes are so deep they hurt our cars.   Many of the roads cause damage to our cars.   Even the end of Ellen valley is so bumpy and worn that it almost shakes the car in another direction.   Front street is a know issue and even Harding is falling apart.

Q6 What are the top three locations you would like to see improvements?

Location 1 **Inyo-a street**

Location 2 **Washington**

Location 3 **Harding**

Q7 Please specify the type of improvement you would like to see.

Fills the holes.   Save our cars.

Q8 What age group do you belong to? **31 - 35**

Q9 Please provide your contact information (Optional) **Respondent skipped this question**

#30

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 6:20:01 PM
Last Modified:	Sunday, May 05, 2019 6:22:12 PM
Time Spent:	00:02:11
IP Address:	47.28.22.23

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the   , County/City

I work in the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

12:00 PM - 2:00 PM,

10:00 PM -

12:00AM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Location 1	**Bersch tract area**

Q7 Please specify the type of improvement you would like to see.

More street lighting

Q8 What age group do you belong to?

61 - 65

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#31

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 7:14:01 PM
Last Modified:	Sunday, May 05, 2019 7:35:01 PM
Time Spent:	00:21:00
IP Address:	72.173.169.119

Page 1: About the Study

Q1 Which option best describes you:

I am a business owner in the ,
County/City

I work in the ,
County/City

I commute through the
County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive, Walk**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Inadequate Crosswalks,

Running Stop Sign,

People Driving Under the Influence of Alcohol or   , Drugs

Ineffective Pedestrian   , Signals

Lacking Handicap Infrastructure,

Other (please specify):

And then there is the elk or cows in the roadway

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Drag racing down streets in residential neighborhoods like Ocean-Bertsch subdivision at night. Need to have more stop lights as traffic increases especially off of 101 so locals do not sit at stop sign waiting and waiting for traffic to clear. Very little accommodations for disabled except for new sidewalk to nowhere on Humboldt Ave roundabout. Need designated bike lanes especially near schools, in Marina area, and downtown business area.

Q6 What are the top three locations you would like to see improvements?

Location 1	**flooding on Sand Mine road**
Location 2	**more signage for tourists visiting area especially for visitor's center, scenic routes, hospital, airport, and public transit**
Location 3	**light on Front Street instead of stop sign by mall**

Q7 Please specify the type of improvement you would like to see.

Respondent skipped this question

Q8 What age group do you belong to?

Over 65

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#32

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Sunday, May 05, 2019 8:48:22 PM
Last Modified:	Sunday, May 05, 2019 8:54:46 PM
Time Spent:	00:06:24
IP Address:	47.28.22.127

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM,

8:00 PM - 10:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Running Stop Sign,

People Driving Under the Influence of Alcohol or ,
Drugs

Road Signs are not Clear

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

There needs to be a stop sign from parkway into Washington instead of a dang yield sign which the traffic always seems to ignore I have almost been hit at this location at least 11 times in the past month. This will cause a major accident at some point as they always speed up to race around this section to BEAT the car with right away

Q6 What are the top three locations you would like to see improvements?

Location 1	**Parkway and Washington**
Location 2	**Front street**
Location 3	**101 south in town with over grown bushes**

Q7 Please specify the type of improvement you would like to see.

Yield sign replaced with stop sign at parkway and Washington. Over grown bushes along 101 south

Q8 What age group do you belong to? **51 - 55**

Q9 Please provide your contact information (Optional)

Name

Email Address

#33

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Monday, May 06, 2019 7:59:20 AM
Last Modified:	Monday, May 06, 2019 8:02:07 AM
Time Spent:	00:02:47
IP Address:	47.25.210.175

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive, Bike**
Business or Work	**Drive, Bike**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM,

8:00 PM - 10:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Other (please specify):

Huge pot holes everywhere

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Especially front street, is covered in potholes and really never fixed

Q6 What are the top three locations you would like to see improvements?

Location 1	**Front street**
Location 2	**8th street**
Location 3	**Elk valley rd**

Q7 Please specify the type of improvement you would like to see.

Roadwork, potholes fixed

Q8 What age group do you belong to?   **36 - 40**

Q9 Please provide your contact information (Optional)

Name

Email Address

#34

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Monday, May 06, 2019 9:17:47 AM
Last Modified:	Monday, May 06, 2019 9:35:42 AM
Time Spent:	00:17:55
IP Address:	68.185.2.162

Page 1: About the Study

Q1 Which option best describes you:

**I am a resident of the   ,
County/City**

**I work in the
County/City**

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

4:00 AM - 6:00 AM,

10:00 AM - 12:00 PM,

2:00 PM - 4:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding,

Other (please specify):

Congested intersections without control.

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

The intersection of Wilson Ave. at Highway 101 N. is very dangerous. It is hard to pull out from/on to Wilson Ave. with all the cross traffic and then traffic is also coming and going from/to Burtschell Ave at an angle into the same intersection. There are also pedestrians crossing Wilson at the same time.

Q6 What are the top three locations you would like to see improvements?

Location 1   **Wilson Ave./Burtschell St. at Hwy 101 North**

Q7 Please specify the type of improvement you would like to see.

