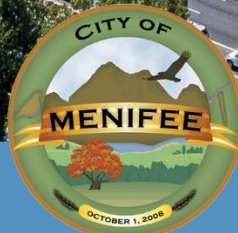




Local Road Safety Plan and Program

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Executive Summary

The City of Menifee Local Road Safety Plan (LRSP) identifies emphasis areas to inform and guide further safety evaluation of the City's transportation network. The emphasis areas include type of crash, certain locations, and notable relationships between current efforts and crash history. The LRSP analyzes crash data on an aggregate basis as well as at specific locations to identify high-crash locations, high-risk locations, as well as city-wide trends and patterns. The analysis of crash history throughout the City's transportation network allows for opportunities to:

1. Identify factors in the transportation network that inhibit safety for all roadway users,
2. Improve safety at specific high-crash locations, and
3. Develop safety measures using the four E's of safety: Engineering, Enforcement, Education, and Emergency Response to encourage safer driver behavior and better severity outcomes.

With this LRSP, the City continues its safety efforts by identifying areas of emphasis and systemic recommendations to enhance safety.

The City's vision is to enhance the transportation network and reduce traffic fatalities and serious injury related crashes, and the goals for the City of Menifee include the following:

Goal #1: Identify areas with a high risk for crashes.

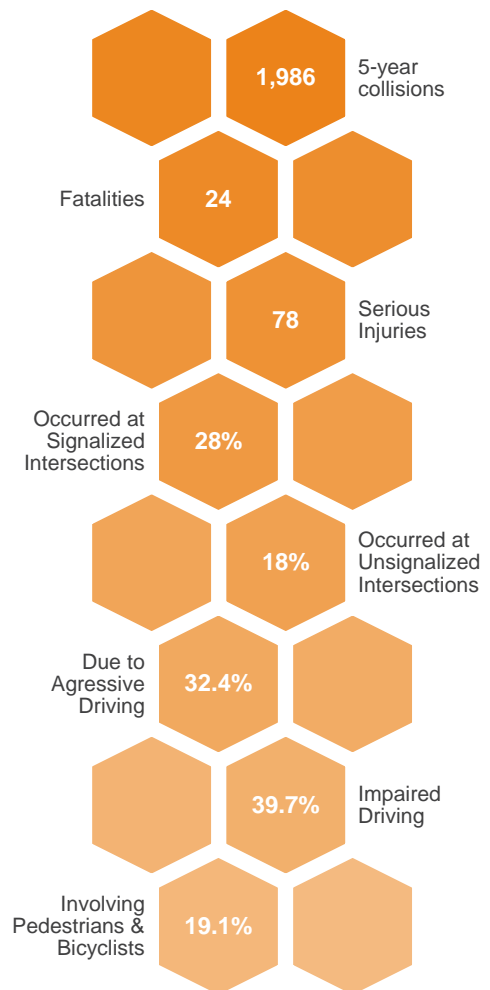
Goal #2: Illustrate the value of a comprehensive safety program and the systemic process.

Goal #3: Plan future safety improvements for near-, mid- and long-term.

Goal #4: Define safety projects for High Safety Improvement Program (HSIP) and other program funding consideration.

This LRSP analyzes the most recent range of crash data (January 1, 2016 – December 31, 2020) and roadway improvements to assess historic trends, patterns, and areas of increasing concern.

Further, the collision history was analyzed to identify locations with elevated risk of collisions either through their collision histories or their similarities to other locations with more active collision patterns. Using a network screening process, locations were identified within the City that will most likely benefit from safety



Source: Menifee Collision Database (2016-2020)

enhancements. Using historic collision data, collision risk factors for the entire network were derived. The outcomes informed the identification and prioritization of engineering and non-infrastructure safety measures to address certain roadway characteristics and related behaviors that contribute to motor vehicle collisions with active transportation users.

Emphasis areas were developed by revisiting the vision and goals developed at the onset of the planning process and comparing them with the trends and patterns identified in the crash analysis.

Emphasis Area #1: Impaired Driving

Emphasis Area #2: Distracted Driving

Emphasis Area #3: Young Drivers

Emphasis Area #4: Vulnerable Road Users (Pedestrians & Bicyclists)

The following 11 case study locations were chosen to be representative of the corridor and intersection configurations throughout the City.

1. Signalized Intersection: Newport Road and Haun Road
2. Signalized Intersection: Newport Road and Bradley Road
3. Unsignalized Intersection: Murrieta Road and Holland Road
4. Signalized Intersection: Haun Road/Zeiders Road and Scott Road
5. Unsignalized Intersection: Manganese Road and Goetz Road
6. Signalized Intersection: Trumble Road and Highway 74
7. Unsignalized Intersection: Sherman Road and Highway 74
8. Unsignalized Intersection: Sherman Road and Jackson Ave
9. Signalized Intersection: Highway 74 and Meniffee Road
10. Signalized Intersection: Briggs Road and Highway 74

These locations were identified through the analysis process based on their crash histories, stakeholder engagement, the observed crash patterns, and their different characteristics to provide the most insight into potential systemic safety countermeasures that the City can employ to achieve the most cost-effective safety benefits. Countermeasures were subjected to a benefit/cost assessment and scored according to their potential return on investment. These case studies can be used to select the most appropriate countermeasure, and to potentially phase improvements over the longer-term. The potential benefit of these countermeasures at locations with similar design characteristics can then be extrapolated regardless of crash history, allowing for proactive safety enhancements that can prevent future safety challenges from developing. Additionally, this information can be used to help the City apply for grants and other funding opportunities to implement these safety improvements. These opportunities were assembled into the “countermeasure toolbox” shown below.

Table 1 – Citywide Countermeasure Toolbox

ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
S02	Improve signal hardware: back-plates with retroreflective borders	Signalized intersections with significant right-angle and rear-end collisions due to signal visibility	15%	\$12,000	per intersection
S03	Re-evaluate signal timing	Signalized intersections with a significant collision history related to clearance intervals, high-risk movements, and signal timing coordination.	15%	\$5,000	per intersection
S04	Provide Advanced Dilemma Zone Detection for high-speed approaches	Signalized intersections with significant right-angle and rear-end collisions due to unsafe stopping and illegal turns during stop phase.	40%	\$30,000	per intersection
S07	Install protected left turn phasing on north bound approach	Signalized intersections that have an existing left turn pocket and permissive left turn or no left turn protection.	30%	\$40,000	per intersection
S09	Evaluate and improve lane striping through intersection	Intersections with lane designations that are unclear to drivers, through-lanes that are not aligned, multiple turning lanes or overall large pavement area.	10%	\$22,000	per intersection
S09	Refresh lane extensions striping	Intersections with lane designations that are unclear to drivers, through-lanes that are not aligned, multiple turning lanes or overall large pavement area.	10%	\$22,000	per intersection
NS14	Restrict left turn from the driveway	Entrances/exits from driveways with high numbers of turning movement collisions	50%	\$15,000	per location
S18PB	Install high visibility crosswalk	Signalized intersections with high pedestrian traffic and no marked crossing.	25%	\$50,000	Per intersection
S18PB	Complete crosswalk	Signalized intersections that have prohibited crossing at one or more approach	25%	\$50,000	per intersection



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ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
S21PB	Modify signal phasing to implement a Leading Pedestrian Interval (LPI) with new controller	Signalized Intersections – especially those with high pedestrian activity	60%	\$30,000	per intersection
NS01	Add Intersection Lighting	Unsignalized intersections with significant nighttime collisions and no lighting at the intersection or approaches.	40%	\$50,000	Per mile
NS07	Refresh and improve intersection pavement markings (to make more visible)	Intersections where outdated or degraded striping and pavement markings exist	25%	\$22,000	per intersection
NS11	Sight Distance Evaluation on westbound right turn	Unsignalized intersections that with significant collision patterns due to restricted sight distance.	20%	\$3,000	per intersection
R24	Install flashing beacons on curve chevron signage	Roadway segments that have a significant amount of collision activity at sharp curves.	25%	\$4,500	per sign
R26	Install dynamic/variable speed warning sign	Roadway segments that are curvilinear with a significant number of collisions due to unsafe speeds.	30%	\$16,000	Per sign
R28	Install safety edges	Roadway segments with collisions that resulted in run-off-road right/left, head-on, or opposite-direction-sideswipe.	25%	\$8,000	Per mile
-*	Install advanced lane markings	Intersections with significant collisions due to turning lanes leading to freeway on ramps. Advanced lane markings to indicate dedicated turning lanes.	5%	\$5,000	Per intersection
-*	Install limit line	Intersections where outdated or degraded limit line striping exist	5%	\$2,000	per location
-*	Standardize speed limit for curve	Locations that reflect inconsistent speed limits	5%	\$2,000	per location
-*	Install ADA ramps	Intersections with high pedestrian activity	5%	\$15,000	per location
-*	Realign ADA ramps with crosswalk	Locations with ADA ramps that are misaligned with existing crosswalk	5%	\$22,000	per location



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ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
-*	Evaluate truck turning radius	Locations that are inadequate for truck turning and show visible curb degradation	5%	Varies	-
-*	Repave roadway surface	Roadway segments that have degraded pavement conditions	5%	Varies	-
-*	Refresh crosswalk striping	Intersections with outdated/faded crosswalks	5%	\$2,500	per location
-*	Install Traffic Signal Communication and Interconnect	Intersections with communication gaps	5%	Varies	-

**There were not approved countermeasures for these improvements in the Local Roadway Safety Manual, so a conservative Crash Reduction Factor (CRF) was assumed.*

Near-term action items were identified to accelerate the City's achievement of the goals and vision of this LRSP. The City can:

- Actively seek other funding opportunities to improve safety for all modal users,
- Collaborate with established safety partners & neighboring municipalities as improvements are made to create a cohesive transportation network, and
- Iteratively evaluate existing and proposed transportation safety programs and capital improvements to design a safer transportation network in Menifee.

The City will regularly monitor and update the analysis performed in this plan. A full plan update will be due five years from the City Council's adoption of this plan which will maintain eligibility for HSIP funding.

1. Introduction

Located in Southwest Riverside County, the City of Menifee is a family-oriented environment with a population of approximately 103,000. Menifee is a growing community with clean air, attainable housing, and open spaces. Based on University of California Berkeley's Transportation Injury Mapping System (TIMS) and California Department of Transportation (Caltrans) Vehicle Operation Cost Parameters, Menifee's economic losses due to traffic injuries amounted to approximately \$350M from 2015 to 2020. This report identifies factors associated with the most vehicle crashes particular to the City and proposes matching countermeasures to reduce or eliminate those crashes.

This Local Road Safety Plan (LRSP) identifies emphasis areas to inform and guide further safety evaluation of the City's transportation network. The emphasis areas include the type of crash, certain locations, and notable relationships between current efforts and crash history. The LRSP analyzes crash data on an aggregate basis as well as at specific locations to identify high-crash locations, high-risk locations, and city-wide trends and patterns. The analysis of crash history throughout the City's transportation network allows for the following opportunities:

1. Identify factors in the transportation network that inhibit safety for all roadway users,
2. Improve safety at specific high-crash locations, and
3. Develop safety measures using the four E's of safety (Engineering, Enforcement, Education, and Emergency Response) to encourage safer driver behavior and better severity outcomes.

Menifee has taken steps to enhance all modal safety throughout the City and with this LRSP, Menifee is continuing to prioritize safety in its planning processes. The Office of Traffic Safety (OTS) most recently ranked Menifee 64 out of 102 peer cities for traffic injuries after normalizing for population and VMT in 2018. With number one (1) in the OTS crash rankings considered the highest, or "worst," this positions the City at slightly above average for roadway safety performance. This LRSP analyzes the most recent range of Crossroads crash data from January 1, 2016 – December 31, 2020 and roadway improvements to assess historic trends, patterns, and areas of increasing concern.

The intent of the LRSP is to:

- Create a greater awareness of road safety and risks
- Reduce the number of fatal and severe-injury crashes
- Develop lasting partnerships
- Support for grant/funding applications, and
- Prioritize investments in traffic safety.

2. Vision and Goals

The Menifee LRSP evaluates the transportation network as well as non-infrastructure programs and policies within the City. Mitigation measures are evaluated using criteria to analyze the safety of road users (drivers, bicyclist, and pedestrians), the interaction of modes, the influences on the roadway network from adjacent municipalities, and the potential benefits of safety countermeasures. Through historical data and trends, proactive identification and safety opportunities can be identified and implemented without relying solely on a reaction and response to crashes as they occur.

As cities across the country have implemented LRSPs and systemically addressed the conditions leading to fatal and severe-injury crashes, the Federal Highway Administration (FHWA) has found that LRSPs effectively improve safety. LRSPs provide a locally developed and customized roadmap to directly address the most common safety challenges in the given jurisdiction. This project's vision, goals, and objectives have been established to reflect discussions with Menifee staff, various stakeholders identified by City staff, and a review of existing plans/policies in the area.

VISION:

To enhance the transportation network for all users to move towards zero traffic fatalities and serious injuries by the year 2050 (Vision Zero).

The City is planning to adopt a Vision Zero goal to eliminate traffic deaths by 2050. The implementation of this goal will be led by City departments. While the identified improvements in this report will be helpful in working toward achieving Vision Zero, improvements in driver education and a culture shift towards roadway safety will be necessary.

Goal #1: Identify areas with a high risk for crashes.

Objectives:

- Identify intersections and segments that would most benefit from mitigation.
- Identify areas of interest with respect to safety concerns for vulnerable users (pedestrians and bicyclists).

Goal #2: Illustrate the value of a comprehensive safety program and the systemic process.

Objectives:

- Demonstrate the systemic process' ability to identify locations with higher risk for crashes based on present characteristics closely associated with severe crashes.
- Demonstrate, through the systemic process, the gaps and data collection activities that can be improved upon.

Goal #3: Plan future safety improvements for near-, mid- and long-term.

Objectives:

- Identify safety countermeasures for specific locations (case studies).
- Identify safety countermeasures that can be applied city-wide.



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Goal #4: Define safety projects for future Highway Safety Improvement Plan (HSIP) and other program funding consideration.

Objectives:

- Create the outline for a prioritization process that can be used in this and forth-coming cycles to apply for funding.
- Use the systemic process to create Project Case Studies.
- Use Case Studies to apply for HSIP and other funding consideration.
- Demonstrate the correlation between the proposed safety countermeasures with the Vision Zero Initiative and the California State Highway Safety Plan.

3. Process

The primary goal for the City of Menifee and its safety partners is to provide safe, sustainable, and efficient mobility choices for their residents and visitors. Through the development and implementation of this LRSP, the City will continue its collaboration with its safety partners to identify and discuss safety issues within the community.

Guidance on the LRSP process is provided at both the national (FHWA) and state (Caltrans) level, and both agencies have developed a general framework of data and recommendations for a LRSP.

FHWA encourages the following:

- The establishment of a working group (stakeholders) to participate in developing an LRSP
- A review of crash, traffic, and roadway data to identify areas of concern
- The identification of goals, priorities, and countermeasures to recommend improvements at spot locations, systemically, and comprehensively

Caltrans guidance follows a similar outline with the following steps:

- Establish leadership
- Analyze the safety data
- Determine emphasis areas
- Identify strategies
- Prioritize and incorporate strategies
- Evaluate and update the LRSP

This LRSP documents the results of data and information obtained, including the preliminary vision and goals for the LRSP, existing safety efforts, initial crash analysis, and developed emphasis areas. The LRSP recommendations consider the four E's of traffic safety defined by the California Strategic Highway Safety Plan (SHSP): Engineering, Enforcement, Education, and Emergency Response.

3.1 Guiding Manuals

This section describes the analysis process undertaken to evaluate safety within Menifee at a systemic level. This report identifies specific locations within the City that will benefit from safety enhancements and derives crash risk factors based on historic crash data using a network screening process. The outcome will inform the identification and prioritization of engineering and non-infrastructure safety measures by addressing certain roadway characteristics and related driving behaviors contributing to crashes. This process uses the latest national and state best practices for statistical roadway analysis described.

3.1.1 Local Roadway Safety Manual

The *Local Roadway Safety Manual: A Manual for California's Local Road Owners* (Version 1.5, April 2020) encourages local agencies to pursue a proactive approach when identifying and analyzing safety issues and preparing to compete for project funding opportunities. A proactive approach is the analyzation of safety in an entire roadway network through either a one-time network wide analysis or a routine analysis of the roadway network.¹

According to the *Local Roadway Safety Manual* (LRSM), “the California Department of Transportation (Caltrans) – Division of Local Assistance is responsible for administering California’s federal safety funding intended for local safety improvements.”

To provide the most beneficial and competitive funding approach, the analysis leading to countermeasure selection should focus on both intersections and roadway segments and maintain consideration of roadway characteristics and traffic volumes. The result should reflect a list of locations that are most likely to benefit from cost-effective countermeasures, preferably prioritized by benefit/cost ratio. The manual suggests using a mixture of quantitative and qualitative measures to identify and rank locations using both crash frequency and crash rates. These findings should then be screened for crash type and severity patterns to determine the cause of crashes and the potential effective countermeasures. Qualitative analysis should include field visits and a review of existing roadway characteristics and devices. The specific roadway context can then be used to assess conditions that may decrease safety at the site and at systematic levels.

Countermeasure selection should be supported using Crash Modification Factors (CMFs). These factors are a peer reviewed product of research quantifying the expected rate of crash reduction expected from a given countermeasure. If more than one countermeasure is under consideration, the LRSM provides guidance on appropriate application of CMFs.

3.1.2 Highway Safety Manual

The American Association of State Highway and Transportation Officials (AASHTO) *Highway Safety Manual* (HSM), published in 2010, presents a variety of methods for quantitatively estimating crash frequency or severity at a variety of locations.² This four-part manual is divided into the following parts: A) Introduction, Human Factors, and Fundamentals, B) Roadway Safety Management Process, C) Predictive Method, D) Crash Modification Factors.

In Chapter 4 of Part B in the HSM, the “Network Screening Process” is a tool for an agency to analyze the entire network and identify/rank locations that are most likely or least likely to realize a reduction in the frequency of crashes.

¹ Local Roadway Safety Manual (Version 1.5) 2020. Page 5.

² AASHTO, Highway Safety Manual, 2010, Washington D.C.,
<http://www.highwaysafetymanual.org/Pages/About.aspx>

The HSM identifies five steps in this process:³

1. **Establish Focus:** Identify the purpose or intended outcome of the network screening analysis. This decision will influence data needs, the selection of performance measures and the screening method that can be applied.
2. **Identify Network and Establish Reference Populations:** Specify the types of sites or facilities being screened (i.e., segments, intersections, geometrics) and identify groupings of similar sites or facilities.
3. **Select Performance Measures:** There are a variety of performance measures available to evaluate the potential to reduce crash frequency at a site. In this step, the performance measure is selected as a function of the screening focus and the data and analytical tools available.
4. **Select Screening Method:** There are three principal screening methods described in this chapter (i.e., ranking, sliding window, peak searching). Each method has advantages and disadvantages; the most appropriate method for a given situation should be selected.
5. **Screen and Evaluate Results:** The final step in the process is to conduct the screening and analysis and evaluate the results.

The HSM provides several statistical methods for screening roadway networks and identifying high risk locations based on overall crash histories.

3.2 Analysis Techniques

3.2.1 Collision Analysis

The initial steps of a collision analysis involve establishing sub-populations of roadway segments and intersections that have similar characteristics. For this LRSP, intersections were grouped by their control type (signalized and unsignalized), and segments were grouped by their roadway category (primary arterial, secondary arterial, collector, local). Individual collision rates were then calculated for each sub-population. The population level collision rates were used to assess the number of collisions at a specific location. These sub-populations were also used to determine typical collision patterns to highlight locations where an unusual number of specific collision types occurred.

3.2.2 Network Screening Analysis

The network screening process lists intersections and roadway segments by the number of collisions over the analysis period and identifies areas with a higher number of a given collision type than would be expected for the location.

The different collisions were organized by the following categories:

³ AASHTO. *Highway Safety Manual*. 2010. Washington, DC. Page 4-2.



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1. Collision injury (fatal, serious injury, other visible injury, complaint of pain, property damage only),
2. Collision type (broadside, rear-end, sideswipe, head-on, hit object, overturned, bicycle, pedestrian, other),
3. Environmental factors (lighting, wet roads), and
4. Driver behavior (impaired, aggressive, and distracted driving).

3.3 Future Analysis

The City can plan to conduct regular collision monitoring as described in Section 10.2. The City will then refresh the analysis and update the LRSP every 5 years to maintain eligibility for HSIP funding, as described in **Section 10.2**.

