City of
COACHELLA
EST 1946

LOCAL ROADWAY SAFETY PLAN

Acknowledgements

The 2024 City of Coachella Local Roadway Safety Plan was funded through a grant from the California Department of Transportation (Caltrans). The City of Coachella, along with stakeholders and partner agencies, worked to develop a plan that aims to increase roadway safety for all users of the City's roadway network. The study was managed by Andrew Simmons, PE, and Brianna Greenwood, PE, of the City's Engineering Department, in coordination with a stakeholder group. A consulting team led by Kimley-Horn and Associates, Inc. (Kimley-Horn) assisted the City of Coachella and the stakeholder group in preparing this Plan.

Project Partners

City of Coachella

- Andrew Simmons, PE
- Brianna Greenwood

Riverside County Sheriff

- Lt. Randy Vasquez

Kimley-Horn

- Darryl DePencier, AICP
- Jason Melchor, PE
- Kameron Qureshi, PE
- Abbey Ibarra
- Shaun Howard, EIT

Consultant Team

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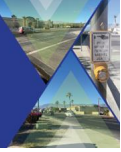
ANDREW SIMMONS, CITY ENGINEER



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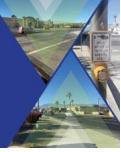

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Executive Summary

The City of Coachella (City) has created a Local Roadway Safety Plan (LRSP), which identifies a framework to identify, analyze, and develop traffic safety enhancements on the City's roadway network. The LRSP was developed in response to local issues and needs. Through the analysis, this report has identified emphasis areas to inform and further guide safety evaluation and planning for the City's transportation network. The LRSP also analyzes crash data on an aggregate basis as well as at specific locations to identify high-crash locations, high-risk locations, and citywide trends and patterns. The analysis of crash history on 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.

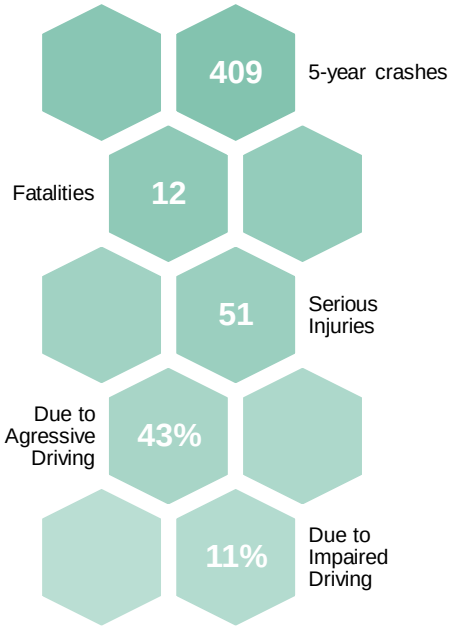
The City's vision is to enhance the transportation network and reduce traffic fatalities and serious injury related crashes, and the goals for the City of Coachella include the following:

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 HSIP and other program funding consideration.



Source: SWITRS - TIMS Database (2018-2023)

This LRSP analyzes the most recent range of crash data (January 1, 2018 – December 31, 2023) and roadway improvements to assess historic trends, patterns, and areas of increasing concern.

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

Emphasis Area #2: Impaired Driving

Emphasis Area #3: Intersection Improvements

Emphasis Area #4: Aggressive Driving

The following 9 case study locations were chosen to be representative of the corridor and intersection configurations throughout the City.

1. Signalized Intersection: Avenue 50 & Cesar Chavez Street
2. Roadway Segment: Avenue 52 from Hernandez St to Polk St
3. Signalized Intersection: Avenue 51 & Van Buren Street
4. Roadway Segment: Cesar Chavez Street from 1st Street to Bagdad Avenue
5. Signalized Intersection: Avenue 52 & Cesar Chavez Street
6. Unsignalized Intersection: Avenue 52 & Douma Street
7. Unsignalized Intersection: Avenue 53 & Calle Empalme
8. Signalized Intersection: Avenue 53 & Cesar Chavez Street
9. Signalized Intersection: 54th Avenue & Cesar Chavez Street

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. The toolbox shows the crash reduction factor, which is the factor 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). The toolbox also shows the countermeasure ID number from the California Local Roadway Safety Manual.