Some kind of control

Q8 What age group do you belong to?   **56 -**
                                                            60

Q9 Please provide your contact information (Optional)

Name

Email Address

#35

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Monday, May 06, 2019 8:54:17 PM
Last Modified:	Monday, May 06, 2019 9:26:06 PM
Time Spent:	00:31:49
IP Address:	131.150.121.160

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine   **Drive, Walk**

Everyday Errands   **Drive, Walk**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

People Driving Under the Influence of Alcohol or Drugs ,

Streets are too Dark,

Other (please specify):

13 years now, Cushing Ave & Darby has gravel roads which keep getting worse & worse, have MAJOR potholes &

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

There are 5 homes who get road base (out of our own pockets) with an 80 plus man who usually starts it & the rest of certain neighbors pay 2-3 times a year! The other part of Cushing Ave. is paved but there are 3 plus "Trailers" in the 2300 addresses that are RUN DOWN, trashy, piles of garbage, broken down motor home with NO tires, people who DON'T belong there, walking & riding bikes all day & night, plus numerous cars coming & going ALL hours! The streets have ALOT of potholes & none of them help with the cost. We have filed complaints but....... nothing seems to happen from the county nor the Sheriff's.

Q6 What are the top three locations you would like to see improvements?

Location 1	**ALL of Cushing Avenue**
Location 2	**100 Darby Street**
Location 3	**Dodane**

Q7 Please specify the type of improvement you would like to see.

All of our roads,   Shrubbery blocking a lot of the street when entering Cushing,   Cars parked in the street, not enough room for Postal people, County employees, ie: water/SewerDepartment, Fire Department, Delivery vechicles

Q8 What age group do you belong to?

61 - 65

Q9 Please provide your contact information (Optional)

Name

Email Address

#36

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Tuesday, May 07, 2019 6:20:33 AM
Last Modified:	Tuesday, May 07, 2019 6:23:00 AM
Time Spent:	00:02:27
IP Address:	47.28.27.228

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

12:00 PM - 2:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Cars Speeding

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Respondent skipped this question

Q6 What are the top three locations you would like to see improvements?

Respondent skipped this question

Q7 Please specify the type of improvement you would like to see.

Respondent skipped this question

Q8 What age group do you belong to?

51 - 55

Q9 Please provide your contact information (Optional)   **Respondent skipped this question**

#37

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Wednesday, May 08, 2019 12:13:54 PM
Last Modified:	Wednesday, May 08, 2019 12:29:15 PM
Time Spent:	00:15:21
IP Address:	68.185.2.162

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

6:00 AM - 8:00 AM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM,

6:00 PM - 8:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

Streets are too Dark,

Other (please specify):

redwood school during afternoon pick ups and cars parking in walking space so children are walking in the busy traffic

---

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

During winter months the street lighting for pedestrians in the city is inadequate especially for people walking to the family resource center or to work from their homes. Second area of concern is in the fort dick area. Many people walk kings valley rd to get to the market, there is no space for them to walk on the side of the road and there have been a few close calls with driver vs pedestrian. Third is the redwood school and parents parking on the walk paths to pick up their kids this leaves many children and adults walking in the road with tons of traffic

Q6 What are the top three locations you would like to see improvements?

Location 1	**Redwood school**
Location 2	**main Walking paths in town**
Location 3	**please create a walking path for Kings Valley Road to Fort Dick Market**

Q7 Please specify the type of improvement you would like to see.

lights needs to work. curb could be put in at redwood school so cars can't park on walkway. walking path created on kings valley rd from hwy to fortdick market

Q8 What age group do you belong to?

36 - 40

Q9 Please provide your contact information (Optional)

Respondent skipped this question

#38

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Thursday, May 09, 2019 2:50:00 PM
Last Modified:	Thursday, May 09, 2019 4:35:06 PM
Time Spent:	01:45:06
IP Address:	68.118.56.18

Page 1: About the Study

Q1 Which option best describes you:

**I am a resident of the   ,
County/City**

**I am a business owner in the
County/City**

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the
County/City? (Please select all that apply)

Shop or Dine	**Drive**
Business or Work	**Drive**
Everyday Errands	**Drive**

Q3 Which time periods are you most likely traveling on
the roads during the weekdays? (Please select all that
apply)

6:00 AM - 8:00 AM,

8:00 AM - 10:00 AM,

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please
select all that apply)

Cars Speeding,

Inadequate Sidewalks,

Inadequate Crosswalks,

Running Red Lights,

Running Stop Sign

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Elk Valley Cross Road has Sunset High School located there and the traffic seems to ignore the speed and School Sign. No sidewalks.
A catastrophe waiting to happen!!

Q6 What are the top three locations you would like to see improvements?

Location 1   **Elk valley Cross Road**

Location 2   **All cross roads between L & M (101) N & S**

Location 3   **Front Street**

Q7 Please specify the type of improvement you would like to see.

Traffic Control and pavement improvement

Q8 What age group do you belong to?   **Over 65**

Q9 Please provide your contact information (Optional)

Name

Email Address

#39

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Monday, May 13, 2019 11:59:37 AM
Last Modified:	Monday, May 13, 2019 12:03:48 PM
Time Spent:	00:04:11
IP Address:	174.254.133.142

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine

Drive, Bus

Business or Work

Drive

Everyday Errands

Drive, Walk, Bike, Bus

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

10:00 AM - 12:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Not sufficient enough lighting in some high foot traffic areas

---

Q6 What are the top three locations you would like to see improvements?