4. Safety Partners

Local stakeholders were included in the development of this report to ensure the local perspective was maintained at the forefront of planning efforts. A stakeholder group of City staff and external partners consisted of representatives from the Menifee Police Department, Menifee Union School District, Riverside Transit Agency, and Los Angeles County Fire Department.

The local stakeholders were called together to offer insight on the safety issues present in the City's transportation network. After the initial network screening and safety analysis, the stakeholder group met to discuss potential countermeasures and challenge areas through a field visit. The summary of the stakeholder meetings are outlined below.

4.1 Stakeholder Meeting #1

The first stakeholder meeting was conducted virtually on April 28, 2022. At the meeting, stakeholders were introduced to the project and provided an overview of the data used, the required outputs, and the potential outcomes of the study.

In addition to the overview, stakeholders were asked to provide local insight and knowledge at ten "case study" locations that were identified after the initial network screening and crash analysis process.

4.2 Field Tour Stakeholder Workshop

On June 1, 2022, the stakeholder group visited each of the 10 "case study" locations to identify potential issues that are contributing to the collision patterns. Potential countermeasures were identified and discussed.

4.3 Stakeholder Meeting #2

The second stakeholder meeting was conducted virtually on June 23, 2022. During this meeting collision diagrams were presented to the stakeholders which list observations and potential countermeasures. Emphasis/challenge areas were discussed, specifically aggressive driving and impaired driving as a major factor in collisions throughout the City.

4.4 Public Comment

The draft LRSP was made available to the public through the City website⁴ for commentary. The City reached out to members of the public and selected stakeholders. The public noted the need for traffic signals along arterials, crosswalks, sidewalks and bike lanes around school and residential areas.

Stakeholder feedback was reviewed and incorporated into the study process for the development of the LRSP.

⁴ <https://www.cityofmenifee.us/834/14602/Local-Road-Safety-Plan?activeLiveTab=widgets>

5. Existing Efforts

Existing plans, policies, and projects that were recently completed, planned, or on-going were compiled at the start of the LRSP process to gain perspective on the existing efforts for transportation-related improvements within the City. High-level key points regarding transportation improvements and safety-related topics were identified to inform decision making in this LRSP.

Table 2 outlines the relevant existing City plans and their improvements and funding sources. **Table 3** outlines the relevant existing City projects and their timelines.

Table 2 – Review of Existing City Plans

Document Name	Transportation Policies/Improvements
General Plan	<ul style="list-style-type: none"> • Outlines City's circulation network, response to regional and statewide regulatory direction and fosters design to reduce vehicle miles traveled by promoting a range of transportation options. • Addresses mobility options in the City, including vehicular, pedestrian, bicycle, neighborhood electric vehicles, golf carts, transit, and trucks. • Purpose includes the coverage and the extension of existing and/or proposed major throughfares, transportation routes, terminals, any military airports and ports, and other local public utilities and facilities, all correlated with the land use element of the plan. • Element must provide a balance, multimodal transportation network that accommodates the needs of all users (bicyclist, children, persons with disabilities, motorist, movers of commercial goods, pedestrians, users of public transportation, and seniors) of streets, roads, and highways.
Menifee Active Transportation Plan	<ul style="list-style-type: none"> • Outlines City's goals and vision for providing a transportation system that supports walking, cycling, public transit, and vehicles. • Action plan for design changes to City streets and programs that assists active transportation and distinguishes projects that can be undertaken at low cost and in short term. • Goal includes to support and increase bicycling and walking. Provide opportunities to enhance non-motorized travel infrastructure and help aid existing and future populations.
City of Menifee Mobility Survey	<ul style="list-style-type: none"> • Sponsored by Riverside County Transportation Commission (RCTC), to enhance mobility for residents, including persons with disabilities and older adults. • Contributes to further understanding of unmet transportation needs of Menifee residents that are not met or cannot be met by existing public transportation services. • Recommends responsive and sustainable alternatives to address mobility needs. • Assessment considers alternative by which the City can implement that address mobility needs eligible for Measure A support.



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Document Name	Transportation Policies/Improvements
Menifee's Traffic Management Forum	<ul style="list-style-type: none">• Establishes goals and policies to manage dialogue about traffic congestion and road conditions in Menifee.• Aims to educate residents about how Menifee Public Works is easing traffic congestion and completing road repair projects, while incorporating the community.• Goals includes infrastructure improvements and traffic management.
Traffic Signal Upgrades	<ul style="list-style-type: none">• Public Works Department working on upgrading traffic signals to enhance simpler flow of traffic, increased pedestrian safety, and advanced operational standards.• Goal includes improvement of resident safety and traffic congestion.

Table 3 – Review of Existing City Projects

Document Name	Timeline	Transportation Policies/Improvements
Adams Ave Resurfacing from Antelope Road to 3rd St	August 2019	<ul style="list-style-type: none"> Relocation of utilities, construction new curb, gutters and sidewalks, construction of new driveways and ADA compliant ramps, reconstruct existing road, including new street signs, new stop bars and legends.
Encanto Neighborhoods Street Resurfacing	August 2019	<ul style="list-style-type: none"> This project consists of improving existing ramps to ADA compliant ramps, reconstructing existing road, adding new stop bars and legends.
Miralago & Lakepointe Communities St Resurfacing	August 2019	<ul style="list-style-type: none"> Improvements include upgrading existing ramps to ADA compliant, resurfacing existing streets, overlay existing streets with new asphalt & adding new stop bars and legends
Quail Valley Community (West) Resurfacing	December 2019	<ul style="list-style-type: none"> Project consist of re-surface of existing streets with Cape Seal & Type II Slurry Seal. Including new street signs, stop bars, and legends.
Menifee Lakes Street Resurfacing	December 2019	Improvements Include resurfacing of existing streets with Type II Slurry Seal and adding new stop bars and legends.
Goetz Road Asphalt Overlay	June 2020	<ul style="list-style-type: none"> The project consists of widening the street and installing a safety guardrail at a sharp curve located at this intersection. In addition, there will be minor drainage improvements and upgrading of and existing driveway onto the street
Andalusia & Belcanto Street Resurfacing	June 2020	<ul style="list-style-type: none"> This project consists of existing street resurfacing, improvement of existing ramps to ADA compliant ramps, street striping.
McCall Blvd & Oakhurst Ave Traffic Signal	June 2020	<ul style="list-style-type: none"> This project consists of installing traffic signals, upgrading existing ramps to be ADA compliant, adding road signs and road striping.
Murrieta Rd and Scott Rd Traffic Signal	March 2021	<ul style="list-style-type: none"> Traffic Signal improvement
Quail Valley Community (East) Street Resurfacing	June 2020	<ul style="list-style-type: none"> Improvements include existing AC removal and replacement, slurry seal addition and street striping.
Traffic Signal Interconnect - West	Completed	<ul style="list-style-type: none"> Install a new wireless interconnect system including radios, antennas, and upgraded communication equipment to improve traffic safety and operations via optimized traffic



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Document Name	Timeline	Transportation Policies/Improvements
		signal timing coordination for the west side of Menifee. With this upgrade, appropriate adjustments to traffic signal and timing can be made remotely to improve traffic conditions during peak hours or mitigate traffic obstruction.
Traffic Signal Interconnect - East	December 2020	<ul style="list-style-type: none"> Install a new wireless interconnect system including radios, antennas, and upgraded communication equipment to improve traffic safety and operations via optimized traffic signal timing coordination for the east side of Menifee. With this upgrade, appropriate adjustments to traffic signal and timing can be made remotely to improve traffic conditions during peak hours or mitigate traffic obstruction
Citywide ADA & Pedestrian Safety Improvements	November 2020	<ul style="list-style-type: none"> This project will install pedestrian signals, push buttons, ADA-compliant curb ramps, and crosswalk striping at various signalized intersections throughout the City.
Menifee Rd & Holland Rd Traffic Signal	January 2021	<ul style="list-style-type: none"> Install traffic and pedestrian crosswalk signals at the intersection of Menifee Road and Holland Road. The existing intersection is controlled by all-way Stop signs which are inadequate to handle the existing traffic.
Menifee Rd & Camino Cristal Traffic Signal	January 2021	<ul style="list-style-type: none"> Install traffic and pedestrian crosswalk signals at the intersection of Menifee Road and Camino Cristal. The existing intersection is controlled by all-way Stop signs which are inadequate to handle the existing traffic.
Scott Rd & I-215 Overpass / Interchange	November 2020	<ul style="list-style-type: none"> The existing two lane over crossing, two-span concrete structure, and tight diamond interchange configuration was replaced with a partial clover leaf interchange configuration with loop ramps and a four lane over crossing. In addition, the project widened Scott Road between Palomar Road and Haun Road.
Murrieta Rd & Park City Ave Traffic Signal	June 2020	<ul style="list-style-type: none"> This project consists of installing traffic signals, upgrading existing ramps to be ADA compliant, adding road signs and road striping.
Sun City Blvd ADA Improvements	October 2018	<ul style="list-style-type: none"> The project consists of installation of ADA compliant pedestrian ramps and relocation of crosswalk.
Newport Rd and Menifee Rd Street Improvements	October 2018	<ul style="list-style-type: none"> The project consists of removing a portion of the existing median on Newport Road and widening the existing road to accommodate a third eastbound through lane.
Raised Safety Medians	Completed	<ul style="list-style-type: none"> The State Route 74 (SR-74) Median Barrier project will install a raised curb median



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Document Name	Timeline	Transportation Policies/Improvements
		barrier on SR-74 from west of Acacia Avenue to the Ramona Expressway Intersection in Riverside County.
Antelope Road Safety Medians - HSIP 9	Completed	<ul style="list-style-type: none"> This project will install raised concrete medians on Antelope Road from Santa Rosalia to La Piedra Road. The project will also modify an existing traffic signal and install new signs and striping.
Rancho LaVita Resurfacing	Under Construction	<ul style="list-style-type: none"> The project consists of 1.8 miles of grind and overlay. It will also include the removal and replacement of 22 non-compliant accessible curb ramps, curb, gutter, and cross gutters. All striping and blue reflective markers will be replaced.
McCall Blvd AC Resurfacing	Under Construction	<ul style="list-style-type: none"> The project will rehabilitate the existing pavement on McCall Boulevard from Encanto Road to Antelope Road. The proposed project will use Cold Recycling-In-Place technology for the road rehabilitation. In addition, the project includes pedestrian ADA ramps retrofitting, signing, striping and minor storm drain improvements.
Menifee Rd & Garbani Rd Traffic Signal	Under Construction	<ul style="list-style-type: none"> The project consists of installing a new Traffic Signal to replace the existing 4-way STOP controlled intersection. In addition, the project will reconstruct the existing raised median on Menifee Road and widen the existing pavement to provide for additional left turn pockets. The project will also construct new ADA ramps, and install new street signing and striping.
Murrieta Rd & Sun City Blvd Traffic Signal	Under Construction	<ul style="list-style-type: none"> Install traffic signals at the intersection of Menifee Road and Sun City Blvd. This intersection is currently controlled by a four-way stop and causes traffic congestion during peak times of the day. Sun City Blvd at Murrieta is at build-out and no additional right-of-way is needed for this project. In addition to traffic signals, this project will also install traffic signal interconnection equipment, upgrade existing ADA ramps, standardize turn pocket lanes, and address drainage deficiencies at the intersection.

6. Data Summary

This section describes the data sources used for the analysis process of this LRSP.

6.1 Roadway Network

The California Department of Transportation (Caltrans) California Road System (CRS) GIS database was used to build the base roadway network used for this analysis. Intersections and roadway segments were divided into control and classification categories so that each set could have its own crash rates and be compared with similar facilities or control type. Functional Classifications were imported from the city's General Plan and confirmed by city staff. Information on intersection traffic control was provided by the city and included in the analysis network. The collision analysis requires each intersection to be classified by type: Signalized or Unsignalized. **Figure 1** illustrates the City of Menifee's roadway functional classification and intersection control type, respectively, as used for this study.

6.2 Collision Data

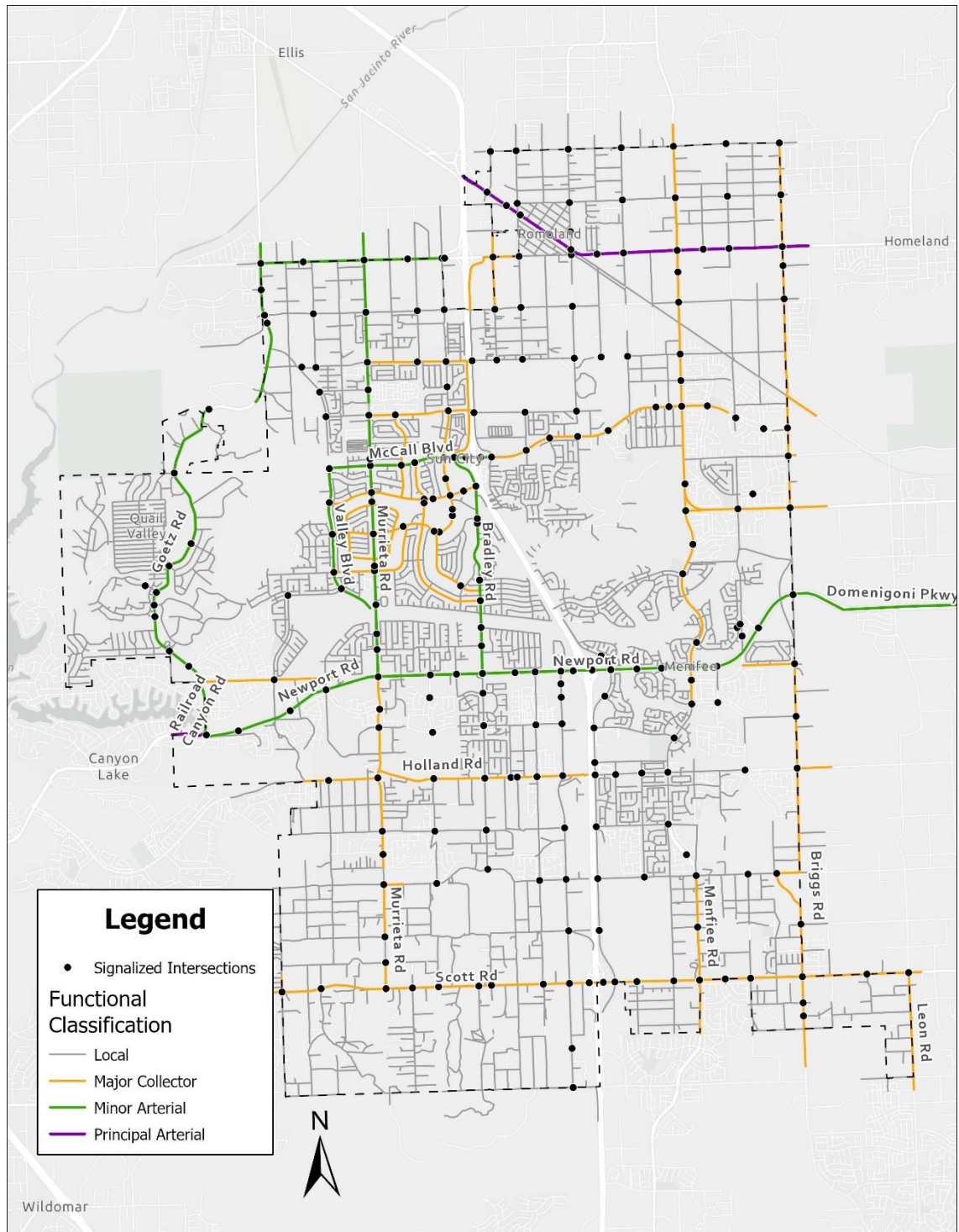
Collision data was collected from Crossroads software for the period from January 1, 2016 through December 31, 2020, displayed in **Figure 2**. Five years of data are utilized instead of the standard three years to provide more history to evaluate trends or patterns. Analysis of the raw collision data is the first step in understanding the specific and systemic challenges faced throughout the city. Analyzing the five years of data provided insight on the collision trends and patterns detailed in **Section 7**. The locations of fatal and severe injury collisions are displayed in **Figure 3**.



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Figure 1 : Functional Classification & Signalized Intersections

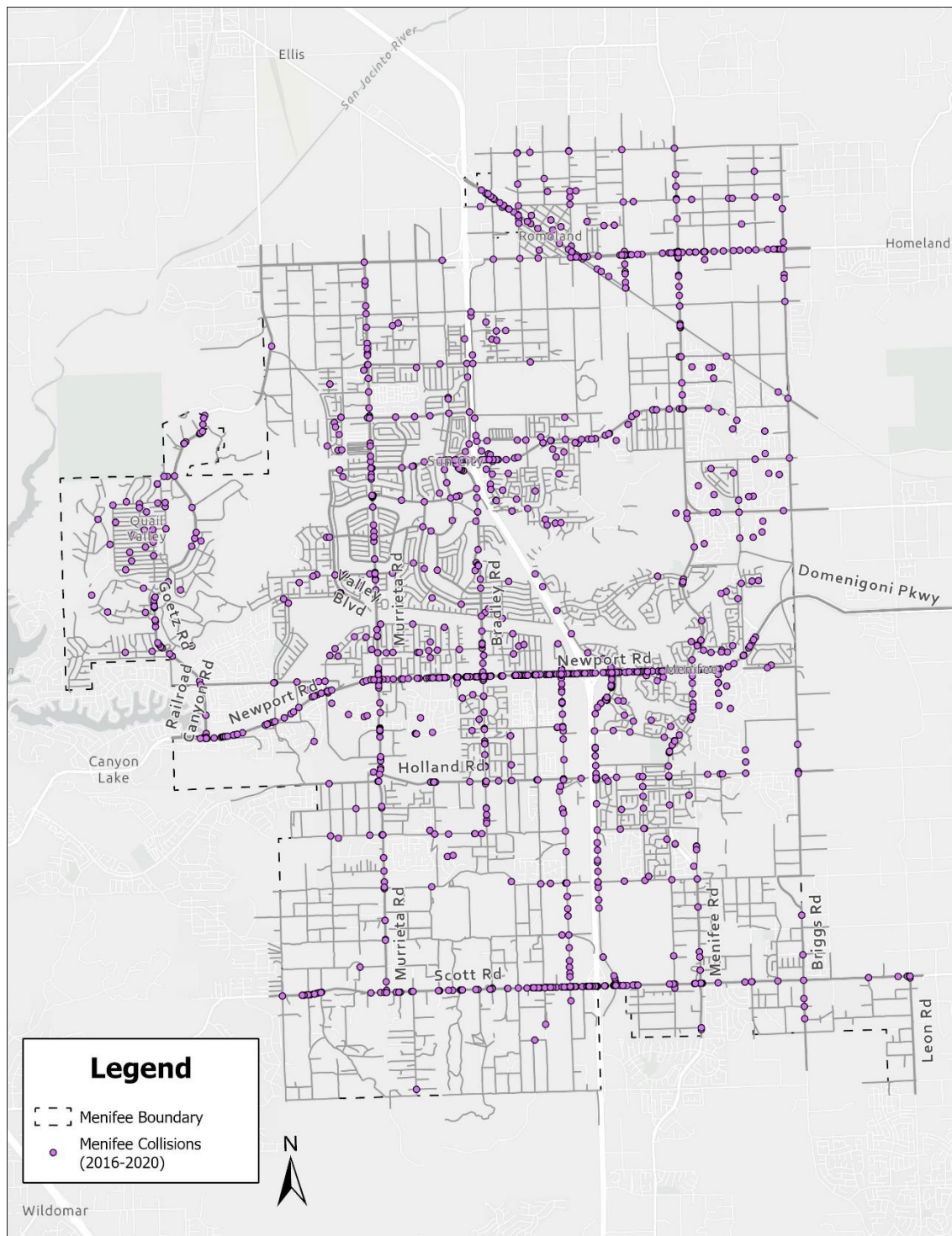




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Figure 2: All Collisions (2016-2020)