Citywide Countermeasure Toolbox

ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
SI16RA[1]	Convert intersection to roundabout (from signal)	Signalized intersections	Varies	Varies	Varies
S18PB[1]	Install pedestrian countdown signal heads and audible pedestrian push button systems	Signalized intersections with crosswalks	25%	$60,600	Intersection
S19PB	Install high visibility crosswalk for signalized intersections	Signalized intersections with no marked crossing and pedestrian heads, with significant turning movements	25%	$18,600	EA
SI22PB	Modify signal phasing to implement a Leading Pedestrian Interval (LPI)	Signalized Intersections – especially those with high pedestrian activity	60%	$45,600	Intersection
NS16	Install raised median on approaches for unsignalized intersections	Unsignalized intersections where related or nearby turning movements affect the safety and operation of an intersection	25%	$760	LF (for 12-ft-wide median)
NS21PB	Install raised medians	Locations that have a long pedestrian crossing to reduce exposure between pedestrian and motor vehicles	45%	$324	LF (10’ wide median)
NS22PB	Install pedestrian crossing at uncontrolled locations (new signs and markings only)	Unsignalized intersections with high pedestrian activity where sufficient sight distance is available	25%	$45,600	EA
NS25PB	Install Pedestrian Signal (including Pedestrian Hybrid Beacon (HAWK))	Unsignalized intersections with high pedestrian activity and high motor vehicle volumes and/or speeds	55%	$228,000	EA
NS07RA	Convert intersection to mini/compact roundabout (from stop or yields control on minor road)	Locations where low speeds, low volume, and few heavy vehicles are present. Typically in residential neighborhoods.	Varies	Varies	Varies
R14	Road Diet (Reduce travel lanes and add a two way left turn and bike lane)	Locations where related turning movements with no designated turn/phases exist that affect safety	35%	$79,200	Mile

[1] This countermeasure typically covers pedestrian countdown signal heads, but can be also used for audible pedestrian push buttons

ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
R26	Install dynamic/variable speed warning signs	Locations with excessive speeds	30%	$22,800	Sign
R34PB	Install Separated Bike Lanes	Locations with a high number of bicycle crashes and/or high bicycle traffic volumes, where sufficient space is available for the selected separation measure	45%	$100,000	Mile
R35PB	Install sidewalk/pathway (to avoid walking along roadway)	Locations where no sidewalks or walkways exist	80%	$30,000	Crossing
-	Pedestrian Bridge	Locations where related sidewalks/pathways affect the safety of pedestrian and bicyclist	5%	Varies	Varies
-*	Speed reduction efforts per California Assembly Bill 43	Roadway segments	5%	$1,000	Segment

**The City is not limited to the countermeasures in this toolbox and can utilize other approved countermeasures in its roadway safety planning.*

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 Coachella.

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

1. Introduction

The City of Coachella (City), located in Riverside County, California, is a growing community with a rich history and diverse population. With a population of approximately 44,000 residents, Coachella offers a unique blend of small-town charm and modern amenities. The city is committed to economic development and has a strong sense of community. Coachella has a historic downtown area and a thriving art scene, making it an attractive destination for residents and visitors. This report identifies factors associated with the most prevalent vehicle crashes occurring in 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.

Coachella has taken steps to enhance all modal safety throughout the City and with this LRSP, Coachella is continuing to prioritize safety in its planning processes. This LRSP analyzes the most recent range of SWITRS crash data from January 1, 2018 – December 31, 2023 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 Coachella 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, bicyclists, 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 Coachella 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*

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.

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 Coachella and their 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 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 Coachella 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 1.7, April 2024) 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.[2]

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.[3] 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.

[2] Local Roadway Safety Manual (Version 1.7) 2024. Page 5.