Location 1

Elk valley

Location 2

Lake earl

Location 3

9th st

Q7 Please specify the type of improvement you would like to see.

Lighting

Q8 What age group do you belong to?

**46 -
50**

Q9 Please provide your contact information (Optional)

Name

Email Address

#40

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Thursday, May 16, 2019 1:58:15 PM
Last Modified:	Thursday, May 16, 2019 2:09:20 PM
Time Spent:	00:11:05
IP Address:	47.28.55.122

Page 1: About the Study

Q1 Which option best describes you:

I am a resident of the County/City

Q2 Which mode(s) of transportation (Walk/Bike/Drive/Transit) do you most often use for trips in and around the County/City? (Please select all that apply)

Shop or Dine

Walk, Bus

Everyday Errands

Drive, Walk

Q3 Which time periods are you most likely traveling on the roads during the weekdays? (Please select all that apply)

10:00 AM - 12:00 PM,

12:00 PM - 2:00 PM,

2:00 PM - 4:00 PM,

4:00 PM - 6:00 PM

Q4 What are your primary safety concerns? (Please select all that apply)

Inadequate Sidewalks,

**Ineffective Pedestrian   ,
Signals**

**Sharp Curve on   ,
Roadways**

Streets are too Dark

Q5 Please elaborate on the concerns you selected from the previous question. (Optional)

Some crosswalks have a flashing signal light, but traffic often fails to stop. Either they don't see the light or they don't understand it. ??

Q6 What are the top three locations you would like to see improvements?

Location 1

Front of Sutter Coast Hospital, 800 Washington

Location 2

Washington Street overpass on Hwy 101 and Parkway Drive

Location 3

E. Cooper Ave at J Street confusing intersection

Q7 Please specify the type of improvement you would like to see.

Better markings, maybe signal lights, less confusion. Vehicles go through too fast.

Q8 What age group do you belong to?

Over 65

Q9 Please provide your contact information (Optional)

Respondent skipped this question

APPENDIX C – COUNTERMEASURE TOOLKIT RESULTS

TJKM VISION THAT MOVES YOUR COMMUNITY

Del Norte Signalized Intersection Countermeasure Toolkit Results:

PRIMARY ROAD	SECONDARY ROAD	S1	S2	S3	S4	S5	S6	S7	S8	S9	S11	S12	S13	S17	S18	S19	S20	S21	S22	S23
ROWDY CREEK RD	10TH ST	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
ELK VALLEY RD	IOWA ST	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WASHINGTON BL	NORTHCREST DR	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No
LAKE EARL DRIVE	YOUNKERS ROAD	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
EL DORADO ST	COOPER AVE	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
HUMBOLDT ROAD	SANDMINE ROAD	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
NORTHCREST DR	HARDING AVE	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No
LAKE EARL DRIVE	PELICAN BAY STATE PRISON	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
ELK VALLEY ROAD	SOUTH BEND AVENUE	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
RAILROAD AVE.	FERN LANE	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
CHILDS AVE	EL DORADO ST	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
LOWER LAKE ROAD	SILVA ROAD	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Del Norte Unsignalized Intersection Countermeasure Toolkit Results:

PRIMARY ROAD	SECONDARY ROAD	NS1	NS2	NS3	NS4A	NS4B	NS5	NS6	NS7	NS8	NS9	NS10	NS11	NS12	NS13	NS14	NS15	NS16	NS17	NS18	NS19	NS20
ROWDY CREEK RD	10TH ST	No	No	No	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	No
ELK VALLEY RD	IOWA ST	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	No
WASHINGTON BL	NORTHCREST DR	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
LAKE EARL DRIVE	YOUNKERS ROAD	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	No
EL DORADO ST	COOPER AVE	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
HUMBOLDT ROAD	SANDMINE ROAD	Yes	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes
NORTHCREST DR	HARDING AVE	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
LAKE EARL DRIVE	PELICAN BAY STATE PRISON	No	No	No	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes
ELK VALLEY ROAD	SOUTH BEND AVENUE	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No
RAILROAD AVE.	FERN LANE	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	No
CHILDS AVE	EL DORADO ST	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
LOWER LAKE ROAD	SILVA ROAD	Yes	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes

Del Norte Roadway Countermeasure Toolkit Results:

PRIMARY ROAD	SECONDARY ROAD	DIS	DIR	R1	R2	R3	R4	R5	R6	R7	R9	R10	R11	R13	R14	R15	R16	R17	R18	R19	R20	R21
ALDER CAMP RD	KLAMATH BEACH RD	1056	S	No	No	No	Yes	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	No	No
KLAMATH BL	EHLERS WY	1056	S	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes
WASHINGTON BL	RIVERSIDE RD	1056	W	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	No
BLAKE RD	TERWER RIFFLE RD	535	E	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No
NORTHCREST DR	PINE GROVE RD	285	S	No	No	No	No	No	No	No	No	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Yes
KINGS VALLEY ROAD	SOUTH KRAFT ROAD	340	S	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes
LOWER LAKE RD	LAKE EARL DR	1056	W	No	No	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No
SUMMER LANE	WASHINGTON BOULEVARD	322	N	Yes	No	No	No	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No
FRED HAIGHT DRIVE	101	1584	W	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	No
SARINA ROAD	FIRST STREET	630	W	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No
ELK VALLEY ROAD	HOWLAND HILL ROAD	500	W	No	No	No	No	No	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No
LOW DIVIDE ROAD	TREY LANE	8448	W	No	No	No	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LOW DIVIDE RD	TREY LANE	7920	E	No	No	No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WASHINGTON BLVD	RIVERSIDE ST	1584	W	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	Yes
PARKWAY DRIVE	WASHINGTON BOULEVARD	305	S	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No	No	No