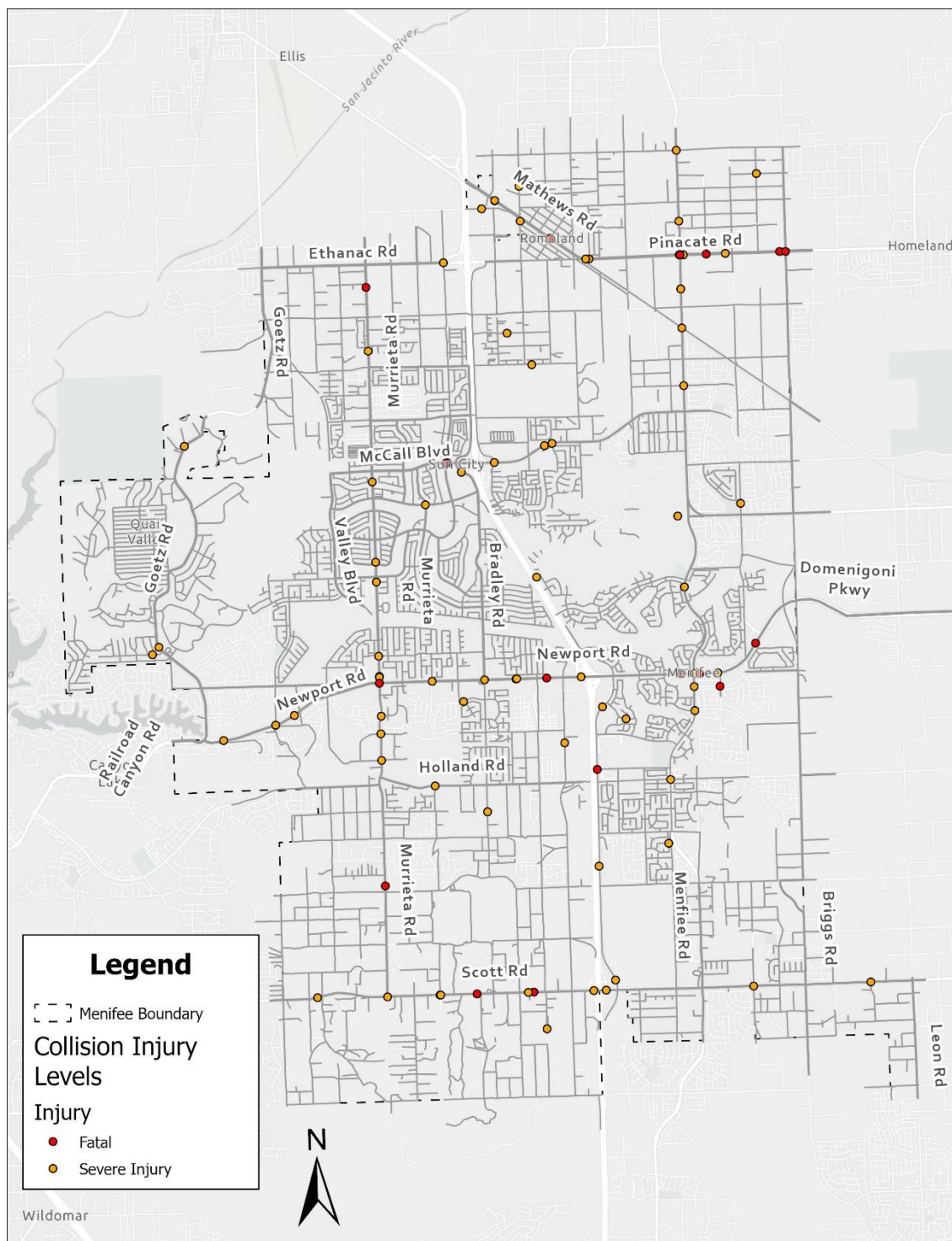




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Figure 3: Fatal & Severe Injury Collisions (2016-2020)



7. Crash Safety Trends

The analysis was conducted using a network screening process for the City-maintained roadway system based on collision records spanning from January 1, 2016 through December 31, 2020. This section contains the results of the analysis, which included the evaluation of Menifee's fatal and serious injury (generally denoted as K+SI) collisions, statewide K+SI collisions, pedestrian collisions, bicycle collisions, collision severity levels, and collision causes.

7.1 All Collisions

This report utilized collision data for a five-year period to provide a better understanding of trends and to reflect the patterns in crashes that have occurred on city streets. Data used for this report was extracted from Crossroads Software on February 25, 2022 and was current as of that date. Collision data from January 1, 2016 through December 31, 2020 as reported to Crossroads from the local enforcement indicated that during this time there were 1,986 collisions recorded within Menifee.

During this time, the most common occurring collision types were Rear-End (33%) and Broadsides (26%). The total number of collisions varied throughout the study period, with a peak in 2017, as shown in **Figure 4**.

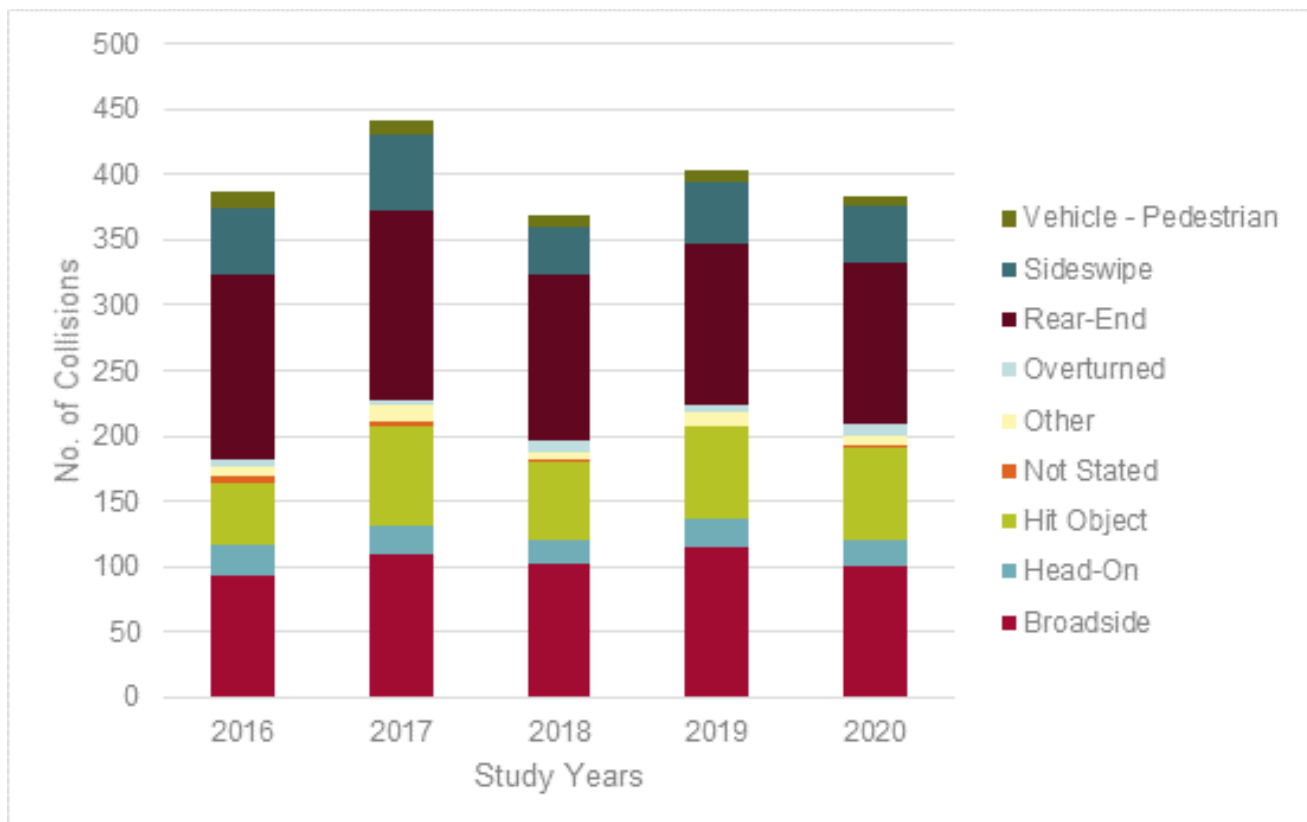


Figure 4: Collision Type by Year (2016-2020)

Source: Menifee Crossroads Database (2016-2020)

7.2 Fatalities & Severe Injuries

During the study period, 24 fatal collisions and 78 severe injury collisions occurred during the study period, as seen in **Figure 3**. **Table 4** outlines the fatal collisions categorized by modes involved.

Table 4 – Fatal Collisions Categorized by Modes Involved (2016-2020)

Involved With	# of Fatal Collisions	# of Severe Injury Collisions
Other Motor Vehicle	11	47
Fixed Object	5	15
Pedestrian	7	7
Non - Collision	-	4
Bicycle	-	2
Other Object	1	1
Not Stated	-	1
Parked Motor Vehicle	-	1

7.3 Injury Levels

As shown in **Figure 5**, 48% of the collisions reported during the time-period resulted in property damage only. Fatalities and severe injuries totaled 5% of all collisions.



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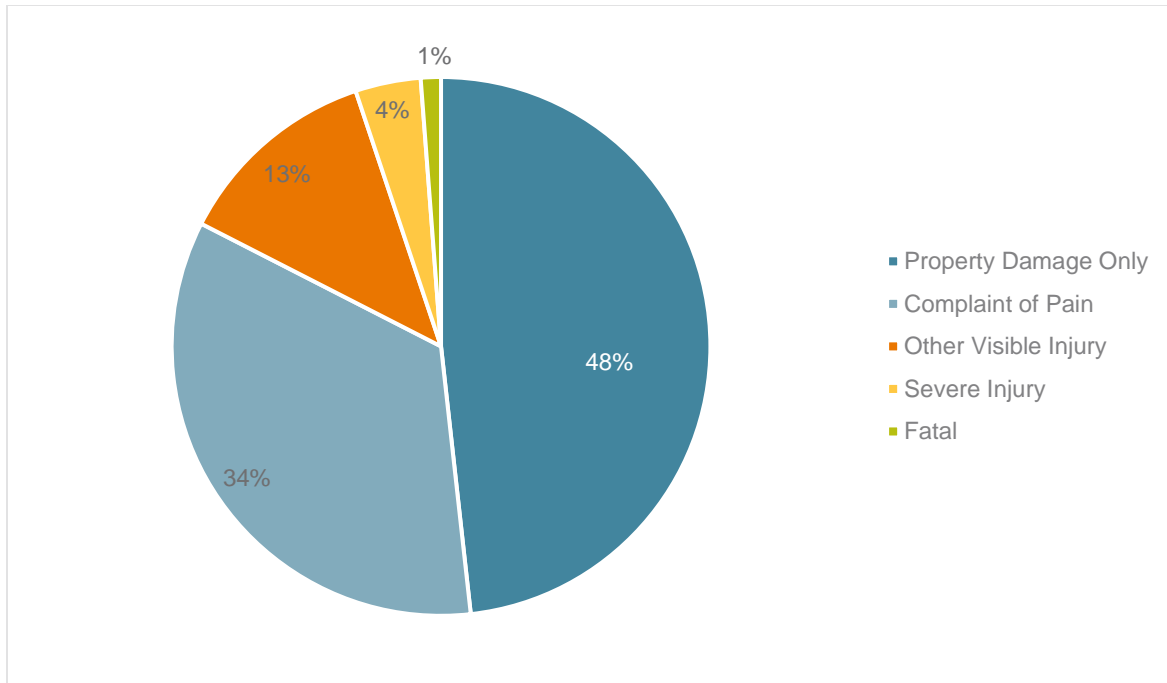


Figure 5 – Collisions by Injury Levels (2016-2020)

Source: Menifee Crossroads Database (2016 – 2020)

7.4 Cause of Collision

The highest recorded cause of collisions in Menifee during the study period is Unsafe Speed at 33%, followed by Automobile R/W Violations at 16%, and Improper Turning at 12%. **Figure 6** shows the distribution of collision cause.



7.5 Vulnerable Users

47 pedestrian involved collisions occurred during the study period, resulting in 7 fatal collisions, 7 severe injuries, and 29 collisions with some form of reported injury or pain. **Figure 7** shows the locations of pedestrian collisions during the study period.

During the study period, 41 collisions involving bicycles were reported. Of these 2 resulted in severe injuries, and 20 resulted in some form of reported injury or pain. **Figure 7** shows the location of bicycle collisions during the study period.



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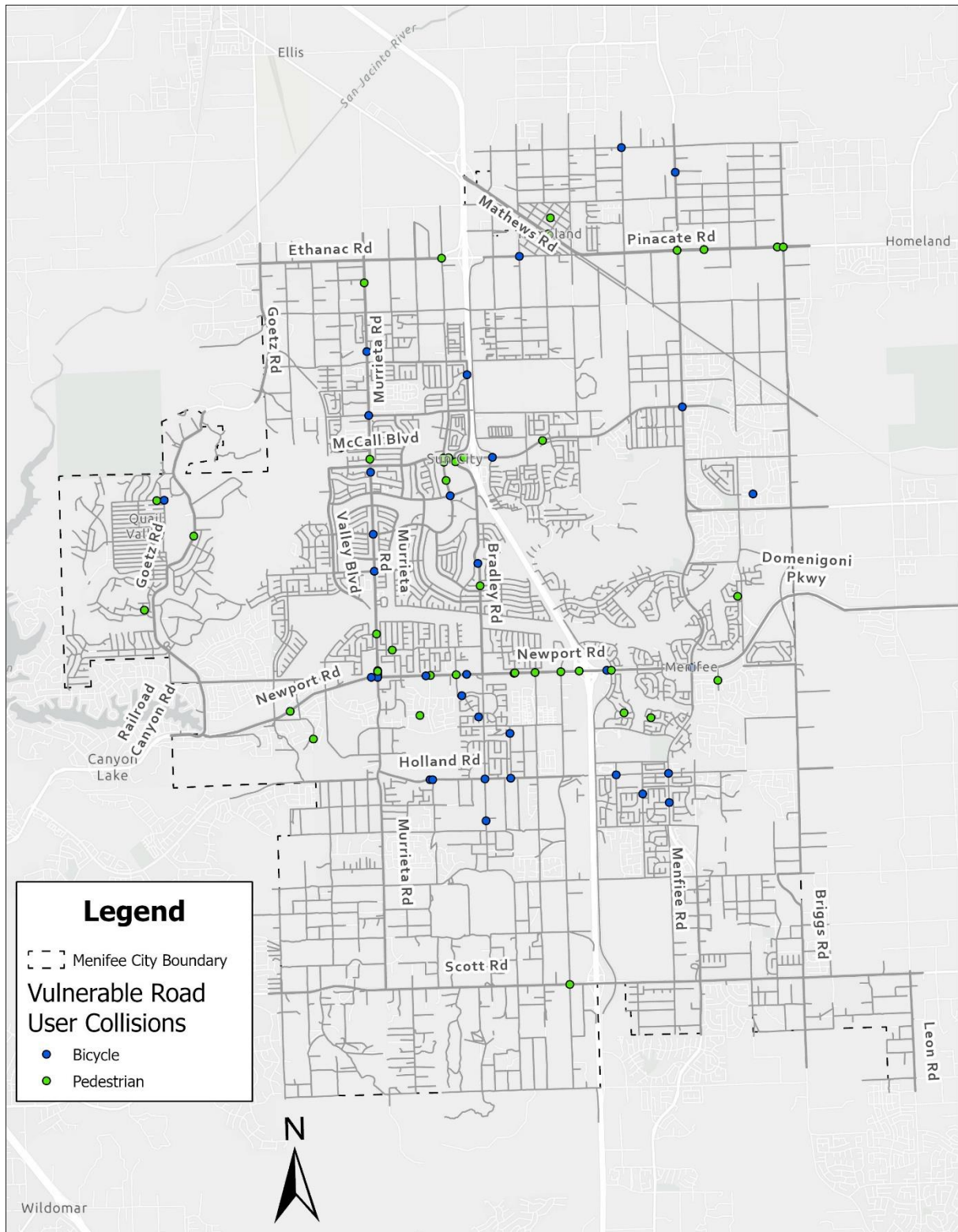


Figure 7 – Pedestrian & Bicycle Collisions (2016-2020)



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7.6 Other Significant Trends

In addition, the following trends were observed:

- 31% of collisions occurred at night or during the dusk/dawn hours.
- Drivers aged 16-20 were at fault in 12.2% of all collisions.
- Drivers aged 65+ were at fault in 6.5% of all collisions.

7.7 Collision Network Screening Analysis Results

Figure 8 below show the results of the collision network screening analysis, with the number of collisions at both intersections and mid-block roadway segments.

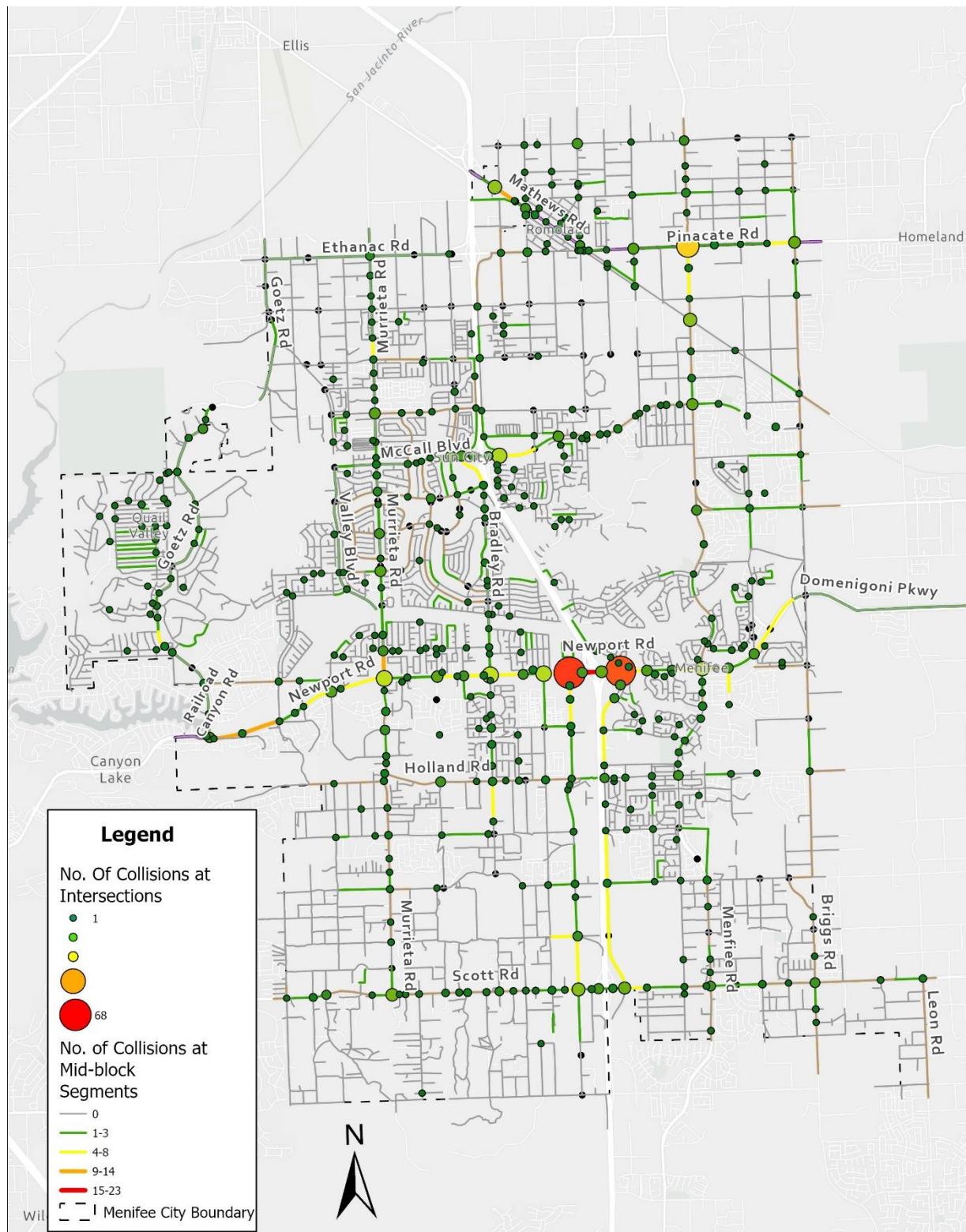


Figure 8 – Collision Network Screening Analysis Results (2016-2020)

Table 5 and 6 show the number of crashes occurring at the top ten locations in Menifee by crash type for the locations that will be studied further in the Report, and highlights locations in which the probability of those crash types exceeding the threshold proportion is greater than 33%. **Appendix A** provides a full list of analysis rankings for all intersection and segment locations.

The tables are ordered by the number of collisions that occurred at that segment or intersection. To be statistically significant, only locations where more than two collisions occurred are represented. At locations with two or less collisions, random chance can account for crash history as much or more than specific roadway characteristics.