[3] AASHTO, Highway Safety Manual, 2010, Washington D.C., http://www.highwaysafetymanual.org/Pages/About.aspx

The HSM identifies five steps in this process:[4]

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 Crash and Network Screening Analysis

Intersections and roadways were analyzed using four crash metrics:

- Number of Crashes
- Critical Crash Rate (HSM Ch. 4)
- Probability of Specific Crash Types Exceeding Threshold Proportion (HSM Ch. 4)
- Equivalent Property Damage Only (HSM Ch. 4)

The initial steps of the crash analysis established sub-populations of roadway segments and intersections that have similar characteristics. For this study, intersections were grouped by their control type (Signalized or Unsignalized) and segments by their roadway category (Major Arterial, Primary Arterial, Secondary Arterial, Collector Arterial, Local). Individual crash rates were calculated for each sub-population. The population level crash rates were then used to assess whether a specific location has more or fewer crashes than expected. These sub-populations were also used to determine typical crash patterns to help identify locations where unusual numbers of specific crash types are seen.

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

The network screening process ranks intersections and roadway segments by the number of crashes that occurred at each one over the analysis period, and then identifies areas that had more of a given type of crash than would be expected for that type of location. These crash type factors were 1) crash injury (fatal, serious injury, other visible injury, complaint of pain, property damage only), 2) crash type (broadside, rear-end, sideswipe, head-on, hit object, overturned, bicycle, pedestrian, other), 3) environmental factors (lighting, wet roads), 4) driver behavior (aggressive), and 5) driver impairment. With these additional factors, the locations were further analyzed and assigned a new rank.

From the results of the network screening analyses, a short-list of locations was chosen based on crash activity, crash severity, crash patterns, location type, and area of the City of Coachella to provide the greatest variety of locations covering the widest range of safety opportunities for safety toolbox development. The intent is to populate the safety toolbox with mitigation measures that will be applicable to most of the crash activity in the city. Ten locations will ultimately be selected for mitigation analysis.

3.2.2 Statistical Performance Measures

Critical Crash Rate (CCR)

Reviewing the number of crashes at a location is a method used to understand the cost to society incurred at the local level; however, it does not give a complete indication of the level of risk for those who use that intersection or roadway segment daily. The Highway Safety Manual describes the Critical Crash Rate method which provides a statistical review of locations to determine where risk is higher than that experienced by other similar locations. It is also the first step in analyzing for patterns that may suggest systemic issues that can be addressed at that location, and proactively at others to prevent new safety challenges from emerging.

The Critical Crash Rate compares the observed crash rate to the expected crash rate at a location based on facility type and volume using a locally calculated average crash rate for the specific type of intersection or roadway segment being analyzed. Based on traffic volumes and a weighted citywide crash rate for each facility type, a critical crash rate threshold is established at the 95% confidence level to determine locations with higher crash rates that are unlikely to be random. The threshold is calculated for each location individually based on its traffic volume and the crash profile of similar facilities.

Figure 1 – Critical Crash Rate Formula

$$R_{c,i} = R_a + \left[P \times \sqrt{\frac{R_a}{MEV_i}} \right] + \left[\frac{1}{(2 \times (MEV_i))} \right]$$

Where,

$R_{c,i}$ = Critical crash rate for intersection i

R_a = Weighted average crash rate for reference population

P = P-value for corresponding confidence level

MEV_i = Million entering vehicles for intersection i

SOURCE: HIGHWAY SAFETY MANUAL

DATA NEEDS

CCR can be calculated using:

- Daily entering volume for intersections, or VMT for roadway segments;
- Intersection control types to separate them into like populations;
- Roadway functional classification to separate them into like populations;
- Crash records in GIS or tabular form including coordinates or linear measures.

STRENGTHS

- Reduces low volume exaggeration
- Considers variance
- Establishes comparison threshold

CCR Methodology

The Process of analyzing the CCR and comparing locations (separately by intersections and segments) is a multi-step process. The following is a high-level description of the process undertaken to develop the initial ranking of locations.