PRIMARY ROAD	SECONDARY ROAD	DIS	DIR	R22	R23	R24	R26	R27	R28	R29	R30	R31	R32	R33	R34	R35	R36	R37	R38	R39	R40	R42
ALDER CAMP RD	KLAMATH BEACH RD	1056	S	Yes	No	No	Yes	No	Yes	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	No
KLAMATH BL	EHLERS WY	1056	S	No	No	No	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No	No	No	No	No
WASHINGTON BL	RIVERSIDE RD	1056	W	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
BLAKE RD	TERWER RIFFLE RD	535	E	No	No	No	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No	No	No	No	No
NORTHCREST DR	PINE GROVE RD	285	S	No	No	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No
KINGS VALLEY ROAD	SOUTH KRAFT ROAD	340	S	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
LOWER LAKE RD	LAKE EARL DR	1056	W	Yes	No	No	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Yes	No	No	No	No	No	No
SUMMER LANE	WASHINGTON BOULEVARD	322	N	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes
FRED HAIGHT DRIVE	101	1584	W	Yes	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
SARINA ROAD	FIRST STREET	630	W	Yes	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
ELK VALLEY ROAD	HOWLAND HILL ROAD	500	W	No	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes
LOW DIVIDE ROAD	TREY LANE	8448	W	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	No
LOW DIVIDE RD	TREY LANE	7920	E	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	No
WASHINGTON BLVD	RIVERSIDE ST	1584	W	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
PARKWAY DRIVE	WASHINGTON BOULEVARD	305	S	No	Yes	No	Yes	No	No	No	No	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes

TJKM VISION THAT MOVES YOUR COMMUNITY

Crescent City Signalized Intersection Countermeasure Toolkit Results:

PRIMARY ROAD	SECONDARY ROAD	S1	S2	S3	S4	S5	S6	S7	S8	S9	S11	S12	S13	S17	S18	S19	S20	S21	S22	S23
CHILDS AVE	EL DORADO ST	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
EL DORADO ST	COOPER AVE	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
NORTHCREST DR	HARDING AVE	No	No	Yes	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
WASHINGTON BL	NORTHCREST DR	No	No	Yes	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
ELK VALLEY RD	IOWA ST	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
ELK VALLEY ROAD	SOUTH BEND AVENUE	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Crescent City Unignalized Intersection Countermeasure Toolkit Results:

PRIMARY ROAD	SECONDARY ROAD	NS1	NS2	NS3	NS4A	NS4B	NS5	NS6	NS7	NS8	NS9	NS10	NS11	NS12	NS13	NS14	NS15	NS16	NS17	NS18	NS19	NS20
CHILDS AVE	EL DORADO ST	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	No
EL DORADO ST	COOPER AVE	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	No
NORTHCREST DR	HARDING AVE	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WASHINGTON BL	NORTHCREST DR	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
ELK VALLEY RD	IOWA ST	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No
ELK VALLEY ROAD	SOUTH BEND AVENUE	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No

Crescent City Roadway Countermeasure Toolkit Results:

PRIMARY ROAD	SECONDARY ROAD	DIS	DIR	R1	R2	R3	R4	R5	R6	R7	R9	R10	R11	R13	R14	R15	R16	R17	R18	R19	R20	R21
NORTHCREST DR	PINE GROVE RD	285	S	No	No	No	No	No	No	No	No	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Yes
SUMMER LANE	WASHINGTON BOULEVARD	322	N	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	Yes
ELK VALLEY ROAD	HOWLAND HILL ROAD	500	W	No	No	No	No	No	No	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	No
WASHINGTON BLVD	RIVERSIDE ST	1584	W	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	Yes
PARKWAY DRIVE	WASHINGTON BOULEVARD	305	S	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No	No	No

PRIMARY ROAD	SECONDARY ROAD	DIS	DIR	R22	R23	R24	R26	R27	R28	R29	R30	R31	R32	R33	R34	R35	R36	R37	R38	R39	R40	R42
NORTHCREST DR	PINE GROVE RD	285	S	No	No	Yes	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No	No	No	No	No
SUMMER LANE	WASHINGTON BOULEVARD	322	N	No	Yes	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes
ELK VALLEY ROAD	HOWLAND HILL ROAD	500	W	No	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes
WASHINGTON BLVD	RIVERSIDE ST	1584	W	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
PARKWAY DRIVE	WASHINGTON BOULEVARD	305	S	No	Yes	No	Yes	No	No	No	No	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes

Table 1. Countermeasures for Signalized Intersections

No.	Type	Countermeasure Name	Crash Type	CRF	Expected Life (Years)	Federal Funding Eligibility	Systemic Approach Opportunity?
S1	Lighting	Add intersection lighting (S.I.)	Night	40%	20	100%	Medium
S2	Signal Mod.	Improve signal hardware: lenses, back-plates, mounting, size, and number	All	15%	10	100%	Very High
S3	Signal Mod.	Improve signal timing (coordination, phases, red, yellow, or operation)	All	15%	10	50%	Very High
S4	Signal Mod.	Provide Advanced Dilemma Zone Detection for high speed approaches	All	40%	10	100%	High
S5	Signal Mod.	Install emergency vehicle pre-emption systems	Emergency Vehicle	70%	10	100%	High
S6	Signal Mod.	Provide protected left turn phase (left turn lane already exists)	All	30%	20	100%	High
S7	Signal Mod.	Convert signal to mast arm (from pedestal-mounted)	All	30%	20	100%	Medium
S8	Operation/ Warning	Install raised pavement markers and striping (Through Intersection)	All	10%	10	100%	Very High
S9	Operation/ Warning	Install flashing beacons as advance warning (S.I.)	All	30%	10	100%	Medium
~~S10~~	~~Operation/ Warning~~	~~Install cameras to detect red-light running~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
S11	Operation/ Warning	Improve pavement friction (High Friction Surface Treatments)	All	40%	10	100%	Medium
S12	Geometric Mod.	Install raised median on approaches (S.I.)	All	25%	20	90%	Medium
S13	Geometric Mod.	Create directional median openings to allow (and restrict) left-turns and u-turns (S.I.)	All	50%	20	90%	Medium
~~S14~~	~~Geometric Mod.~~	~~Install right-turn lane (S.I.)~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
~~S15~~	~~Geometric Mod.~~	~~Install left-turn lane (signal has no left-turn phase - before and after)~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
~~S16~~	~~Geometric Mod.~~	~~Install left-turn lane (signal has a left-turn phase - before and after)~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
S17	Geometric Mod.	Install left-turn lane and add turn phase (signal has no left-turn lane or phase before)	All	55%	20	90%	Low
S18	Geometric Mod.	Convert intersection to roundabout (from signal)	All	Varies	20	100%	Low
S19	Ped and Bike	Install pedestrian countdown signal heads	P & B	25%	20	100%	Very High
S20	Ped and Bike	Install pedestrian crossing (S.I.)	P & B	25%	20	100%	High
S21	Ped and Bike	Install advance stop bar before crosswalk (Bicycle Box)	P & B	15%	10	100%	Very High
~~S22~~	~~Ped and Bike~~	~~Install pedestrian overpass/underpass~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
S23	Geometric Mod.	Install pedestrian median fencing on approaches	P & B	35%	20	90%	Low

Struck-through countermeasures are not eligible in the current HSIP call for projects.

Table 2. Countermeasures for Non-Signalized Intersections

No.	Type	Countermeasure Name	Crash Type	CRF	Expected Life (Years)	Federal Funding Eligibility	Systemic Approach Opportunity?
NS1	Lighting	Add intersection lighting (NS.I.)	Night	40%	20	100%	Medium
NS2	Control	Convert to all-way STOP control (from 2-way or Yield control)	All	50%	10	100%	High
NS3	Control	Install signals	All	25%	20	100%	Low
NS4A	Control	Convert intersection to roundabout (from all way stop)	All	Varies	20	100%	Low
NS4B	Control	Convert intersection to roundabout (from stop or yield control on minor road)	All	Varies	20	100%	Low
NS5	Operation/ Warning	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	All	15%	10	100%	Very High
NS6	Operation/ Warning	Upgrade intersection pavement markings (NS.I.)	All	25%	10	100%	Very High
NS7	Operation/ Warning	Install Flashing Beacons at Stop-Controlled Intersections	All	15%	10	100%	High
NS8	Operation/ Warning	Install flashing beacons as advance warning (NS.I.)	All	30%	10	100%	High
NS9	Operation/ Warning	Install transverse rumble strips on approaches	All	20%	10	90%	High
NS10	Operation/ Warning	Improve sight distance to intersection (Clear Sight Triangles)	All	20%	10	90%	High
NS11	Geometric Mod.	Install splitter-islands on the minor road approaches	All	40%	20	90%	Medium
NS12	Geometric Mod.	Install raised median on approaches (NS.I.)	All	25%	20	90%	Medium
NS13	Geometric Mod.	Create directional median openings to allow (and restrict) left-turns and u-turns (NS.I.)	All	50%	20	90%	Medium
NS14	Geometric Mod.	Install right-turn lane (NS.I.)	All	20%	20	90%	Low
NS15	Geometric Mod.	Install left-turn lane (where no left-turn lane exists)	All	35%	20	90%	Low
NS16	Ped and Bike	Install raised medians / refuge islands (NS.I.)	P & B	45%	20	90%	Medium
NS17	Ped and Bike	Install pedestrian crossing at uncontrolled locations (new signs and markings only)	P & B	25%	10	100%	High
NS18	Ped and Bike	Install pedestrian crossing at uncontrolled locations (with enhanced safety features)	P & B	35%	20	100%	Medium
NS19	Ped and Bike	Install pedestrian signal or HAWK	P & B	55%	20	100%	Low
NS20	Operation/ Warning	Improve pavement friction (High Friction Surface Treatments)	All	40%	10	100%	Medium

Struck-through countermeasures are not eligible in the current HSIP call for projects.