After this analysis was completed, the locations were ranked against other similar locations within the City by their categories according to the expected proportion of that crash type within Menifee. Locations with higher-than-expected crashes of that type were identified by the probability that random chance would not account for exceedances.

Additionally, it should be noted that the columns for Collision Severity, Type, Involved With, and Behavior are additional characteristics of the collisions and should not be counted as a separate collision.

The following provides an example of how to read **Tables 5 and 6**.

Table Definitions:

- Total Collisions: Number of collisions observed at the intersection or segment from January of 2016 through December of 2020.
- Severity: The number of severe injury and fatal collisions that occurred at this location in the study period.
- Fatality: The number of fatal collisions that occurred at this location in the study period.
- Broadside, Sideswipe, Rear-End, Head-On, Hit Object, Overturned, Other, Pedestrian, Bicycle: The number of these types of collisions that occurred at this location in the study period.
- Other: The number of miscellaneous collision types (mostly single vehicle) that occurred at this location in the study period.
- Aggressive, Dark, Wet: The number of the collisions with this factor identified as the cause of collision.



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Table 5 – Analysis Rankings: Intersections (Top 10 Per Type)


Intersection	Crashes	EPDO ²	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overtaken	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Signalized Intersections																					
Haun Rd & Newport Rd	68	248	0	0	7	22	39	17	11	32	3	2	0	0	3	1	27	6	15	0	5
Antelope Rd & Newport Rd	65	270	0	0	7	27	31	12	7	35	2	3	0	2	2	2	38	7	3	0	1
Menifee Rd & Highway 74	44	661	2	1	3	19	19	7	5	22	3	5	0	0	1	0	19	3	5	1	1
Bradley Rd & Newport Rd	28	431	0	2	1	13	12	8	4	14	1	0	0	0	0	0	16	1	3	0	0
Murrieta Rd & Newport Rd	27	241	1	0	2	6	18	8	3	14	0	1	0	0	1	1	12	4	5	0	1
Avenida de Cortez & Newport Rd	26	126	0	0	3	14	9	2	0	22	0	1	0	0	1	0	20	5	3	0	0
Encanto Dr & McCall Blvd	25	282	0	1	6	7	11	6	2	11	4	2	0	0	0	1	9	2	3	0	2
Menifee Rd & Newport Rd	23	242	0	1	1	9	12	6	3	13	0	0	0	0	0	1	15	2	0	0	2
Trumble Rd & Highway 74	21	100	0	0	4	8	9	5	2	12	1	1	0	0	0	0	14	5	1	0	0
Haun Rd/Zeiders Rd & Scott Rd	19	59	0	0	1	6	12	7	1	10	0	0	0	0	1	0	10	1	2	1	1
Unsignalized Intersections																					
Antelope Rd & Sunstream Dr	10	20	0	0	1	0	9	5	2	1	0	1	0	0	0	0	0	0	1	0	1
Sherman Rd & Highway 74 (Unsignalized)	10	35	0	0	0	5	5	1	0	6	0	3	0	0	0	0	6	1	2	0	0
Manganese Rd & Goetz Rd	9	39	0	0	2	2	5	1	2	0	1	3	2	0	0	0	7	0	1	3	1
Debon St & Bundy Canyon Rd	5	29	0	0	2	1	2	0	0	0	2	3	0	0	0	0	1	1	1	3	0
Buckwheat Rd & Scott Rd	5	35	0	0	2	2	1	0	0	3	1	1	0	0	0	0	4	1	1	0	0
Murrieta Rd & Holland Rd	5	20	0	0	1	1	3	2	0	0	1	2	0	0	0	0	2	1	0	1	2





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Intersection	Crashes	EPDO ²	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Bradley Rd & Canberra St/Early Dawn Rd	5	15	0	0	0	2	3	1	1	1	0	2	0	0	0	0	1	1	0	0	0
Avenida de Fiesta & Cabrillo Dr	5	25	0	0	0	4	1	0	0	4	0	1	0	0	0	0	4	3	0	0	0
Goetz Rd & Casa Bonita Dr	5	20	0	0	0	3	2	1	0	3	0	0	1	0	0	0	1	0	0	0	0
1st St & Highway 74	5	20	0	0	0	3	2	1	0	1	1	0	2	0	0	0	2	1	1	1	1

 = 90-100% probability that crash type is over-represented

 = 80-90% probability that crash type is over-represented

 = 70-80% probability that crash type is over-represented



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Table 6 – Analysis Rankings: Segments (Top 10 Per Type)

Facility	Cross Street 1	Cross Street 2	Crashes	EPDO ²	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overtaken	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Expressway																							
Highway 74	Malone Ave	Briggs Rd	4	178	1	0	0	2	1	0	0	3	0	0	0	0	1	0	3	0	0	2	0
Highway 74	Menifee Rd	Cumming Ave	3	13	0	0	1	0	2	0	0	3	0	0	0	0	0	0	2	0	1	0	0
Highway 74	Junipero Rd	Menifee Rd	3	8	0	0	0	1	2	0	0	2	0	1	0	0	0	0	2	0	0	0	0
Highway 74	Palomar Rd	Junipero Rd	3	13	0	0	0	2	1	0	1	2	0	0	0	0	0	0	1	0	1	2	0
Urban Arterial																							
Newport Rd	Haun Rd	Antelope Rd	23	232	0	1	1	7	14	3	3	15	0	0	0	1	1	0	16	0	2	0	0
Newport Rd	Goetz Rd	Lone Pine Dr	12	185	0	1	1	0	10	0	2	1	1	7	0	0	0	0	1	0	4	0	1
Newport Rd	Sherman Rd	Haun Rd	8	192	1	0	1	2	4	2	0	4	0	2	0	0	0	0	3	1	2	0	1
Newport Rd	Bradley Rd	ClI Tomas	8	13	0	0	0	1	7	1	1	5	0	1	0	0	0	0	5	0	2	0	0
Newport Rd	Murphy Ranch Rd	Murrieta Rd	8	38	0	0	2	2	4	1	2	1	0	3	0	1	0	1	2	0	1	0	0
Newport Rd	Wingate Ln	Bradley Rd	8	28	0	0	0	4	4	4	0	2	0	1	0	1	0	1	2	0	0	0	0
McCall Blvd	Encanto Dr	Sherman Rd	6	26	0	0	0	4	2	4	0	2	0	0	0	0	0	0	1	0	0	0	0
Newport Rd	Murphy Ranch Road	Byers Rd	6	25	0	0	2	0	4	0	0	2	0	4	0	0	0	0	2	0	0	1	1
Newport Rd	Menifee Rd	Menifee Lakes Dr	5	179	1	0	0	2	2	1	1	3	0	0	0	0	0	0	2	0	1	0	0
Scott Rd	Little Reb Pl	Antelope Rd	5	20	0	0	1	1	3	1	1	0	0	3	0	0	0	0	0	0	2	0	0



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Facility	Cross Street 1	Cross Street 2	Crashes	EPDO ²	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Menifee Rd	McLaughlin Rd	Highway 74	4	173	0	1	0	1	2	1	0	0	1	2	0	0	0	0	1	0	1	1	1
Newport Rd	Laguna Vista	Menifee Rd	4	183	1	0	0	3	0	1	0	2	0	1	0	0	0	0	3	1	1	0	1
Newport Rd	Westlink Dr	Antelope Rd	4	19	0	0	0	3	1	0	0	4	0	0	0	0	0	0	4	1	0	0	0
Newport Rd	Wingate Ln	Evans Rd	4	28	0	0	2	1	1	0	2	1	0	1	0	0	0	0	2	0	0	0	0
Scott Rd	Howard Rd	Haun Rd	4	14	0	0	0	2	2	0	0	3	0	1	0	0	0	0	2	1	2	0	0
Newport Rd	Evans Rd	Killington Dr	3	13	0	0	0	2	1	0	0	3	0	0	0	0	0	0	3	0	0	0	0
Scott Rd	Antelope Rd	Bailey Park Blvd	3	8	0	0	0	1	2	0	0	3	0	0	0	0	0	0	3	0	0	0	0
Scott Rd	Howard Rd	Haun Rd	3	27	0	0	2	1	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0
Scott Rd	Howard Rd	Ascot Way	3	23	0	0	1	2	0	0	0	3	0	0	0	0	0	0	2	1	0	1	0
Arterial																							
Murrieta Rd	Newport Rd	Lazy Creek Rd	14	396	0	2	3	5	4	11	0	0	0	1	0	0	2	0	0	0	0	0	0
Menifee Rd	Garbani Rd	Craig Ave	3	18	0	0	1	1	1	0	0	0	1	2	0	0	0	0	1	0	0	0	0
Major																							
Hwy 74	Tumble Rd	Watson Rd	13	381	1	1	0	8	3	9	0	3	1	0	0	0	0	0	3	0	0	0	0
Bradley Rd	Bristol Ln	Holland Rd	7	363	0	2	3	0	2	4	0	3	0	0	0	0	0	0	2	0	0	0	0
Antelope Rd	Scott Rd	Garbani Rd	6	199	0	1	2	2	1	1	1	2	1	0	1	0	0	0	3	1	0	2	0
Haun Rd	Scott Rd	Wickerd Rd	6	26	0	0	0	4	2	2	0	3	0	0	0	1	0	0	3	0	0	0	0
Goetz Rd	Goetz Rd	Trent Dr	5	193	0	1	2	1	1	1	1	0	1	2	0	0	0	0	0	1	1	0	1
Antelope Rd	Garbani Rd	Craig Ave	5	178	0	1	1	0	3	0	0	0	0	2	1	1	0	0	1	0	0	1	0
Haun Rd	La Piedra Rd	Newport Rd	4	24	0	0	1	2	1	3	0	1	0	0	0	0	0	0	1	0	0	0	0





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Facility	Cross Street 1	Cross Street 2	Crashes	EPDO ²	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Antelope Rd	la Piedra Rd	Stillwater Dr	4	173	0	1	0	1	2	1	0	0	0	3	0	0	0	0	1	0	0	0	0
Antelope Rd	Albion Ln	la Piedra Rd	4	23	0	0	2	0	2	3	0	1	0	0	0	0	0	0	0	0	0	0	0
Encanto Dr	McCall Blvd	Shadel Rd	3	8	0	0	0	1	2	0	0	0	1	2	0	0	0	0	1	0	0	0	0
Haun Rd	Craig Ave	Holland Rd	3	13	0	0	0	2	1	0	0	0	0	1	1	1	0	0	2	0	0	1	0
Secondary																							
Bradley Rd	Cherry Hills Blvd	McCall Blvd	7	191	0	1	1	2	3	2	0	2	1	2	0	0	0	0	1	0	2	0	0
Murrieta Rd	Rouse Rd	Mantle Dr	4	188	0	1	1	2	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0
Simpson Rd	Lindenberger Rd	Menifee Rd	3	13	0	0	1	0	2	1	0	0	0	2	0	0	0	0	0	0	1	0	0
Collector																							
Case Rd	Palomar Rd	San Jacinto Rd	3	22	0	0	2	0	1	0	0	1	0	1	0	1	0	0	0	0	2	1	0
Craig Ave	Evans Rd	Bradley Rd	3	8	0	0	0	1	2	1	0	1	0	1	0	0	0	0	1	0	0	1	0

 = 90-100% probability that crash type is over-represented

 = 80-90% probability that crash type is over-represented

 = 70-80% probability that crash type is over-represented

8. Best Practices Evaluation and Emphasis Areas

8.1 Best Practices Evaluation

Table 7 identifies existing plans and policies that were recently completed, or are planned, or on-going within the City of Menifee. The intent of this review is to provide an idea of the types of strategies in place or encouraged by the City that may impact the safety analysis process. It will also identify opportunity areas where the City could adopt non-infrastructure countermeasures. This table also ties each topic and enhancement to the emphasis areas that are laid out in **Section 8.2**.

Table 7 – Summary of Program, Policies, and Practices

Topic	Initiatives/ Current Status	Opportunities for Implementation or Enhancement
COMMITTEES / ROLES		
Does the City have an Active Transportation Coordinator?	No dedicated person, but Principal Engineer applies for ATP funding	Formalize Active Transportation Coordinator role and assign to appropriate staff member
Does the City have a Safety or Active Transportation Advisory Committee?	No	Assemble Safety Advisory Committee to identify traffic safety issues and meet on regular basis
Does the City have an Active Transportation Safety Education Program?	No	Implement an Active Transportation Safety Education program
POLICY / PLANS		
Does the City have a Complete Streets Plan?	No	Implement a Complete Streets Plan to formalize complete streets policies
Does the City assess Traffic Impact Fees?	Yes	Continue to assess Traffic Impact Fees and use proceeds for traffic safety improvements
Does the City have a Safe Routes to School program?	Yes. The City's Active Transportation Plan included safe routes to school assessment and list of projects	Continue to regularly update Safe Routes to School program to reflect changing trends
Does the City implement Traffic Calming Policies?	Very few, if any policies. Traffic calming concepts are used on new development.	Formalize Traffic Calming Policies and implement where appropriate
Does the City regularly conduct Speed Surveys?	Every 7 years	Continue to conduct speed surveys every 7 years as required by the CA MUTCD



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Does the City utilized Warrants for Stop Signs and Signals?	Yes. We use Caltrans warrants and engineering judgement	Continue to utilize warrants for stop signs and signals
Is the City planning for Density and Walkable Areas?	Most development is low density residential. New developments provide sidewalk and are planned for higher densities. Mixed use development is allowed and encourage. Trails are provided if on master trails plan. Very low pedestrian volumes except surrounding schools.	Continue to accommodate for pedestrians and bicyclists in new development
Does the City have Transportation Demand Management (TDM) or Vehicle Miles Travelled (VMT) Reduction policies?	Yes	Continue implementing TDM and VMT policies
Does the City perform Traffic Crash Monitoring?	City uses Crossroads to keep track of collisions. Very little is done on traffic crash monitoring.	Regularly monitor crash data to identify any trends or hotspots
Does the City have an Active Transportation Master Plan?	The City completed an Active Transportation Plan and the City's General Plan Circulation Element	Continue to regularly update Active Transportation Plan
Does the City have MUTCD-compliant Pedestrian Signal Timing?	Yes	Continue to implement MUTCD compliant pedestrian signal timing
Does the City implement Crosswalks at high pedestrian locations?	Yes	Continue to implement crosswalks at high pedestrian volume locations
What type of traffic enforcement does the City conduct?	City has new police department. They do the typical speed and signal enforcement and every few months put up DUI checkpoints.	Continue to enforce traffic laws in collision and aggressive driving hotspots
What is the City's Bicycle Policy?	I am not aware of any city bike policies. There is nothing in the municipal code.	Formalize bicycle policies in City's transportation element
What types of transit does the City have?	Public Transportation through RTA	Coordinate with transit agencies to identify any transit-related improvements to traffic safety
What types of wayfinding does the City have?	There is not much to be found in Menifee. If there is any, the signs are likely in the large commercial shopping centers.	Identify areas where wayfinding signage could contribute to increased roadway safety
DATA COLLECTION / INVENTORY		



Local Road Safety Plan and Program

August 2022

Does the City have an Inventory of Pedestrian Signs and Signals?	No inventory of pedestrian signs. Eventually GIS should have everything inventoried.	Create GIS database of pedestrian signals and signs
Does the City have an Inventory/Mapping of Active Transportation Routes?	Yes	Continue to regularly update inventory; assemble in GIS if appropriate
Does the City utilize Crossroads Database for collisions?	Yes	Continue to utilize Crossroads database and regularly update
Does the City have Active Transportation Volume Counting?	Most traffic counts are from development project's traffic impact studies. During Covid we have used old counts and factored them up. There is no annual count program.	Implement Active Transportation Volume counting at key locations to gauge active transportation usage
COORDINATION / FEEDBACK		
What ways can citizens give feedback about roadway safety?	City has an active transportation portal where residents can give comments on ATP, and also the City has an online work order form available to residents where they can place comments or concerns related to traffic safety	Continue to solicit citizen feedback on traffic safety and transportation planning efforts
What types of Coordination with other City organization does your department perform?	Timing of private developments that are required to construct street improvements	Continue coordinate City departments (e.g. Public Works, Engineering, Community Development, Police Department, Etc.)
What types of School Engagement does the City perform?	The City is constantly in communication with the School districts in Menifee regarding safety.	Continue to identify areas of coordination with local schools
What types of Law Enforcement/Emergency Service Engagement does the City perform?	Engagement with police and fire department	Continue to identify areas of coordination with police and fire department

8.2 Emphasis Areas

Emphasis areas represent crash factors that are common in the City and provide the opportunity to reduce the largest number of traffic injuries with strategic investment. Emphasis areas were developed by revisiting the vision and goals of this planning process and comparing them with the trends and patterns identified in the crash analysis.

8.2.1 Emphasis Area #1: Impaired Driving

Description: Impaired driving crashes are a high priority challenge area within the Caltrans SHSP. Caltrans defines these as crashes where any evidence of drug or alcohol use by the driver is present, even if the driver was not over the legal limit. 281 crashes (14.1%) were reported as the driver being under the influence of alcohol or drugs. Eight of these crashes resulted in a fatality and 24 in a severe injury. Almost 2/3 of these crashes (162) resulted in Property Damage Only.

Goal for Emphasis Area #1:

- Reduce the number of crashes attributed to impaired driving
- Identify hot spots and priority corridors for countermeasures to reduce impaired driving
- Apply for funding to implement countermeasures to reduce impaired driving crashes

Strategies for Emphasis Area #1:

- Authorize, publicize, and conduct sobriety checkpoints programs
- Implement an impaired driving education campaign
- Develop educational programs targeting specific audiences based on age group
- Additional enforcement presence
- Create effective media campaigns in both visual and print media

These strategies will be implemented by the City, law enforcement, and community organizations. Funding sources for these strategies may include OTS, NHTSA, and SB1 grant programs.

8.2.2 Emphasis Area #2: Distracted Driving

Description: Distracted driving collisions, as defined by the SHSP, includes instances where the driver of a vehicle was not paying attention or using an electronic device. Distracted drivers were involved with 4.9% of the fatal & severe injury collisions, compared to 4.7% of collisions statewide (based on 2016-2018 SHSP data). During the LRSP study period, 7.3% (145) of the collisions involved distracted driving. One resulted in a fatality and 4 resulted in severe injuries. The most common type of collisions involving distracted driving was rear-end, followed by broadsides.

Goal for Emphasis Area #6:

- Reduce the number of distracted driving collisions
- Identify hot spots for distracted driving collisions
- Apply for funding and implement countermeasures involved distracted driving

Strategies for Emphasis Area #6:

- Address distracted driving collisions by implementing proven countermeasures
 - Install flashing beacons on curve chevron signage
 - Evaluate and improve lane striping through intersections
- Implement educational program to address causes of distracted driving
- Increase enforcement of distracted driving in the City

These strategies can be implemented by the City with assistance from emergency services and community organizations. Funding sources for these strategies may include Highway Safety Improvement Program (HSIP), OTS, and SB1 grant programs.

8.2.3 Emphasis Area #3: Young Drivers

Description: Young drivers, as defined by the Caltrans SHSP, are drivers between 15 and 20 years of age. Young drivers were involved in 221 crashes, about 11% of total crashes. Six resulted in severe injury. 4% of these crashes resulted in property damage only.

Goal for Emphasis Area #3:

- Reduce the number and severity of young driver collisions
- Identify hot spots and priority corridors for young driver collisions
- Apply for funding and implement countermeasures to address young drivers

Strategies for Emphasis Area #3:

Strategies to address young driver behaviors will mainly focus on education, encouragement, and enforcement. Strategies that have had success nationally include driver's education courses, implementing technology in young drivers' vehicles, and education campaigns to target young drivers with messages regarding road safety, common mistakes, and challenges that young drivers face. Strategies may also include increased enforcement near hotspots of young driver collisions and increased coordination with community organizations.

These strategies will be implemented by the City, law enforcement, and local community organizations. Funding sources for these strategies may include NHTSA, OTS, and SB1 grant programs.

8.2.4 Emphasis Area #4: Vulnerable Road Users (Pedestrians & Bicyclists)

Description: Pedestrians and bicyclists are classified by Caltrans as vulnerable users, meaning they possess the highest potential for severe harm during a crash. These groups need appropriate infrastructure to travel to key destinations such as schools, workplaces, and core commercial areas. The City's Circulation element lays out plans and standards for non-motorized transportation. Of the 1,968 crashes involving vulnerable road users, 7 resulted in a fatal injury and 9 resulted in a severe injury. The City should aim to implement countermeasures to further protect these users from injury.

Goals for Emphasis Area #4:

- Improve active transportation infrastructure by adding pedestrian facilities, bike lanes, and other amenities to make it safer for employees and community members to get to key destinations such as school, commercial centers, transit centers, and recreation areas
- Encourage healthier lifestyles through active transportation infrastructure
- Apply for HSIP and other funding to implement countermeasures to address vulnerable road user crashes

Strategies for Emphasis Area #4:

- Provide outreach, education, and enforcement to encourage more separation between vehicular and pedestrian traffic
- Install high-visibility crosswalk markings at the intersection of key destinations
- Ensure all signalized intersections have completed crosswalks
- Provide dedicated pedestrian and bicycle infrastructure to and from bus stops
- Install adequate street lighting
- Widen street shoulders
- Provide signage (e.g., pedestrian crossing ahead) to help drivers expect to slow down for pedestrians and bikes
- Install bicycle lanes along key corridors
- Install bicycle storage facilities in public areas, such as parks and schools, to encourage bicycle use
- Implement recommendations from Safe Routes to School plan and consider opportunities for more systemic implementation where appropriate.
- Install curb extensions
- Install ADA ramps
- Modify signal phasing to implement a Leading Pedestrian Interval (LPI) with new controller
- Install/upgrade pedestrian crossing at uncontrolled locations
- Establish rotating enforcement targets for high visibility campaigns
- Incorporate GIS bicycle facilities into interactive map on City website
- Update City traffic analysis guidelines to require bicycle and pedestrian counts



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These strategies will be implemented by the City, while partnering with Caltrans, Southern California Association of Governments (SCAG), California Highway Patrol (CHP), and other community partners. Funding sources for these strategies may include HSIP, Active Transportation Program (ATP), OTS, SB 1, and SS4A grant programs.

9. Countermeasure Toolbox

This section provides information on general identified issues, crash reduction factors, improvements, and countermeasures identified for the City of Menifee, as well as for specific project locations identified as part of this analysis. Countermeasures for each of the Safety Project Case Studies are based on data analysis, stakeholder input, and site visits.

9.1 Infrastructure Improvements

9.1.1 Countermeasure Selection Process

Part D of the HSM provides information on Crash Modification Factors (CMFs) for roadway segments, intersections, interchanges, special facilities, and road networks. CMFs are used to estimate the safety effects of highway improvements, specifically to compare and select highway safety improvements. A CMF less than 1.0 indicates that a treatment has the potential to reduce crashes. A CMF greater than 1.0 indicates that a treatment has the potential to increase crashes. A Crash Reduction Factor (CRF) is directly connected to the CMF and is “mathematically defined as $(1 - \text{CMF})$ (the higher the CRF, the greater the expected reduction in crashes)⁵.” CMFs can help decision makers weigh potential alternative projects, but are only one measure of a project’s value and should be considered part of a larger decision making process. Furthermore, it is important to note that not all CMFs are as reliable as others. The FHWA maintains a federal depository of CMFs and includes a star rating system to help users determine which CMFs are bolstered by the best and most thorough research. Key factors to consider when applying CMFs include:

1. Selection of an appropriate CMF;
2. Estimation of crashes without treatment;
3. Application of CMFs by type and severity; and,
4. Estimation of the combined effect for multiple treatments.

Examples of Safety Countermeasures can be found through several sources. This Report utilizes the countermeasures found in the California *Local Roadway Safety Manual* (LRSM) and the *CMF Clearinghouse* (CMF CH) website. Countermeasures for each of the Safety Project Case Studies are based on the data analysis and site visits. Additional countermeasures were identified for the high-level issues on a city-wide level and are discussed in **Section 9.2 City-Wide Countermeasure Toolbox**.

⁵ Local Roadway Safety Manual (Version 1.5) 2020. Page 27.

9.1.2 Safety Project Case Studies

From the city-wide analysis, eleven (11) project case study locations were selected for further evaluation and countermeasure development. For each of these locations, Safety Project Case Studies were developed to provide a balanced understanding of common safety patterns at a variety of location types that can be used to associate countermeasures with specific roadway configurations and conditions. These locations were identified through the analysis process based on their crash histories, stakeholder engagement, the observed crash patterns, and their different characteristics to provide the most insight into potential systemic safety countermeasures that the City can employ to achieve the most cost-effective safety benefits.

A Safety Project Case Study was developed for each of the following locations:

1. Signalized Intersection: Newport Road and Haun Road
2. Signalized Intersection: Newport Road and Bradley Road
3. Unsignalized Intersection: Murrieta Road and Holland Road
4. Signalized Intersection: Haun Road/Zeiders Road and Scott Road
5. Unsignalized Intersection: Manganese Road and Goetz Road
6. Signalized Intersection: Trumble Road and Highway 74
7. Unsignalized Intersection: Sherman Road and Highway 74
8. Unsignalized Intersection: Sherman Road and Jackson Ave
9. Signalized Intersection: Highway 74 and Meniffee Road
10. Signalized Intersection: Encanto Dr and McCall Road
11. Signalized Intersection: Briggs Road and Highway 74

The following pages summarize conditions at each location, and potentially beneficial countermeasures. Countermeasures were subjected to a benefit/cost assessment and scored according to their potential return on investment. These case studies can be used to select the most appropriate countermeasure, and to potentially phase improvements over the longer-term. The potential benefit of these countermeasures at locations with similar design characteristics can then be extrapolated regardless of crash history, allowing for proactive safety enhancements that can prevent future safety challenges from developing. These case study sheets can also be used to position the City for future grant funding opportunities. The monetary benefits are calculated from the latest Caltrans injury level cost data. Fatal and severe injury collisions are estimated at \$2.19 million, Other Visible Injury collisions at \$142,300, Complaint of Pain collision at \$80,900, and Property Damage Only collisions at \$13,300.



Case Study Sheet: Location # 1

Project Name: Menifee LRSP
 Agency Name: City of Menifee
 Contact Name: Carlos Geronimo
 Email: cgeronimo@cityofmenifee.us

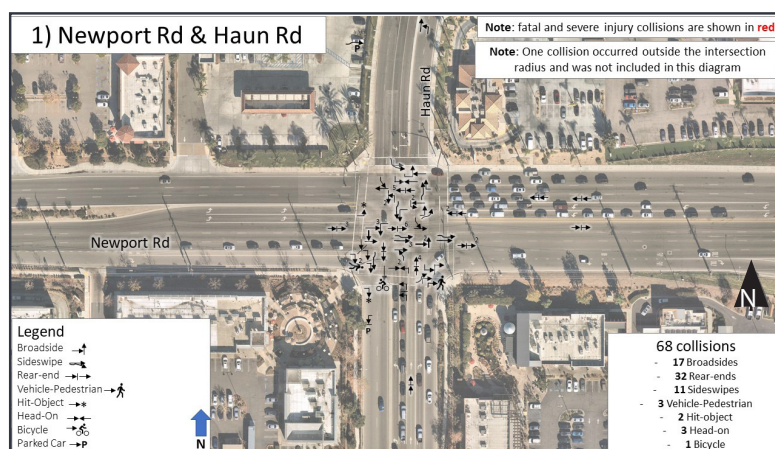
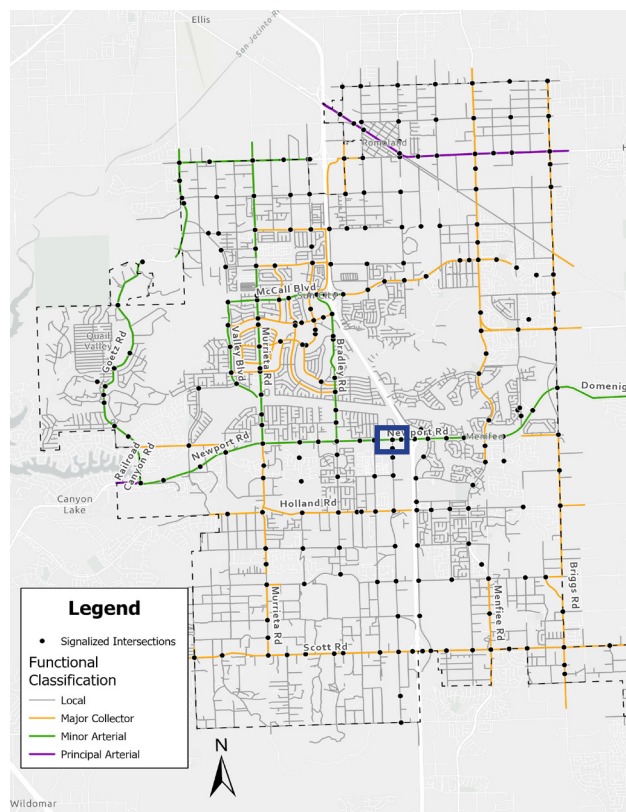
Prepared by: Kimley-Horn
 Checked by:
 Leonardo Espelet, P.E.
 Date: June 2022



Project Location Description & Maps:

Intersection: Newport Rd & Haun Rd

Example of Similar Intersections: Antelope Rd & Newport Rd, Murrieta Rd & Newport Rd



Traffic and Geometric Data:

Collision Data	
Total Collisions	68
Fatal and Injury Collisions	0 fatal; 0 severe; 7 visible injury
Top 3 Collision Types	Rear- End (47%) Broadside(25%) Sideswipe (11%)
Total Nighttime Collisions	28
Wet Surface Collisions	5
Drug and Alcohol Related Collisions	15

Traffic Data	
Number of Approaches	4
Crosswalk Condition	West Crossing Prohibited
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	55
Median	Yes, at 3 approaches

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
58	3	1



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install retroreflective backplates	15% (S02)	\$1,928,220	\$12,000	160.69
Provide Advanced Dilemma Zone Detection	40% (S04)	\$5,141,920	\$30,000	171.40
Implement Leading Pedestrian Interval (LPI)	60% (S21PB)	\$7,712,880	\$30,000	257.10
Refresh lane extensions striping	10% (S09)	\$1,285,480	\$22,000	58.43
Install advanced lane markings	5%	\$642,740	\$5,000	128.55



Case Study Sheet: Location # 2

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

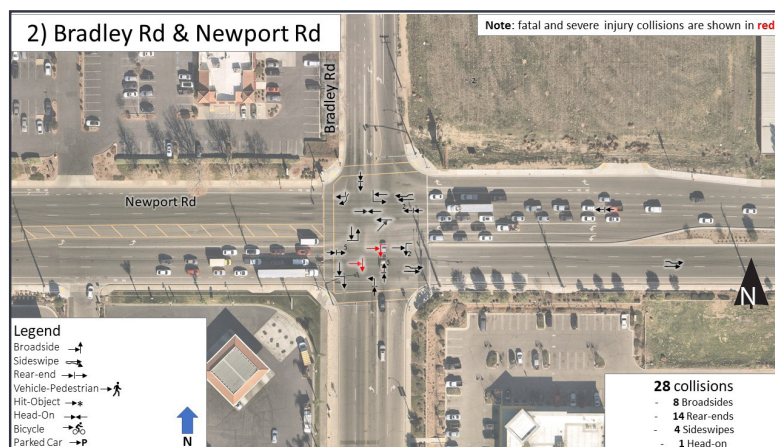
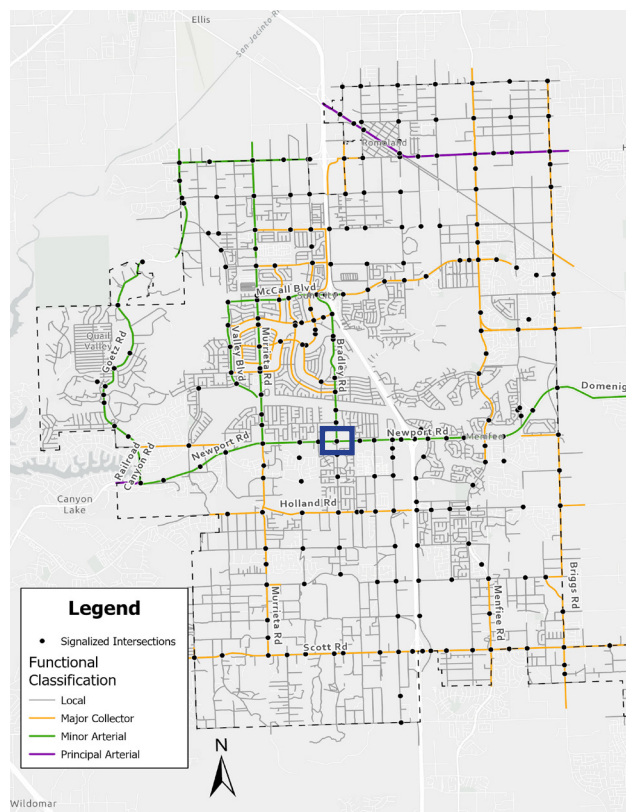
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Newport Rd & Bradley

Example of Similar Intersections: Murrieta Rd & Newport Rd, Avenida de Cortez & Newport Rd



Traffic and Geometric Data:

Collision Data	
Total Collisions	28
Fatal and Injury Collisions	0 fatal; 2 severe; 1 visible injury
Top 3 Collision Types	Rear- End (50%) Broadside(29%) Sideswipe (14%)
Total Nighttime Collisions	13
Wet Surface Collisions	0
Drug and Alcohol Related Collisions	3

Traffic Data	
Number of Approaches	4
Crosswalk Condition	East Crossing Prohibited
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	50
Median	Yes, on east approach

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
28	0	0



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install retroreflective backplates	15% (S02)	\$868,680	\$12,000	72.39
Provide Advanced Dilemma Zone Detection	40% (S04)	\$2,316,480	\$30,000	68.13
Implement Leading Pedestrian Interval (LPI)	60% (S21PB)	\$3,474,720	\$30,000	115.82
Install High Visibility Crosswalk	25% (S18PB)	\$1,447,800	\$50,000	28.96
Install Lane Extension Striping	10% (S09)	\$579,120	\$22,000	26.32



Case Study Sheet: Location # 3

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

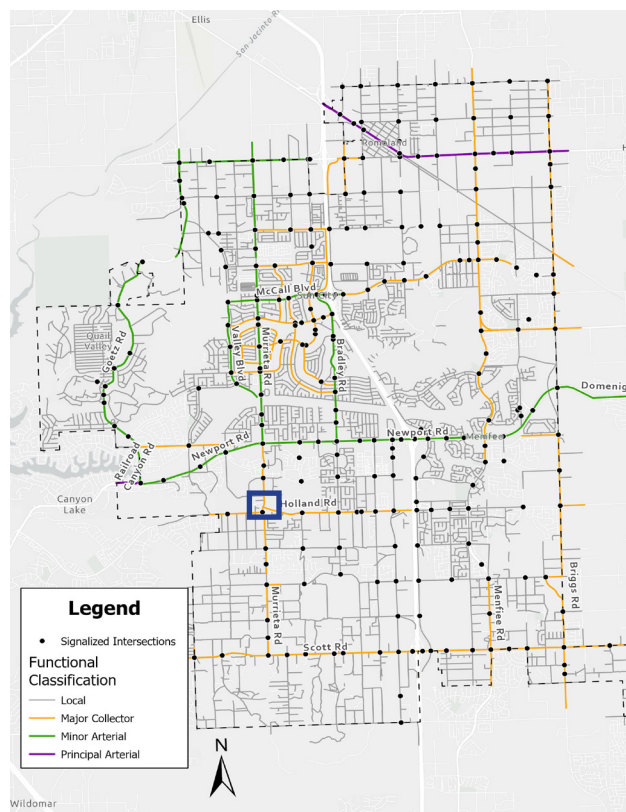
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Murrieta Rd & Holland Rd

Example of Similar Intersections: Bradley Rd & Canberra St/Early Dawn Rd, Farmington Rd & Murrieta Rd



Traffic and Geometric Data:

Collision Data	
Total Collisions	10
Fatal and Injury Collisions	0 fatal; 0 severe; 1 visible injury
Top 3 Collision Types	Broadside (20%) Hit-Object (20%) Rear-End (10%)
Total Nighttime Collisions	5
Wet Surface Collisions	3
Drug and Alcohol Related Collisions	0

Traffic Data	
Number of Approaches	6
Crosswalk Condition	None
Control Type	All-Way Stop
Lighting	No
Highest Posted Speed Limit	35
Median	None

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
8	0	0



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install retroreflective backplates	15% (S02)	\$319,440	\$12,000	26.62
Provide Advanced Dilemma Zone Detection	40% (S04)	\$851,840	\$30,000	25.05
Implement Leading Pedestrian Interval (LPI)	60% (S21PB)	\$1,277,760	\$30,000	42.59
Install Sidewalks	80% (R34PB)	\$1,703,680	\$540,000	3.15
Install Safety Edges	25% (R28)	\$532,400	\$8000	66.55
Add Intersection Lighting	40% (NS01)	\$851,840	\$50,000	17.04
Install Signals	30% (NS03)	\$638,880	\$270,000	2.37



Case Study Sheet: Location # 4

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

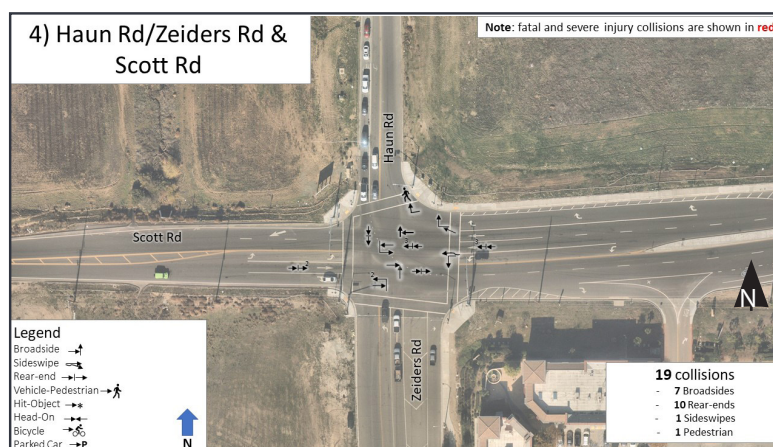
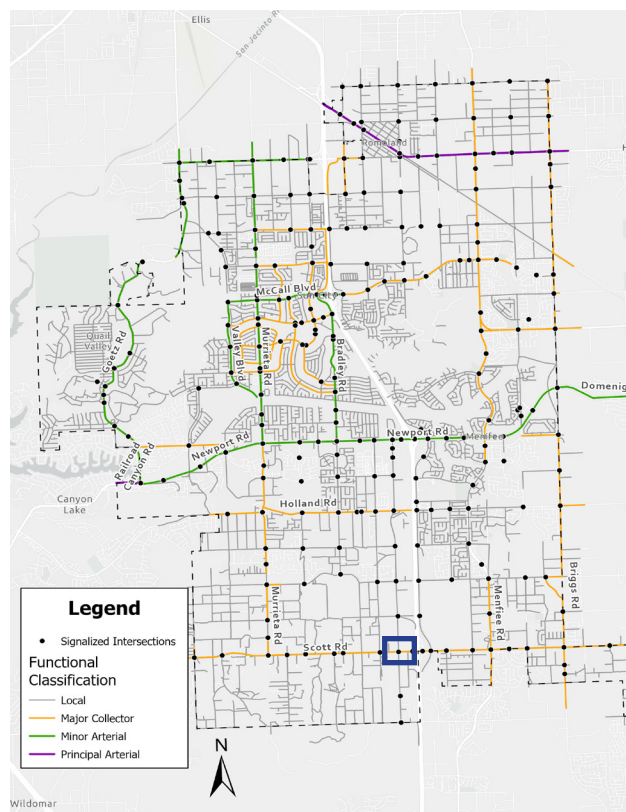
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Haun Rd/Zeiders Rd & Scott Rd

Example of Similar Intersections: Antelope Rd & Scott Rd, Menifee Rd & Scott Rd



Traffic and Geometric Data:

Collision Data	
Total Collisions	19
Fatal and Injury Collisions	0 fatal; 0 severe; 1 visible injury
Top 3 Collision Types	Rear-End (53%) Broadside (37%) Sideswipes (5%)
Total Nighttime Collisions	5
Wet Surface Collisions	1
Drug and Alcohol Related Collisions	2

Traffic Data	
Number of Approaches	4
Crosswalk Condition	4-Standard
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	50
Median	No

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
18	0	1



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install retroreflective backplates	15% (S02)	\$472,380	\$12,000	39.37
Provide Advanced Dilemma Zone Detection	40% (S04)	\$1,259,680	\$34,000	37.05
Implement Leading Pedestrian Interval (LPI)	60% (S21PB)	\$1,889,520	\$30,000	62.98
Install dynamic/variable speed warning sign	30% (R26)	\$944,760	\$16,000	59.05
Sight Distance Evaluation on westbound right turn	20% (S09)	\$629,840	\$3,000	209.95
Evaluate and improve lane striping through intersection	10% (S09)	\$314,920	\$22,000	14.31