Table 3. Countermeasures for Roadways

No.	Type	Countermeasure Name	Crash Type	CRF	Expected Life (Years)	Federal Funding Eligibility	Systemic Approach Opportunity?
R1	Lighting	Add segment lighting	Night	35%	20	100%	Medium
R2	Remove/ Shield Obstacles	Remove or relocate fixed objects outside of Clear Recovery Zone	All	35%	20	90%	High
R3	Remove/ Shield Obstacles	Install Median Barrier	All	25%	20	100%	Medium
R4	Remove/ Shield Obstacles	Install Guardrail	All	25%	20	100%	High
R5	Remove/ Shield Obstacles	Install impact attenuators	All	25%	10	100%	High
R6	Remove/ Shield Obstacles	Flatten side slopes	All	30%	20	90%	Medium
R7	Remove/ Shield Obstacles	Flatten side slopes and remove guardrail	All	40%	20	90%	Medium
~~R8~~	~~Remove/ Shield Obstacles~~	~~Upgrade bridge railing~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
R9	Geometric Mod.	Install raised median	All	25%	20	90%	Medium
R10	Geometric Mod.	Install median (flush)	All	15%	20	90%	Medium
R11	Geometric Mod.	Install acceleration/ deceleration lanes	All	25%	20	90%	Low
~~R12~~	~~Geometric Mod.~~	~~Install climbing lane (where large difference between car and truck speed)~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~Low~~
R13	Geometric Mod.	Widen lane (initially less than 10 ft)	All	25%	20	90%	Medium
R14	Geometric Mod.	Add two-way left-turn lane (without reducing travel lanes)	All	30%	20	90%	Medium
R15	Geometric Mod.	Road Diet (Reduce travel lanes from 4 to 3 and add a two way left-turn and bike lanes)	All	30%	20	90%	Medium
R16	Geometric Mod.	Widen shoulder (paved)	All	30%	20	90%	Medium
R17	Geometric Mod.	Widen shoulder (unpaved)	All	20%	20	90%	Medium
R18	Geometric Mod.	Pave existing shoulder	All	15%	20	90%	Medium
R19	Geometric Mod.	Improve horizontal alignment (flatten curves)	All	50%	20	90%	Low
R20	Geometric Mod.	Flatten crest vertical curve	All	25%	20	90%	Low
R21	Geometric Mod.	Improve horizontal and vertical alignments	All	60%	20	90%	Low
R22	Geometric Mod.	Improve curve superelevation	All	45%	20	90%	Medium
R23	Geometric Mod.	Convert from two-way to one-way traffic	All	35%	20	90%	Medium
R24	Geometric Mod.	Improve pavement friction (High Friction Surface Treatments)	All	40%	10	100%	High

Struck-through countermeasures are not eligible in the current HSIP call for projects.

Table 3. Countermeasures for Roadways (Continued)

No.	Type	Countermeasure Name	Crash Type	CRF	Expected Life (Years)	Federal Funding Eligibility	Systemic Approach Opportunity?
~~R25~~	~~Geometric Mod.~~	~~Provide Tapered Edge for Pavement Edge Drop-off~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
R26	Operation/ Warning	Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)	All	15%	10	100%	Very High
R27	Operation/ Warning	Install chevron signs on horizontal curves	All	40%	10	100%	Very High
R28	Operation/ Warning	Install curve advance warning signs	All	25%	10	100%	Very High
R29	Operation/ Warning	Install curve advance warning signs (flashing beacon)	All	30%	10	100%	High
R30	Operation/ Warning	Install dynamic/variable speed warning signs	All	30%	10	100%	High
R31	Operation/ Warning	Install delineators, reflectors and/or object markers	All	15%	10	100%	Very High
R32	Operation/ Warning	Install edge-lines and centerlines	All	25%	10	100%	Very High
R33	Operation/ Warning	Install no-passing line	All	45%	10	100%	Very High
R34	Operation/ Warning	Install centerline rumble strips/stripes	All	20%	10	100%	High
R35	Operation/ Warning	Install edgeline rumble strips/stripes	All	15%	10	100%	High
R36	Ped and Bike	Install bike lanes	P & B	35%	20	90%	High
R37	Ped and Bike	Install sidewalk/pathway (to avoid walking along roadway)	P & B	80%	20	90%	Medium
R38	Ped & Bike	Install pedestrian crossing (with enhanced safety features)	P & B	30%	10	90%	Medium
R39	Ped and Bike	Install raised pedestrian crossing	P & B	35%	10	90%	Medium
R40	Animal	Install animal fencing	Animal	80%	20	90%	Medium
~~R41~~	~~Truck~~	~~Install truck escape ramp~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
R42	Geometric Mod.	Install pedestrian median fencing on approaches	P & B	35%	20	90%	Low

Struck-through countermeasures are not eligible in the current HSIP call for projects.

APPENDIX D – SSARP IMPLEMENTATION GUIDELINES

submit a joint application through partnership. A maximum of $500,000 of SSARP funds can be requested per joint application.

Additional funds beyond the maximum amount will need justification and approval by the Office of Bridge, Bond, and Safety Programs (OBBSP) in the DLA.