Case Study Sheet: Location # 5

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

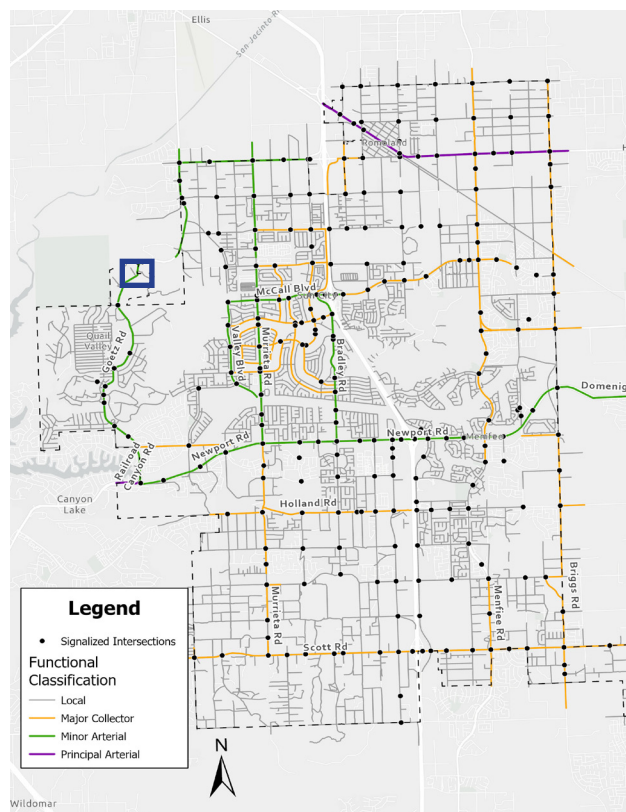
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Manganese Rd & Goetz Rd

Example of Similar Intersections: Coyote & Goetz, Goetz Rd & Casa Bonita Dr



Traffic and Geometric Data:

Collision Data	
Total Collisions	9
Fatal and Injury Collisions	0 fatal; 0 severe; 1 visible injury
Top 3 Collision Types	Hit Object (33%) Sideswipe (22%) Overturned (22%)
Total Nighttime Collisions	4
Wet Surface Collisions	1
Drug and Alcohol Related Collisions	1

Traffic Data	
Number of Approaches	3
Crosswalk Condition	None
Control Type	1 Stop Sign at North Approach
Lighting	None
Highest Posted Speed Limit	45
Median	None

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
4	0	0



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install limit line at Manganese Rd	5%	\$102,580	\$2,000	51.29
Install speed feedback signage	30% (R26)	\$615,480	\$16,000	38.47
Install flashing beacons on curve chevron signage	25% (R24)	\$512,900	\$4,500	113.98
Add street lighting	40% (NS01)	\$820,640	\$50,000	16.41
Standardize speed limit for curve	5%	\$102,580	\$2,000	51.29
Install rumble strips in center line	20% (R30)	\$410,320	\$12,000	34.19
Install safety edges	25% (R28)	\$512,900	\$8,000	64.11



Case Study Sheet: Location # 6

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

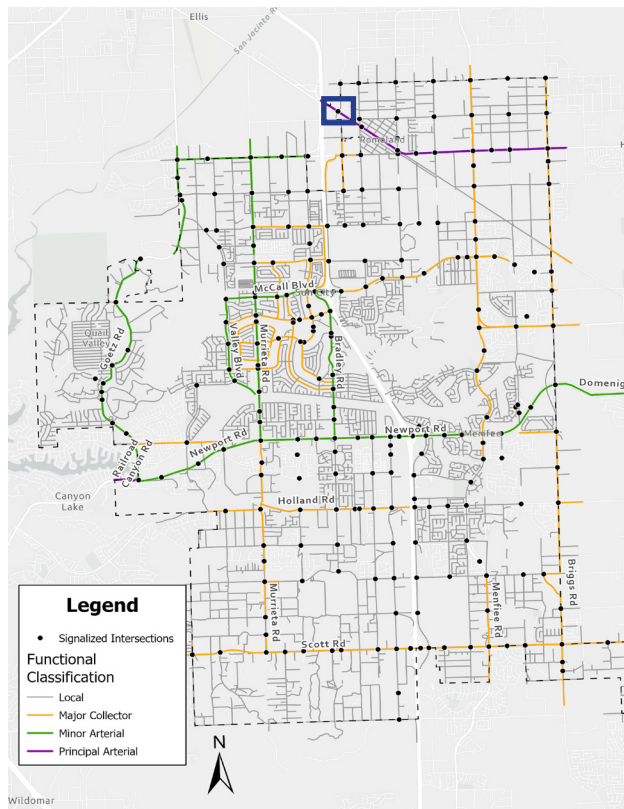
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Trumble Rd & Highway 74

Example of Similar Intersections: Antelope Rd & Highway 74, Antelope Rd & Holland Rd



Traffic and Geometric Data:

Collision Data	
Total Collisions	32
Fatal and Injury Collisions	1 fatal; 1 severe; 4 visible injury
Top 3 Collision Types	Broadside (44%) Rear-End(41%) Sideswipes (6%)
Total Nighttime Collisions	9
Wet Surface Collisions	0
Drug and Alcohol Related Collisions	1

Traffic Data	
Number of Approaches	3
Crosswalk Condition	1-West Approach
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	45
Median	None

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
32	0	0



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install retroreflective backplates	15% (S02)	\$3,793,380	\$12,000	316.12
Provide Advanced Dilemma Zone Detection	40% (S04)	\$10,115,680	\$34,000	297.52
Implement Leading Pedestrian Interval (LPI)	60% (S21PB)	\$15,173,520	\$30,000	505.78
Restrict left-turn from the driveway	50% (S14)	\$12,644,600	\$15,000	842.97
Install protected left turn phasing	30% (S07)	\$7,586,760	\$40,000	189.67
Complete crosswalk	25% (S18PB)	\$6,322,300	\$50,000	126.45
Install ADA Ramps	5%	\$1,264,460	\$30,000	42.15



Case Study Sheet: Location # 7

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

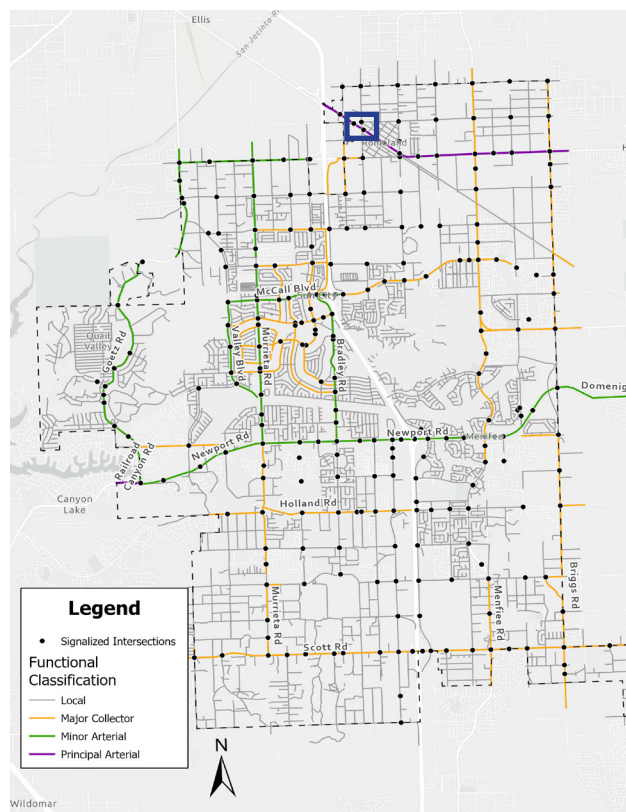
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Sherman Rd & Highway 74

Example of Similar Intersections: 1st & Highway 74, Antelope Rd & Sunstream Dr



Traffic and Geometric Data:

Collision Data	
Total Collisions	10
Fatal and Injury Collisions	0 fatal; 2 severe; 0 visible injury
Top 3 Collision Types	Rear-End(60%) Hit-Object(30%) Broadside (10%)
Total Nighttime Collisions	6
Wet Surface Collisions	0
Drug and Alcohol Related Collisions	2

Traffic Data	
Number of Approaches	2
Crosswalk Condition	None
Control Type	1-Stop Sign
Lighting	Yes
Highest Posted Speed Limit	50
Median	1 - Raised Median at West Approach

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
14	0	0



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install no left turn sign	15% (NS06)	\$2,926,560	\$1,000	2926.56
Restripe Sherman Rd to remove left turn lane	5%	\$975,520	\$5,000	195.10
Realign ADA ramps with crosswalk	5%	\$975,520	\$20,000	48.78
Evaluate access to Sherman Rd from California Ranch Market	5%	\$975,520	Varies	Varies
Evaluate truck turning radius	5%	\$975,520	Varies	Varies



Case Study Sheet: Location # 8

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

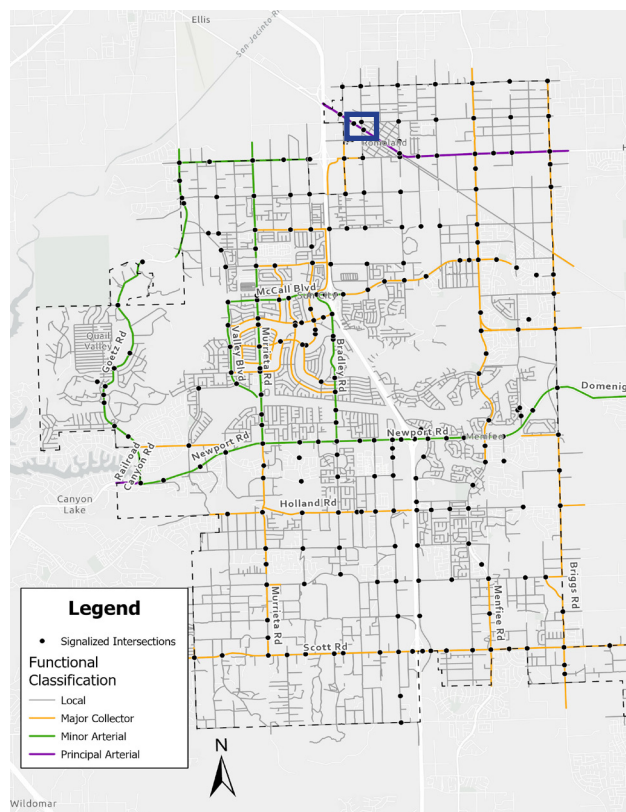
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Sherman Rd & Jackson Ave

Example of Similar Intersections: Buckwheat Rd & Scott Rd, Murrieta Rd & Woodcrest Lake Dr



Traffic and Geometric Data:

Collision Data	
Total Collisions	2
Fatal and Injury Collisions	0 fatal; 0 severe; 0 visible injury
Top Collision Type	Rear-End
Total Nighttime Collisions	1
Wet Surface Collisions	0
Drug and Alcohol Related Collisions	0

Traffic Data	
Number of Approaches	3
Crosswalk Condition	None
Control Type	1-Stop Sign at East Approach
Lighting	Yes
Highest Posted Speed Limit	40
Median	None

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
2	0	0



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Refresh and improve striping, with potential to improve sight distance	25% (NS06)	\$26,600	\$22,000	1.21



Case Study Sheet: Location # 9

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

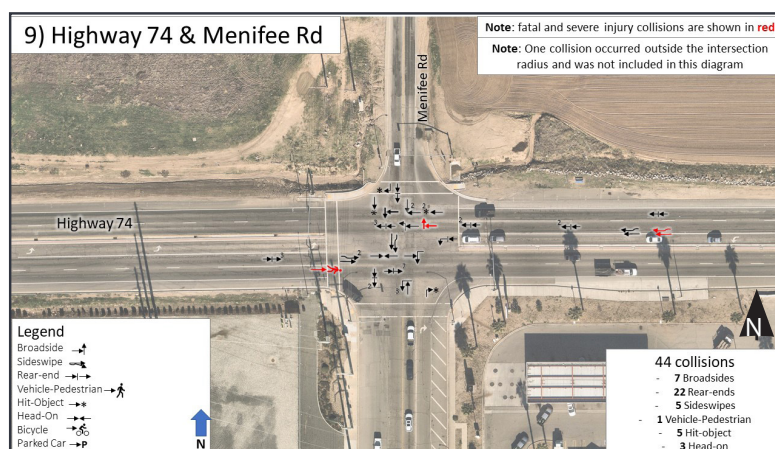
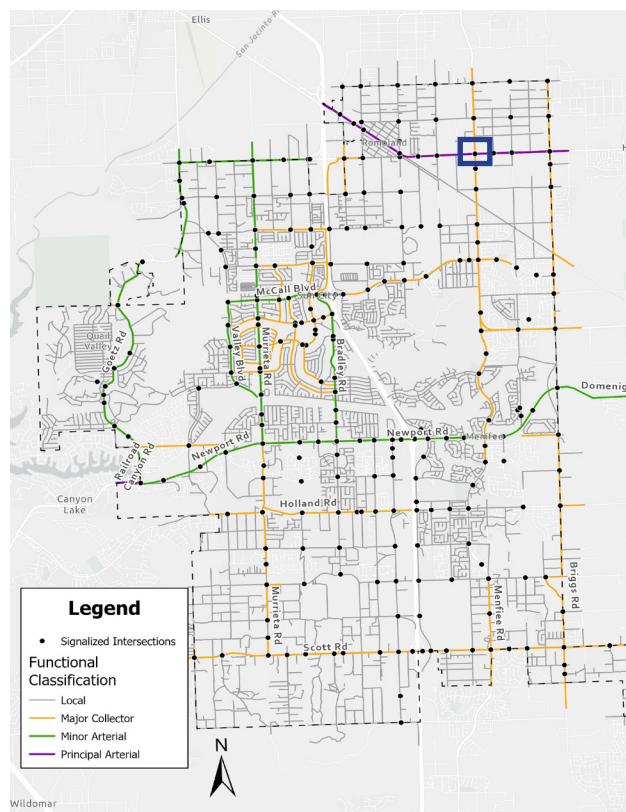
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Highway 74 & Menifee Rd

Example of Similar Intersections: Palomer Rd & Hwy 74, Oakhurst Ave & McCall Blvd,



Traffic and Geometric Data:

Collision Data	
Total Collisions	44
Fatal and Injury Collisions	2 fatal; 1 severe; 3 visible injury
Top Collision Types	Rear-End (50%) Broadside (16%) Sideswipe(11%)
Total Nighttime Collisions	21
Wet Surface Collisions	1
Drug and Alcohol Related Collisions	5

Traffic Data	
Number of Approaches	4
Crosswalk Condition	West Crossing Prohibited
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	55
Median	Yes- W/E Approaches

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
38	1	0



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install retroreflective backplates	15% (S02)	\$5,320,560	\$12,000	443.38
Provide Advanced Dilemma Zone Detection	40% (S04)	\$14,188,160	\$34,000	417.30
Implement Leading Pedestrian Interval (LPI)	60% (S21PB)	\$21,282,240	\$30,000	709.41
Repave roadway surface	5%	\$1,773,520	\$2,500	709.41
Complete crosswalk	25% (S18PB)	\$8,867,600	\$50,000	177.35
Re-evaluate signal timing for westbound left turn to provide sufficient time for trucks	15% (S03)	\$5,320,560	\$5,000	1064.11



Case Study Sheet: Location # 10

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

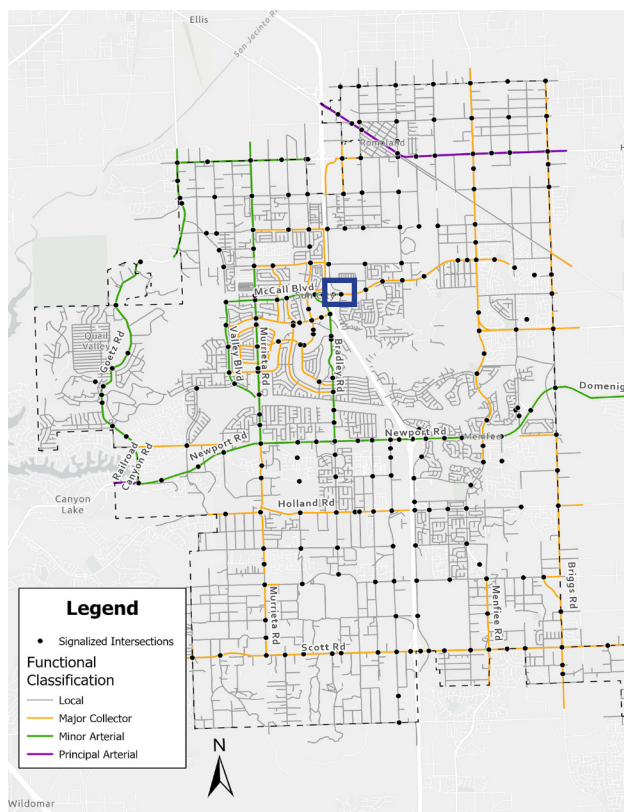
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Encanto Dr & McCall Blvd

Example of Similar Intersections: Via Entrada & McCall Blvd, Antelope Rd & Scott Rd



Traffic and Geometric Data:

Collision Data	
Total Collisions	25
Fatal and Injury Collisions	0 fatal; 1 severe; 6 visible injury
Top 3 Collision Types	Rear-End(44%) Broadside(24%) Head-On(16%)
Total Nighttime Collisions	10
Wet Surface Collisions	2
Drug and Alcohol Related Collisions	3

Traffic Data		
Number of Approaches		4
Crosswalk Condition		3-Standard, 1-Continental at East Crossing
Control Type		Signalized
Lighting		Yes
Highest Posted Speed Limit		50
Median		None
Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
23	0	1



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install retroreflective backplates	15% (S02)	\$2,302,380	\$12,000	191.87
Provide Advanced Dilemma Zone Detection	40% (S04)	\$6,139,680	\$34,000	180.58
Implement Leading Pedestrian Interval (LPI)	60% (S21PB)	\$3,474,720	\$30,000	115.82
Install protected left turn phasing on north bound approach	30% (S07)	\$4,604,760	\$40,000	115.12
Install freeway guidance lane markings	5%	\$767,460	\$5,000	153.49
Install feedback signage on eastbound approach	30% (R26)	\$4,604,760	\$16,000	287.80
Complete crosswalk	25% (S18PB)	\$3,837,300	\$50,000	76.75
Refresh crosswalk striping	5%	\$767,460	\$2,500	306.98



Case Study Sheet: Location # 11

Project Name: Menifee LRSP
Agency Name: City of Menifee
Contact Name: Carlos Geronimo
Email: cgeronimo@cityofmenifee.us

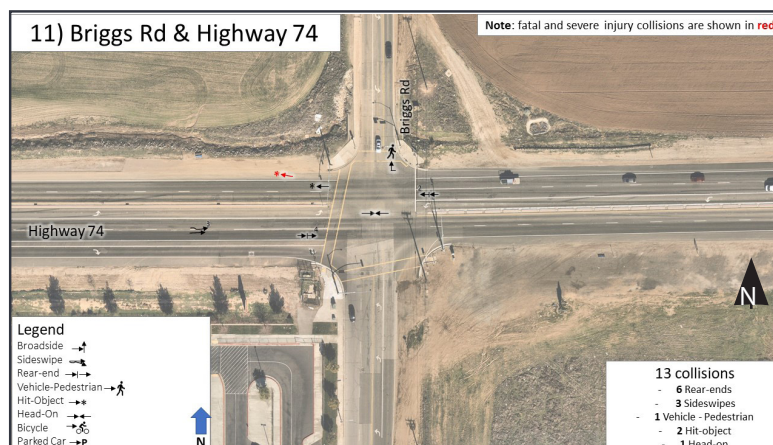
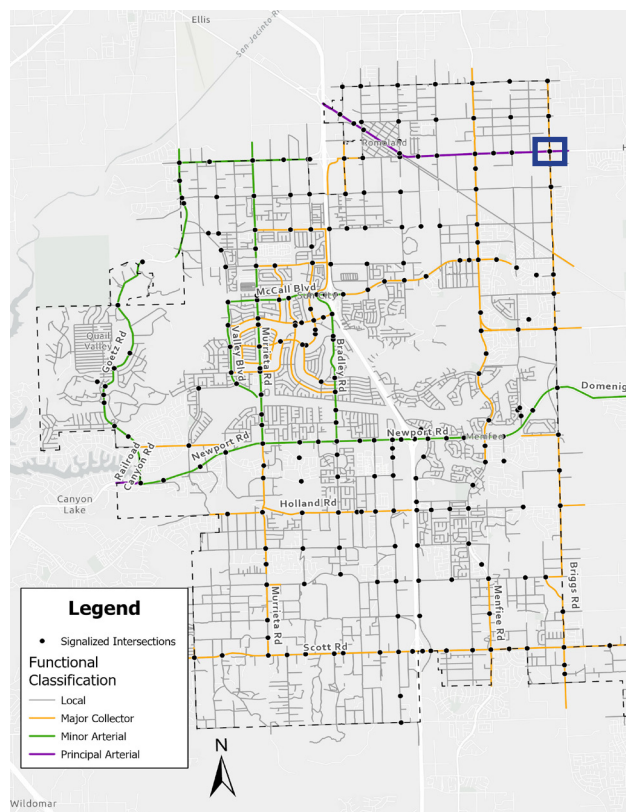
Prepared by: Kimley-Horn
Checked by:
Leonardo Espelet, P.E.
Date: June 2022



Project Location Description & Maps:

Intersection: Briggs Rd & Highway 74

Example of Similar Intersections: Evans Rd & Newport Rd, Menifee Rd & Chamber Ave



Traffic and Geometric Data:

Collision Data	
Total Collisions	13
Fatal and Injury Collisions	1 fatal; 0 severe; 3 visible injury
Top 3 Collision Types	Rear-End(46%) Sideswipe(23%) Hit-Object(15%)
Total Nighttime Collisions	5
Wet Surface Collisions	1
Drug and Alcohol Related Collisions	3

Traffic Data	
Number of Approaches	4
Crosswalk Condition	East Crossing Prohibited
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	25
Median	Yes - W/E Approaches

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
11	1	0



Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install retroreflective backplates	15% (S02)	\$1,690,500	\$12,000	140.88
Provide Advanced Dilemma Zone Detection	40% (S04)	\$4,508,000	\$34,000	132.59
Implement Leading Pedestrian Interval (LPI)	60% (S21PB)	\$6,762,000	\$30,000	225.40
Complete crosswalk	25% (S18PB)	\$2,817,500	\$50,000	56.35

9.2 City-wide Countermeasure Toolbox

This evaluation considered citywide trends to identify countermeasures that would likely provide the most benefit with widespread implementation. **Table 8** outlines the citywide safety project opportunities, which is also referred to as the “Countermeasure Toolbox”. Within the toolbox, the description of the countermeasure along with its Local Roadway Safety Manual (LRSM) ID number is listed. The next column, Crash Reduction Factor (CRF), are “multiplicative factors used to estimate the expected reduction in number of crashes after implementing a given countermeasure at a specific site (the higher the CRF, the greater the expected reduction in crashes).” For each of these countermeasures, a planning level benefit/cost analysis was completed.

Applying the benefit/cost at the citywide level was estimated assuming some randomness in crash distribution. The location characteristics, such as whether there is a traffic signal, and the type of crashes, were used at the citywide level to calculate an average cost of crashes that the countermeasure might reduce. The benefit per location was then factored out to a 20-year lifecycle savings, with an Opinion of Project Probable Cost (OPCC) for the initial installation costs and a per-year maintenance cost estimate. The cost shown in **Table 8** should be considered initial planning costs using 2022 dollars and not assumed final.

Table 8 - Citywide Safety Countermeasure Toolbox

ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
S02	Improve signal hardware: back-plates with retroreflective borders	Signalized intersections with significant right-angle and rear-end collisions due to signal visibility	15%	\$12,000	per intersection
S03	Re-evaluate signal timing for westbound left turn to provide sufficient time for trucks	Signalized intersections with a significant collision history related to clearance intervals, high-risk movements, and signal timing coordination.	15%	\$5,000	per intersection
S04	Provide Advanced Dilemma Zone Detection for high-speed approaches	Signalized intersections with significant right-angle and rear-end collisions due to unsafe stopping and illegal turns during stop phase.	40%	\$30,000	per intersection
S07	Install protected left turn phasing on north bound approach	Signalized intersections that have an existing left turn pocket and permissive left turn or no left turn protection.	30%	\$40,000	per intersection
S09	Evaluate and improve lane striping through intersection	Intersections with lane designations that are unclear to drivers, through-lanes that are not aligned, multiple turning lanes or overall large pavement area.	10%	\$22,000	per intersection
S09	Refresh lane extensions striping	Intersections with lane designations that are unclear to drivers, through-lanes that are not aligned, multiple turning lanes or overall large pavement area.	10%	\$22,000	per intersection
S14	Restrict left turn from the driveway	Entrances/exits from driveways with high numbers of turning movement collisions	50%	\$15,000	per location
S18PB	Install high visibility crosswalk	Signalized intersections with high pedestrian traffic and no marked crossing.	25%	\$50,000	Per intersection
S18PB	Complete crosswalk	Locations that do not have crosswalks on all legs	25%	\$50,000	per intersection
S21PB	Modify signal phasing to implement a Leading Pedestrian Interval (LPI) with new controller	Signalized Intersections – especially those with high pedestrian activity	60%	\$30,000	per intersection



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ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
NS01	Add Intersection Lighting	Unsignalized intersections with significant nighttime collisions and no lighting at the intersection or approaches.	40%	\$50,000	Per mile
NS07	Refresh and improve intersection pavement markings (to make more visible)	Intersections where outdated or degraded striping and pavement markings exist	25%	\$22,000	per intersection
NS11	Sight Distance Evaluation on westbound right turn	Unsignalized intersections that with significant collision patterns due to restricted sight distance.	20%	\$3,000	per intersection
R24	Install flashing beacons on curve chevron signage	Roadway segments that have a significant amount of collision activity at sharp curves.	25%	\$4,500	per sign
R26	Install dynamic/variable speed warning sign	Roadway segments that are curvilinear with a significant number of collisions due to unsafe speeds.	30%	\$16,000	Per sign
R28	Install safety edges	Roadway segments with collisions that resulted in run-off-road right/left, head-on, or opposite-direction-sideswipe.	25%	\$8,000	Per mile
-*	Install advanced lane markings	Intersections with significant collisions due to turning lanes leading to freeway on ramps. Advanced lane markings to indicate dedicated turning lanes.	5%	\$5,000	Per intersection
-*	Install limit line	Intersections where outdated or degraded limit line striping exist	5%	\$2,000	per location
-*	Standardize speed limit for curve	Locations with inconsistent curve speed limits	5%	\$2,000	per location
-*	Install ADA ramps	Intersections with high pedestrian activity	5%	\$15,000	per location
-*	Realign ADA ramps with crosswalk	Locations with high pedestrian activity and misaligned ADA ramps	5%	\$22,000	per location
-*	Evaluate access to Sherman Rd from California Ranch Market	Locations with limited access to minor street	5%	Varies	-
-*	Evaluate truck turning radius	Locations/Intersections identified in the field tour that show signs of inadequate truck turning radius	5%	Varies	-



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ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
-*	Repave roadway surface	Roadway segments that have degraded pavement conditions	5%	Varies	-
-*	Refresh crosswalk striping	Intersections with fading crosswalk striping	5%	\$2,500	per location
-*	Install Traffic Signal Communication and Interconnect	Intersections with communication gaps	5%	Varies	-

**These locations did not have an approved Crash Reduction Factor, so a conservative 5% CRF was assumed to calculate benefit*

10. Funding Sources & Next Steps

10.1 Funding

Competitive funding resources are available to assist in the development and implementation of safety projects in Menifee. The City should continue to seek available funding and grant opportunities from local, state, and federal resources to accelerate their ability to implement safety improvements throughout Menifee. This section provides a high-level introduction to some of the main funding programs and grants for which the City can apply.

10.1.1 Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) is a Federal program that apportions funding as a lump sum for each state, which is then divided among apportioned programs. These flexible funds can be used for projects to preserve or improve safety conditions and performance on any Federal-aid highway, bridge projects on any public road, facilities for non-motorized transportation, and other project types. Safety improvement projects eligible for this funding include:

- New or upgraded traffic signals
- Upgraded guard rails
- Pedestrian warning flashing beacons
- Marked crosswalks
- Other projects listed in the Caltrans Local Road Safety Manual

California's local HSIP focuses on infrastructure projects with national recognized crash reduction factors. Normally HSIP call-for-projects is made at an interval of one to two years. The applicant must be a city, a county, or a tribal government federally recognized within the State of California.

Additional information regarding this program at the Federal level can be found online at: <https://safety.fhwa.dot.gov/hsip/>. California specific HSIP information – including dates for upcoming call for projects - can be found at: <http://www.dot.ca.gov/hq/LocalPrograms/hsip.html>. HSIP Cycle 11 applications are due in September 2022.

10.1.2 Caltrans Active Transportation Program

Caltrans Active Transportation Program (ATP) is a statewide funding program, created in 2013, consolidating several federal and state programs. The ATP funds projects that encourage increased mode share for walking and bicycling, improve mobility and safety for non-motorized users, enhance public health, and decrease greenhouse gas emissions. Projects eligible for this funding include:

- Bicycle and pedestrian infrastructure projects
- Bicycle and pedestrian planning projects (e.g., safe routes to school)
- Non-infrastructure programs (education and enforcement)

This program funding is provided annually. The ATP call for projects typically comes out in the spring. Information on this program and cycles can be found online at: <http://www.dot.ca.gov/hq/LocalPrograms/atp/>.

10.1.3 California SB 1

The California SB 1 is a landmark transportation investment to rebuild California by fixing neighborhood streets, freeways, and bridges in communities across California and targeting funds toward transit and congested trade and commute corridor improvements.

California's state-maintained transportation infrastructure will receive roughly half of SB 1 revenue: \$26 billion. The other half will go to local roads, transit agencies and an expansion of the state's growing network of pedestrian and cycle routes. Each year, this new funding will be used to tackle deferred maintenance needs both on the state highway system and the local road system, including:

- Local Street and Road Maintenance and Rehabilitation: \$1.5 billion
 - This funding is dedicated to improve local road maintenance, rehabilitation, and/or safety through projects such as restriping and repaving.
- Bike and Pedestrian Projects: \$100 million
 - This will go to cities, counties, and regional transportation agencies to build or convert more bike paths, crosswalks, and sidewalks. It is a significant increase in funding for these projects through the ATP.
- Local Planning Grants: \$25 million

10.1.4 California Office of Traffic Safety Grants

This program has funding for projects related to traffic safety, including transportation safety education and encouragement activities. Grants applications must be supported by local crash data (such as the data analyzed in this report) and must relate to the following priority program areas:

- Alcohol Impaired Driving
- Distracted Driving
- Drug-Impaired Emergency Medical Services
- Motorcycle Safety
- Occupant Protection
- Pedestrian and Bicycle Safety
- Police Traffic Services
- Public Relations, Advertising, and Marketing Program
- Roadway Safety and Traffic Records

10.1.5 SCAG Sustainable Communities Program

This program is an innovative vehicle for promoting local jurisdictional efforts to test local planning tools. The Sustainable Communities Program (SCP) provides direct technical assistance to SCAG member jurisdictions to complete planning and policy efforts to implement the regional Sustainable Communities Strategies (SCS). Grants are available in the following three categories:

- Integrated Land Use
 - Sustainable Land Use Planning
 - Transit Oriented Development (TOD)
 - Land Use & Transportation Integration
- Active Transportation
 - Bicycle Planning
 - Pedestrian Planning
 - Safe Routes to School Plans
- Green Region
 - Natural Resource Plans
 - Climate Action Plans (CAPs)
 - Green House Gas (GHG) Reduction programs

10.1.6 Safe Streets and Roads for All (SS4A) Grant Program

This program has allocated \$1B annually for the next 4 years for local cities, counties, MPOs, and other roadway owners (excepting state DOTs) for safety improvement grants for safety planning, education, enforcement, and roadway improvements. This program is not benefit / cost based. Evaluation criteria are oriented to the project's alignment with the Safe Systems approach. There is a 20% local match requirement (can be in-kind contribution via staff billable hours). Planning grants are open to any eligible agency and Implementation grants are open to agencies with a completed safety plan such as a Local Roadway Safety Plan. Planning grants are expected to range from \$100K to \$1M and Implementation grants are expected to range from \$1M to \$20M. Grant applications are due in September 2022. Implementing a Local Road Safety Plan and the City's adoption of a Vision Zero resolution makes the City eligible to apply for SS4A implementation grants.

10.1.7 Infrastructure Investment and Jobs Act

In November 2021, the President signed into law the \$1.2 trillion Infrastructure Investment and Jobs Act. In addition to the SS4A grant program described above, this law provides billions of dollars in additional funding for improvements and investment in the transportation sector nationwide. The law provides \$30 billion in funding over 5 years for competitive RAISE grants for transportation projects, as well as additional funding for repair and environmental mitigation projects. As these grant programs continue to be developed, City can position itself by identifying potential projects and programs to pursue.

10.2 Next Steps

Once the Local Roadway Safety Plan has been completed, the City can plan to regularly review and monitor collision data for trends and changes, as well as update the LRSP every 5 years.

10.2.1 Monitoring

The City can plan to regularly monitor the success of the LRSP and its related implementations by performing the following steps. This before and after analysis can be performed at a yearly interval.

- Pull yearly collision data from Crossroads database to determine year-over-year trend
- Utilize Crossroads or GIS software to review the number of collisions occurring at specific locations. Locations where improvements have been made should receive priority for monitoring.
- Based upon changes in collision activity, determine efficacy of improvements and adjust strategies going forward

10.2.2 Analysis Update

To maintain eligibility for HSIP grant funding, the City will need to update the LRSP every 5 years. The City can plan to update the analysis by performing the following steps:

1. Obtain updated SWITRS collision data from the Crossroads database
2. Use Excel software to update the collision trend analysis completed in **Section 7** of this report
3. Update the roadway shapefile with any new or upgraded roadways
4. Update the intersection shapefile with any new or upgraded intersections
5. Re-run the GIS collision tool to determine the number of collisions at intersections and roadways within the updated study period. The City can plan to run the collision tool for all collisions, as well as the collision types identified in **Section 3.2.2** of this report.
6. Update collision analysis tables shown in **Section 7.7** of this report



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Appendix A – Analysis Rankings



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Table 9 – Analysis Rankings – Intersections

Intersection	Crashes	EPDO	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Signalized Intersections																					
Haun Rd & Newport Rd	68	248	0	0	7	22	39	17	11	32	3	2	0	0	3	1	27	6	15	0	5
Antelope Rd & Newport Rd	65	270	0	0	7	27	31	12	7	35	2	3	0	2	2	2	38	7	3	0	1
Menifee Rd & Highway 74	44	661	2	1	3	19	19	7	5	22	3	5	0	0	1	0	19	3	5	1	1
Bradley Rd & Newport Rd	28	431	0	2	1	13	12	8	4	14	1	0	0	0	0	0	16	1	3	0	0
Murrieta Rd & Newport Rd	27	241	1	0	2	6	18	8	3	14	0	1	0	0	1	1	12	4	5	0	1
Avenida de Cortez & Newport Rd	26	126	0	0	3	14	9	2	0	22	0	1	0	0	1	0	20	5	3	0	0
Encanto Dr & McCall Blvd	25	282	0	1	6	7	11	6	2	11	4	2	0	0	0	1	9	2	3	0	2
Menifee Rd & Newport Rd	23	242	0	1	1	9	12	6	3	13	0	0	0	0	0	1	15	2	0	0	2
Dale St & Mathews Rd	21	100	0	0	4	8	9	5	2	12	1	1	0	0	0	0	14	5	1	0	0
Haun Rd & Scott Rd	19	59	0	0	1	6	12	7	1	10	0	0	0	0	1	0	10	1	2	1	1
Murrieta Rd & Scott Rd	17	433	0	2	6	6	3	6	0	7	3	1	0	0	0	0	11	0	2	7	1
Antelope Rd & Scott Rd	16	61	0	0	1	7	8	3	3	9	1	0	0	0	0	0	7	2	2	0	0
Briggs Rd & Pinacate Rd	15	223	1	0	4	1	9	0	4	7	1	2	0	0	1	0	8	0	3	1	1
I-215 Off Ramp N-Bound & Newport Rd	15	65	0	0	1	8	6	1	3	11	0	0	0	0	0	0	11	2	0	0	0
Evans Rd & Newport Rd	14	222	0	1	2	5	6	4	0	8	0	0	0	0	1	1	8	0	0	0	0
Menifee Rd & Chambers Ave	14	44	0	0	1	4	9	4	0	6	2	1	0	0	0	1	7	0	3	0	2
Byers Rd & Newport Rd	13	18	0	0	0	1	12	4	1	3	0	5	0	0	0	0	8	2	0	0	1
Murrieta Rd & Ridgemoor Rd	13	62	0	0	3	4	6	6	1	5	0	0	0	1	0	2	8	2	0	0	0



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Intersection	Crashes	EPDO	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Palomar Rd & Pinacate Rd	13	48	0	0	1	5	7	1	3	7	1	1	0	0	0	0	8	0	1	1	0
Murrieta Rd & Chambers Ave	13	53	0	0	2	4	7	5	0	4	2	1	0	1	0	1	8	1	0	0	1
Westlink Dr & Newport Rd	12	57	0	0	2	5	5	3	3	5	0	1	0	0	0	0	7	0	1	0	0
Sun City Blvd & McCall Blvd	12	380	2	0	1	6	3	5	0	2	0	2	0	0	3	0	4	1	1	0	0
Via Entrada & McCall Blvd	12	211	0	1	0	7	4	7	0	3	0	2	0	0	0	0	6	2	0	0	1
Lindenberger Rd & Domenigoni Pkwy	11	46	0	0	1	5	5	1	4	3	1	2	0	0	0	0	6	2	0	0	0
Bradley Rd & McCall Blvd	11	46	0	0	1	5	5	2	0	8	0	0	0	0	1	0	7	1	0	0	0
Antelope Rd & Mapes Rd	11	46	0	0	2	3	6	10	0	0	1	0	0	0	0	0	2	0	1	3	0
I-215 Off Ramp S-Bound & Newport Rd	11	47	0	0	0	7	4	3	3	5	0	0	0	0	0	0	7	1	0	0	1
Goetz Rd & Railroad Canyon Rd	11	46	0	0	1	5	5	3	1	6	0	1	0	0	0	0	8	0	0	0	0
I-215 Off Ramp S-Bound & Scott Rd	11	190	0	1	0	3	7	4	2	2	1	2	0	0	0	0	2	0	2	1	3
Menifee Rd & Scott Rd	10	70	0	0	3	6	1	2	1	7	0	0	0	0	0	0	7	0	0	0	2
Briggs Rd & Scott Rd	10	50	0	0	2	4	4	7	0	0	2	1	0	0	0	0	2	0	1	0	1
Evans Rd & Holland Rd	10	228	0	1	4	3	2	6	0	3	0	0	0	0	0	2	5	1	0	1	2
Menifee Rd & Holland Rd	10	213	0	1	2	4	3	6	1	1	0	0	0	1	1	2	6	0	0	0	0
ClI Tomas & Newport Rd	10	372	0	2	1	5	2	0	0	7	1	0	0	1	1	1	8	4	0	1	0
Laguna Vista Dr & Domenigoni Pkwy	10	203	0	1	2	2	5	3	1	3	0	2	1	0	0	0	5	2	3	0	1
Murrieta Rd & Lazy Creek Rd	10	204	0	1	1	4	4	8	1	0	1	0	0	0	0	0	0	1	2	0	0
Murrieta Rd & Sun City Blvd	10	25	0	0	0	3	7	4	1	1	0	4	0	0	0	1	6	0	0	0	0
Winter Hawk Rd & Newport Rd	10	46	0	0	0	7	3	2	0	6	0	0	0	0	2	0	6	0	0	0	0
Menifee Rd & Simpson Rd	10	40	0	0	2	2	6	3	1	3	1	1	1	0	0	0	5	1	2	0	1