4.1.2 Award Phases

Funds will be awarded in two phases to facilitate outreach with the Strategic Highway Safety Plan (SHSP) Regional Summits. Refer to the Section 1.3, Program Schedule, for dates of award.

4.2 SELECTION PROCESS

If requests exceed available SSARP funding, priority will be given to applications from local agencies that

- Have the highest numbers of fatality and severe injury (F+SI) (based on the most recent / available data from California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS));
- Have the highest crash rates of F+SI per 100 Million Vehicle Miles Traveled (MVMT) ;
- Have never submitted applications in Cycle 5 through Cycle 7 HSIP calls-for-projects; or
- Have submitted applications but have had no projects selected for federal funding in Cycle 5 through Cycle 7 HSIP calls-for-projects.

There are no order or priority associated with the above selection criteria. When necessary, the Local HSIP Advisory Committee may review the priority ranking of the applications and approve for funding.

4.3 APPLICATION AWARD

The OBBSP will post the list of awarded applications on the DLA HSIP website. A notification letter will be sent to the sponsor of each successful application.

5 IMPLEMENTATION

In addition to the applicable provisions of the LAPM, local agencies will need to follow the implementation steps in this section. Any work done prior to the funding allocation is at the cost of the project sponsor and will not be eligible for reimbursement.

1. When ready to proceed with their study, the project sponsor submits the following documents to their DLAE to request an allocation of funds:
    a. A letter of request for SSARP Funding Allocation
    b. Finance Letter
    c. Copy of the SSARP Application
    d. Copy of the award notification letter from Caltrans DLA

    Templates of the above (a) and (b) are available for downloading at the DLA HSIP website.

    As an SSARP project utilizes state funds for a study only and no right-of-way or construction is involved, the allocation will be under Preliminary Engineering (PE) phase. No right-of-way or environmental documents are required for the allocation request.

The amount of state funds requested should not exceed the amount of funds awarded. Additional funds shall not be allocated without the written approval from the OBBSP.

2. The DLAE reviews the allocation request package for consistency with the application, assigns project numbers and Advantage IDs, and forwards the request to the DLA HQ Area Engineer for allocation. An allocation request will be rejected if the scope or request amount does not match the application. Any change to the scope of work needs to be approved by the OBBSP in advance of the allocation.
3. After receipt of a complete request package, the DLA HQ Area Engineer will:
   a. Prepare an allocation letter which will serve as the authorizing document for the project sponsor to begin reimbursable work. A copy of the allocation letter and Finance Letter will be distributed to the project sponsor, DLAE, the OBBSP, and Local Programs Accounting (LPA). Note that any work performed prior to the effective date of the allocation letter is not eligible for reimbursement.
   b. Prepare a Program Supplement Agreement (PSA) and send it to the local agency for execution. If a local agency does not have a "State-only Funds Master Agreement" on file with Caltrans, one will need to be executed in conjunction with the PSA.
4. The project sponsor invoices Caltrans (Refer to LAPM Chapter 5 and Exhibit 5-C). In order for the project to remain active, the project sponsor must submit invoices to Caltrans at least every six (6) months after funds are allocated.
5. The analysis and the SSAR report must be completed within thirty-six (36) months of allocation. The project sponsor must submit the final report (refer to Section 6, Reporting Requirements) to the DLAE. The DLAE reviews and verifies that the report has been completed in accordance with the approved scope and the program guidelines, and then forward a copy of the report to the DLA OBBSP.
6. The project sponsor must submit the Final Invoice (LAPM Exhibit 5-C) and the Final Report of Expenditures (LAPM Exhibit 17-M) to the DLAE within six (6) months of the report completion. The DLAE reviews the submittals for compliance and then forward the package to Local Programs Accounting (LPA) for processing.
7. The LPA and the DLA close out the project.

6   REPORTING REQUIREMENTS

To be eligible for final reimbursement, the SSAR must identify and prioritize future safety projects. If no safety projects are identified, reasons must be documented within the SSAR. The following sections and discussions must also be included in the final report.

6.1   EXECUTIVE SUMMARY

This section should include the applicant's objectives and focus for the SSAR and a brief summary of the major results. Include discussion on what methodologies were used to limit the data analysis and studies to stay within the funding limits. Other high-level discussions may include crash trends, corridors identified, countermeasures considered, conceptual projects identified, benefit-cost ratios for the projects, etc.

Planning And Programming

Include Project in Adopted/ Approved Program
- STIP (TE, etc)
- Federal STIP (FSTIP)

Local Assistance Program Guidelines (LAPG)

Preliminary Engineering Phase

Chapter 2
ROLES AND RESPONSIBILITIES

Chapter 9
Civil Rights/ Disadvantaged Business Enterprises (DBE)
- Project Goals
- Reporting

Chapter 10
Consultant Selection
- Segmenting Work
  Environmental
  Engineering
  Right of Way
  Construction
- Selection Methods
- DBE Participation
- Scope of Work
- Contracts
- A&E Consultant Audits

Right of Way Phase

Construction Phase

Financial Management

Chapter 3
Authorize/Obligate Funds for Preliminary Engineering (Obtain E-76)

Chapter 6
Preliminary Environmental Studies
- PES Form
- Req. Tech Studies
- NEPA Class of Action