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Intersection	Crashes	EPDO	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Haun Rd & Wickerd Rd	9	34	0	0	0	5	4	3	2	3	0	1	0	0	0	0	3	1	1	0	0
Murrieta Rd & la Piedra Rd	9	371	0	2	2	3	2	3	2	2	0	1	0	0	0	0	2	0	2	0	0
Antelope Rd & Mathews Rd	9	34	0	0	1	3	5	1	2	4	0	2	0	0	0	0	7	0	0	0	0
Menifee Rd & Mapes Rd	9	213	0	1	1	6	1	7	1	1	0	0	0	0	0	0	2	0	1	3	0
Waldon Rd & Bundy Canyon Rd	8	197	0	1	0	5	2	0	0	4	0	3	0	1	0	0	5	0	0	2	0
Antelope Rd & Holland Rd	8	33	0	0	1	3	4	1	1	4	1	1	0	0	0	0	2	1	3	0	0
Antelope Rd & Stillwater Dr	8	23	0	0	1	1	6	1	2	1	0	4	0	0	0	0	3	0	1	0	0
Menifee Lakes Dr & Newport Rd	8	33	0	0	1	3	4	0	1	5	0	2	0	0	0	0	3	0	2	0	0
Pebble Beach Dr & Cherry Hills Blvd	8	211	0	1	3	2	2	7	1	0	0	0	0	0	0	0	1	0	0	0	0
I-215 Off Ramp S-Bound & McCall Blvd	8	52	0	0	3	3	2	4	1	2	0	0	0	0	1	0	3	2	0	0	0
I-215 Off Ramp N-Bound & McCall Blvd	8	13	0	0	0	1	7	0	2	3	1	2	0	0	0	0	2	0	1	0	1
Bradley Rd & Scott Rd	7	22	0	0	0	3	4	1	0	4	0	2	0	0	0	0	5	0	0	3	0
Murrieta Rd & Cherry Hills Blvd	7	37	0	0	1	4	2	3	3	1	0	0	0	0	0	0	4	0	0	0	0
Murrieta Rd & Ethanac Rd	7	27	0	0	1	2	4	2	1	2	1	1	0	0	0	0	2	1	2	0	0
Sherman Rd & Ethanac Rd	7	32	0	0	0	5	2	2	1	1	2	0	0	1	0	1	1	0	0	0	0
Menifee Rd & Watson Rd	7	47	0	0	1	6	0	6	0	1	0	0	0	0	0	0	1	0	0	0	0
Bradley Rd & Holland Rd	6	41	0	0	1	5	0	3	0	2	1	0	0	0	0	2	4	1	0	0	0
Bradley Rd & la Piedra Rd	6	36	0	0	2	2	2	4	0	1	0	1	0	0	0	0	1	1	0	0	0
Murrieta Rd & Puerto Vallarta Way	6	185	0	1	0	3	2	4	0	0	2	0	0	0	0	0	0	0	0	0	0
Menifee Rd & Loire Valley Ln	6	195	0	1	1	3	1	1	1	1	0	3	0	0	0	0	5	0	0	0	1
Oakhurst Ave & McCall Blvd	6	36	0	0	2	2	2	0	2	2	1	1	0	0	0	0	2	0	2	0	0



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Intersection	Crashes	EPDO	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
I-215 Offramp N-Bound & Scott Rd	6	179	0	1	1	0	4	2	2	0	1	1	0	0	0	0	2	0	2	0	1
Howard Way & Scott Rd	5	25	0	0	0	4	1	0	0	5	0	0	0	0	0	0	5	1	0	0	3
Antelope Rd & Garbani Rd	5	20	0	0	0	3	2	0	1	2	0	2	0	0	0	0	1	0	0	0	0
Menifee Rd & Garbani Rd	5	20	0	0	0	3	2	2	0	1	0	2	0	0	0	0	1	0	2	0	0
Sherman Rd & Holland Rd	5	15	0	0	0	2	3	4	0	0	0	1	0	0	0	0	2	0	0	4	0
Haun Rd & La Piedra Rd	5	10	0	0	0	1	4	0	0	5	0	0	0	0	0	0	2	0	3	0	0
Railroad Canyon Rd & Goetz Rd	5	20	0	0	1	1	3	1	1	2	0	0	0	0	0	0	3	0	0	0	1
Bradley Rd & Cherry Hills Blvd	5	10	0	0	0	1	4	2	1	0	0	2	0	0	0	0	2	2	0	0	1
Murrieta Rd & McCall Blvd	5	15	0	0	0	2	3	2	0	2	0	0	0	0	0	0	3	2	1	0	0
Cumming Ave & Pinacate Rd	5	342	2	0	1	0	2	1	0	1	0	1	0	0	2	0	2	0	0	1	1
Haun Rd & Marketplace Dr	5	10	0	0	0	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0
Tucker Rd & Scott Rd	4	500	0	3	0	1	0	1	1	2	0	0	0	0	0	0	2	1	0	2	0
Lindenberger Rd & Scott Rd	4	178	0	1	0	2	1	0	1	0	0	3	0	0	0	0	2	2	2	1	0
Leon Rd & Scott Rd	4	24	0	0	1	2	1	1	1	2	0	0	0	0	0	0	3	0	1	1	0
Haun Rd & Garbani Rd	4	19	0	0	0	3	1	1	0	2	0	1	0	0	0	0	2	1	0	0	0
Murrieta Rd & Craig Ave	4	19	0	0	0	3	1	2	0	1	0	1	0	0	0	0	0	0	1	0	0
Murrieta Rd & Park City Ave	4	9	0	0	0	1	3	1	0	1	0	1	0	0	1	0	2	0	0	0	0
Lindenberger Rd & Simpson Rd	4	14	0	0	0	2	2	4	0	0	0	0	0	0	0	0	2	0	1	0	0
Goetz Rd & Kabian Park	4	9	0	0	0	1	3	1	1	1	0	1	0	0	0	0	1	0	1	0	0
Menifee Rd & Heritage Lake Dr	4	192	0	1	2	1	0	3	0	1	0	0	0	0	0	0	1	0	0	0	0
Haun Rd & Countryside Marketplace	4	9	0	0	0	1	3	1	1	2	0	0	0	0	0	0	3	0	0	0	0



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Intersection	Crashes	EPDO	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Long Valley Ln & Newport Rd	4	19	0	0	1	1	2	0	0	0	1	3	0	0	0	0	3	0	1	0	0
Guetz Rd & Vista Way	4	19	0	0	0	3	1	3	0	1	0	0	0	0	0	0	1	0	2	1	0
Menifee Rd & Biscayne	4	24	0	0	0	4	0	0	2	2	0	0	0	0	0	0	1	0	0	0	0
Hertiage Lake Dr & McCall Blvd	4	24	0	0	0	4	0	4	0	0	0	0	0	0	0	0	1	0	1	0	0
Mc Bob Rd & Scott Rd	3	330	2	0	0	0	1	0	0	2	0	1	0	0	0	0	0	0	2	1	1
Little Reb Pl & Scott Rd	3	27	0	0	2	1	0	2	0	1	0	0	0	0	0	0	0	0	1	0	0
Murrieta Rd & Holland Rd	3	8	0	0	0	1	2	1	0	0	2	0	0	0	0	0	0	0	0	1	1
Stern Dr & Holland Rd	3	13	0	0	0	2	1	1	0	1	0	0	0	1	0	1	1	0	0	1	1
Haun Rd & Holland Rd	3	13	0	0	1	0	2	0	1	1	0	0	0	1	0	0	1	0	1	1	0
Hanover Ln & Holland Rd	3	18	0	0	1	1	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0
Palomar Rd & Holland Rd	3	18	0	0	0	3	0	1	1	1	0	0	0	0	0	0	1	2	0	0	0
Menifee Rd & la Piedra Rd	3	22	0	0	2	0	1	0	0	1	0	2	0	0	0	0	1	0	2	0	0
la Ladera Rd & Normandy Rd	3	8	0	0	0	1	2	0	1	0	1	1	0	0	0	0	2	0	0	0	0
Bradley Rd & Lazy Creek Rd	3	13	0	0	0	2	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0
Goetz Rd & Juanita Dr	3	3	0	0	0	0	3	0	0	0	0	3	0	0	0	0	1	0	1	0	1
Grosse Point Dr & McCall Blvd	3	8	0	0	0	1	2	0	0	2	0	1	0	0	0	0	2	1	0	0	0
Junipero Rd & McCall Blvd	3	13	0	0	0	2	1	0	0	2	0	1	0	0	0	0	3	0	0	0	1
Murrieta Rd & Rouse Rd	3	8	0	0	0	1	2	1	1	0	0	1	0	0	0	0	0	1	0	0	1
Encanto Dr & Rouse Rd	3	13	0	0	0	2	1	1	0	1	0	1	0	0	0	0	1	0	0	0	1
3rd St & Mathews Rd	3	340	2	0	1	0	0	0	0	0	2	0	0	0	1	0	1	0	1	1	1
Trumble Rd & Ethanac Rd	3	8	0	0	0	1	2	3	0	0	0	0	0	0	0	0	1	0	1	0	1



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Intersection	Crashes	EPDO	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Derby Hill Dr & Newport Rd	3	176	0	1	1	0	1	0	0	1	1	0	0	0	1	0	1	0	0	0	0
Menifee Rd & Rockport Rd	3	172	0	1	0	1	1	2	0	0	0	0	0	1	0	0	1	0	1	0	1
Menifee Rd & Trailhead Dr	3	13	0	0	0	2	1	2	0	0	0	1	0	0	0	0	2	0	0	0	1
Murrieta Rd & Garbani Rd	3	3	0	0	0	0	3	0	1	1	0	1	0	0	0	0	0	1	2	1	0
Unsignalized Intersections																					
Antelope Rd & Sunstream Dr	10	20	0	0	1	0	9	5	2	1	0	1	0	0	0	0	0	0	1	0	1
Sherman Rd & Monroe Ave	10	35	0	0	0	5	5	1	0	6	0	3	0	0	0	0	6	1	2	0	0
Manganese Rd & Goetz Rd	9	39	0	0	2	2	5	1	2	0	1	3	2	0	0	0	7	0	1	3	1
Debon St & Bundy Canyon Rd	5	29	0	0	2	1	2	0	0	0	2	3	0	0	0	0	1	1	1	3	0
Buckwheat Rd & Scott Rd	5	35	0	0	2	2	1	0	0	3	1	1	0	0	0	0	4	1	1	0	0
Murrieta Rd & Holland Rd	5	20	0	0	1	1	3	2	0	0	1	2	0	0	0	0	2	1	0	1	2
Bradley Rd & Early Dawn Rd	5	15	0	0	0	2	3	1	1	1	0	2	0	0	0	0	1	1	0	0	0
Ave Fiesta & Cabrillo Dr	5	25	0	0	0	4	1	0	0	4	0	1	0	0	0	0	4	3	0	0	0
Goetz Rd & Casa Bonita Dr	5	20	0	0	0	3	2	1	0	3	0	0	1	0	0	0	1	0	0	0	0
1st St & Mathews Rd	5	20	0	0	0	3	2	1	0	1	1	0	2	0	0	0	2	1	1	1	1
Menifee Rd & Bayport Ln	4	9	0	0	0	1	3	1	0	0	0	3	0	0	0	0	2	0	0	0	0
Winter Hawk Rd & Newport Rd	4	9	0	0	0	1	3	1	1	2	0	0	0	0	0	0	1	1	1	0	0
Via Salerno & Via Amante	4	14	0	0	0	2	2	1	0	3	0	0	0	0	0	0	3	2	0	0	0
Bradley Rd & Desert Hills Rd	4	9	0	0	0	1	3	1	0	0	0	1	1	1	0	1	3	1	1	0	1
Bradley Rd & Augusta Dr	4	19	0	0	0	3	1	1	0	2	0	1	0	0	0	0	4	1	0	0	0
Murrieta Rd & Sandy Lodge Rd	4	177	0	1	1	0	2	2	0	1	0	0	0	1	0	1	1	0	1	0	1





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Intersection	Crashes	EPDO	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Sherman Rd & Jackson Ave	4	331	0	2	0	0	2	2	0	2	0	0	0	0	0	0	1	0	0	0	0
Cox Rd & Scott Rd	3	13	0	0	1	0	2	0	1	0	0	0	1	1	0	0	1	0	0	1	0
Bailey Park Blvd & Scott Rd	3	13	0	0	0	2	1	0	0	2	1	0	0	0	0	0	1	1	0	0	0
Murrieta Rd & Farmington Rd	3	177	0	1	0	2	0	0	0	2	0	1	0	0	0	0	1	0	0	1	0
Menifee Rd & Woodcrest Lake Dr	3	18	0	0	1	1	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0
Fernleaf Dr & Valombrosa Dr	3	18	0	0	1	1	1	0	1	2	0	0	0	0	0	0	1	0	1	0	0
Clark Pl & San Jacinto Rd	3	8	0	0	0	1	2	0	1	0	1	1	0	0	0	0	1	0	0	0	0
Coyote Cir & Goetz Rd	3	167	0	1	0	0	2	0	0	0	0	2	0	0	0	0	3	0	0	0	1
Aspel Rd & McCall Blvd	3	23	0	0	1	2	0	3	0	0	0	0	0	0	0	0	1	0	1	0	1
Sun City Blvd & Mehaffey St	3	3	0	0	0	0	3	0	0	1	0	2	0	0	0	0	0	0	1	0	0
Encanto Dr & Ethanac Rd	3	13	0	0	1	0	2	1	0	0	1	1	0	0	0	0	0	0	2	2	0
Palomar Rd & Russell Rd	3	18	0	0	0	3	0	3	0	0	0	0	0	0	0	0	1	1	0	0	0
Antelope Rd & Case Rd	3	8	0	0	0	1	2	0	0	1	0	2	0	0	0	0	2	0	0	0	1
Antelope Rd & Matthews Rd	3	176	0	1	1	0	1	1	1	0	0	0	0	1	0	0	1	0	0	1	1
2. Equivalent Property Damage Only Crashes																					

 = 90-100% probability that crash type is over-represented

 = 80-90% probability that crash type is over-represented

 = 70-80% probability that crash type is over-represented



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Table 10 – Analysis Rankings - Roadway Segments

Facility	Cross Street 1	Cross Street 2	Crashes	EPDO ²	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Expressway																							
Highway 74	Malone Ave	Briggs Rd	4	178	1	0	0	2	1	0	0	3	0	0	0	0	1	0	3	0	0	2	0
Highway 74	Menifee Rd	Cumming Ave	3	13	0	0	1	0	2	0	0	3	0	0	0	0	0	0	2	0	1	0	0
Highway 74	Junipero Rd	Menifee Rd	3	8	0	0	0	1	2	0	0	2	0	1	0	0	0	0	2	0	0	0	0
Highway 74	Palomar Rd	Junipero Rd	3	13	0	0	0	2	1	0	1	2	0	0	0	0	0	0	1	0	1	2	0
Urban Arterial																							
Newport Rd	Haun Rd	Antelope Rd	23	232	0	1	1	7	14	3	3	15	0	0	0	1	1	0	16	0	2	0	0
Newport Rd	Goetz Rd	Lone Pine Dr	12	185	0	1	1	0	10	0	2	1	1	7	0	0	0	0	1	0	4	0	1
Newport Rd	Sherman Rd	Haun Rd	8	192	1	0	1	2	4	2	0	4	0	2	0	0	0	0	3	1	2	0	1
Newport Rd	Bradley Rd	ClI Tomas	8	13	0	0	0	1	7	1	1	5	0	1	0	0	0	0	5	0	2	0	0
Newport Rd	Murphy Ranch Rd	Murrieta Rd	8	38	0	0	2	2	4	1	2	1	0	3	0	1	0	1	2	0	1	0	0
Newport Rd	Wingate Ln	Bradley Rd	8	28	0	0	0	4	4	4	0	2	0	1	0	1	0	1	2	0	0	0	0
McCall Blvd	Encanto Dr	Sherman Rd	6	26	0	0	0	4	2	4	0	2	0	0	0	0	0	0	1	0	0	0	0
Newport Rd	Murphy Ranch Road	Byers Rd	6	25	0	0	2	0	4	0	0	2	0	4	0	0	0	0	2	0	0	1	1
Newport Rd	Menifee Rd	Menifee Lakes Dr	5	179	1	0	0	2	2	1	1	3	0	0	0	0	0	0	2	0	1	0	0
Scott Rd	Little Reb Pl	Antelope Rd	5	20	0	0	1	1	3	1	1	0	0	3	0	0	0	0	0	0	2	0	0
Menifee Rd	McLaughlin Rd	Highway 74	4	173	0	1	0	1	2	1	0	0	1	2	0	0	0	0	1	0	1	1	1
Newport Rd	Laguna Vista	Menifee Rd	4	183	1	0	0	3	0	1	0	2	0	1	0	0	0	0	3	1	1	0	1



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Facility	Cross Street 1	Cross Street 2	Crashes	EPDO ²	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Newport Rd	Westlink Dr	Antelope Rd	4	19	0	0	0	3	1	0	0	4	0	0	0	0	0	0	4	1	0	0	0
Newport Rd	Wingate Ln	Evans Rd	4	28	0	0	2	1	1	0	2	1	0	1	0	0	0	0	2	0	0	0	0
Scott Rd	Howard Rd	Haun Rd	4	14	0	0	0	2	2	0	0	3	0	1	0	0	0	0	2	1	2	0	0
Newport Rd	Evans Rd	Killington Dr	3	13	0	0	0	2	1	0	0	3	0	0	0	0	0	0	3	0	0	0	0
Scott Rd	Antelope Rd	Bailey Park Blvd	3	8	0	0	0	1	2	0	0	3	0	0	0	0	0	0	3	0	0	0	0
Scott Rd	Howard Rd	Haun Rd	3	27	0	0	2	1	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0
Scott Rd	Howard Rd	Ascot Way	3	23	0	0	1	2	0	0	0	3	0	0	0	0	0	0	2	1	0	1	0
Arterial																							
Murrieta Rd	Newport Rd	Lazy Creek Rd	14	396	0	2	3	5	4	11	0	0	0	1	0	0	2	0	0	0	0	0	0
Meniffee Rd	Garbani Rd	Craig Ave	3	18	0	0	1	1	1	0	0	0	1	2	0	0	0	0	1	0	0	0	0
Major																							
Hwy 74	Tumble Rd	Watson Rd	13	381	1	1	0	8	3	9	0	3	1	0	0	0	0	0	3	0	0	0	0
Bradley Rd	Bristol Ln	Holland Rd	7	363	0	2	3	0	2	4	0	3	0	0	0	0	0	0	2	0	0	0	0
Antelope Rd	Scott Rd	Garbani Rd	6	199	0	1	2	2	1	1	1	2	1	0	1	0	0	0	3	1	0	2	0
Haun Rd	Scott Rd	Wickerd Rd	6	26	0	0	0	4	2	2	0	3	0	0	0	1	0	0	3	0	0	0	0
Goetz Rd	Goetz Rd	Trent Dr	5	193	0	1	2	1	1	1	1	0	1	2	0	0	0	0	0	1	1	0	1
Antelope Rd	Garbani Rd	Craig Ave	5	178	0	1	1	0	3	0	0	0	0	2	1	1	0	0	1	0	0	1	0
Haun Rd	La Piedra Rd	Newport Rd	4	24	0	0	1	2	1	3	0	1	0	0	0	0	0	0	1	0	0	0	0
Antelope Rd	la Piedra Rd	Stillwater Dr	4	173	0	1	0	1	2	1	0	0	0	3	0	0	0	0	1	0	0	0	0
Antelope Rd	Albion Ln	la Piedra Rd	4	23	0	0	2	0	2	3	0	1	0	0	0	0	0	0	0	0	0	0	0





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Facility	Cross Street 1	Cross Street 2	Crashes	EPDO ²	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Encanto Dr	McCall Blvd	Shadel Rd	3	8	0	0	0	1	2	0	0	0	1	2	0	0	0	0	1	0	0	0	0
Haun Rd	Craig Ave	Holland Rd	3	13	0	0	0	2	1	0	0	0	0	1	1	1	0	0	2	0	0	1	0
Secondary																							
Bradley Rd	Cherry Hills Blvd	McCall Blvd	7	191	0	1	1	2	3	2	0	2	1	2	0	0	0	0	1	0	2	0	0
Murrieta Rd	Rouse Rd	Mantle Dr	4	188	0	1	1	2	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0
Simpson Rd	Lindenberger Rd	Meniffee Rd	3	13	0	0	1	0	2	1	0	0	0	2	0	0	0	0	0	0	1	0	0
Collector																							
Case Rd	Palomar Rd	San Jacinto Rd	3	22	0	0	2	0	1	0	0	1	0	1	0	1	0	0	0	0	2	1	0
Craig Ave	Evans Rd	Bradley Rd	3	8	0	0	0	1	2	1	0	1	0	1	0	0	0	0	1	0	0	1	0

 = 90-100% probability that crash type is over-represented

 = 80-90% probability that crash type is over-represented

 = 70-80% probability that crash type is over-represented