Chapter 7
Field Review
- Types
- Attendance
- Field Review Form
- Data Sheets

Chapter 6
Chapter 8
Compliance With Other Environmental Federal Processes and NEPA Tech Studies
- CE, EA, EIS

Chapter 11
Develop Plans, Specifications and Estimate (PS&E)
- Design Stds.
  Chapter 12
- PS&E

Chapter 3 & *LAPG*
Authorized/Obligate & Allocate Funds for Right of Way Acquisition and Utility Relocation (E-76, and if required CTC Vote)

Chapter 13
Right of Way Acquisition

Chapter 14
Specific Authorization For Utility Relocation

Chapter 3 & *LAPG*
Authorize/Obligate Allocate Funds For Construction (E-76, and if required CTC Vote)

Chapter 15
Construct Projects
- Adv & Award
  Chapter 16
- Admin. Construction

Chapter 4 & *LAPG*
Project Agreements
- Master Agreements
- Program Supplements

Chapter 14 - Utility Relocation

Chapter 5
Project Accounting/Invoices
- Progress/Final Invoice Submittal
- Payments
- ICR Audits

Chapter 17
Project Completion
- Project Verification
- Report of Expenditures

Chapter 18
Maintenance Review

Chapter 19
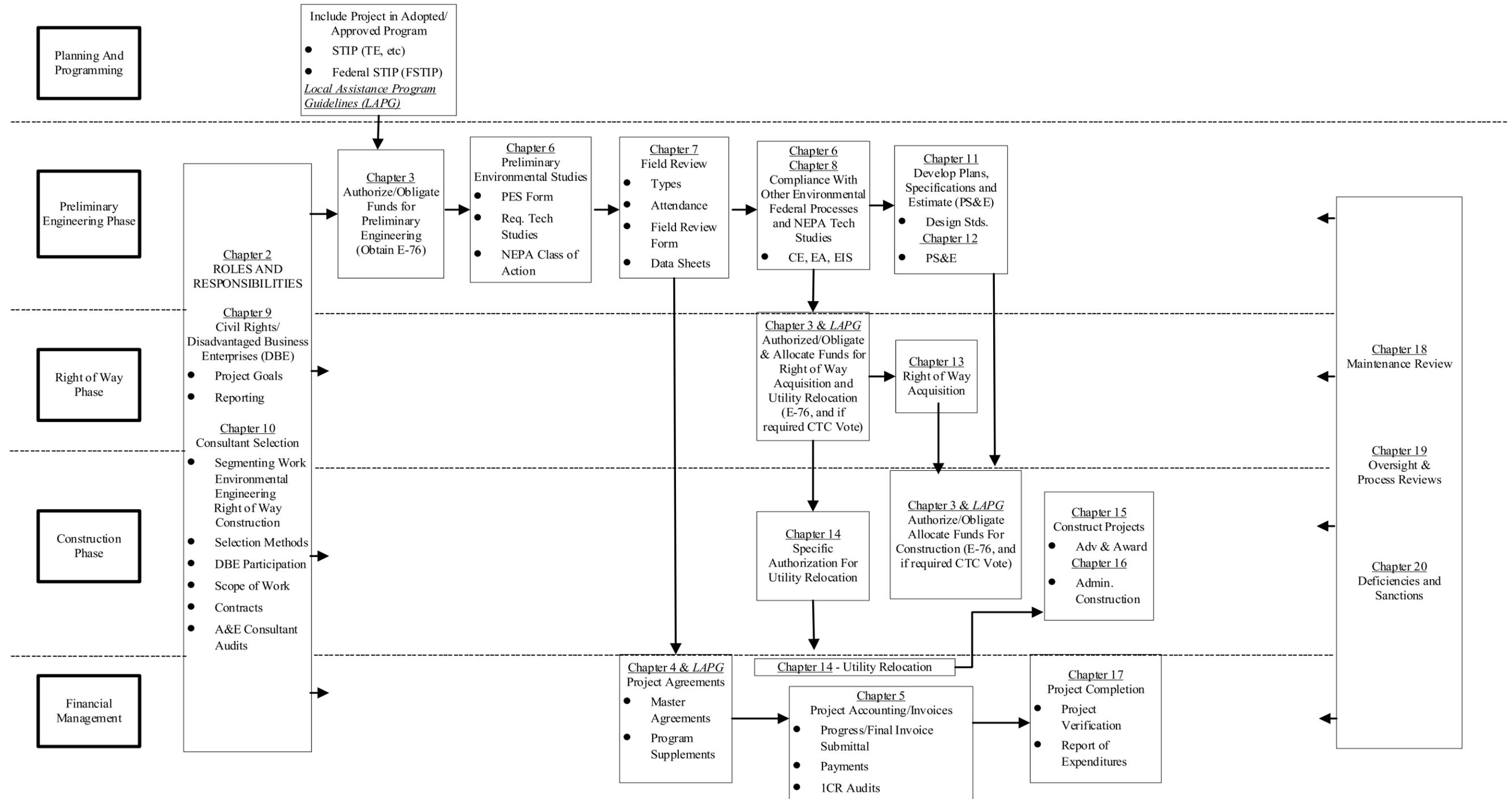Oversight & Process Reviews

Chapter 20
Deficiencies and Sanctions

Figure 1-1: Typical Procedures for Federal-Aid Projects