The first step in the process was to establish a city-wide crash rate for each facility population. These populations are broken into two categories with sub-categories:

- Intersection:
  - Signalized
  - Unsignalized
- Roadway Classification:
  - Major Arterial
  - Minor Arterial
  - Collector
  - Local

The individual crash rate for each location was then calculated based on the associated traffic volume. This volume was either collected through data count resources or calculated based on the roadway classification. The next step was to establish a Significance Threshold. This threshold was used to determine what level of exceedance (how much the crash rate exceeded the critical crash rate) a location must have based on traffic volume to provide a high level of confidence that the crash occurring at the location is not random. For this study, a confidence level of 95% was used. The local crash rates were then compared to Significance Threshold to see if each location exceeded the expected CCR and if so, by how much. After this analysis was completed, the locations were ranked by their categories according to that level of exceedance.

Equivalent Property Damage Only (EPDO)

The equivalent property damage only (EPDO) method is described in the Highway Safety Manual. This method assigns weighting factors to crashes based on injury level (severe, injury, property damage only) to develop a property damage only score. In this analysis, the injury crash costs were calculated for each location (based on the latest Caltrans injury costs). This figure is then divided by the injury cost for a property damage only crash. The resulting number is the equivalent number of property damage only crashes at each site. This figure allows all locations to be compared based on injury crash costs. (Highway Safety Manual, Chapter 4).

Probability

The Highway Safety Manual describes the methodology for determining the probability that crash type is greater than an identified threshold proportion. This helps to identify locations where a crash type is more likely to occur.

DATA NEEDS

The probability of a specific crash type can be determined using crashes records with location data, and classifications of the locations (intersections or segments) studied.

STRENGTHS

- Can be used as a diagnostic tool
- Considers variance in data
- Not affected by selection bias

The HSM methodology first determines the frequency of a specific crash type at an individual location, then determines the observed proportion of that crash type relative to all crash types at that location. A threshold proportion is then determined for the specific crash type; HSM suggests utilizing the proportion of the crash type observed in the entire reference population (e.g. throughout the entire City of Coachella).

These proportions are then utilized to determine the probability that the proportion of a specific crash type is greater than the long-term expected proportion of that crash type.

Figure 2 – Probability of Specific Crash Types Exceeding Threshold Proportion

$$P(p_i > \overline{p^*_i} / N_{observedj}, N_{observedj(TOTAL)}) = 1 - betadist(\overline{p^*_i}, a + N_{observedj}, \beta + N_{observedj(TOTAL)} - N_{observedj})$$

Where:

$\overline{p^*_i}$ = Threshold proportion

p_i = Observed proportion

$N_{observed,i}$ = Observed target crashes for a site i

$N_{observed,i(TOTAL)}$ = Total number of crashes for a site i

SOURCE: HIGHWAY SAFETY MANUAL

3.3 Future Analysis

The City will conduct regular crash 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 Public Works staff and external representatives from the Coachella Police Department, Coachella Unified School District, University of California, Riverside, Coachella Bicycle Club, Coachella Community Health Foundation, Coachella Downtown Partnership, and Coachella Transit Authority.

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, City Public Works and consultant staff met to discuss potential countermeasures and challenge areas through a field visit. The summary of the field visit meeting is outlined below.

4.1 Field Tour Workshop

The first stakeholder meeting was conducted after the field tour in person on August 16, 2024. 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 nine "case study" locations that were identified after the initial network screening and crash analysis process.

4.2 Stakeholder Focus Workshop

On October 22, 2024, the project team introduced the project and presented the crash analysis through tables, charts, and map. The project locations were also introduced with its crash data and a potential countermeasure toolbox. The countermeasure toolbox is not meant to be a recommendation that the project location specifically needs to adopt but more as potential options to enhance the safety at the project locations. Stakeholders provided feedback that helped with the development of the plan.

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 1 outlines the relevant existing City, County, and Regional plans and their improvements and main goals.

Table 2 outlines relevant proposed City transportation and safety projects listed in the relevant City, County, and Regional Plans.

Table 3 outlines the relevant existing and future City transportation projects, pedestrian improvement projects, and traffic calming & safety projects found in the Capital Improvement Program (CIP). The projects are accompanied by their timelines as well as a project description.

Table 1 – Review of Existing City Plans

Document Name	Summary/Goals
City of Coachella General Plan (2015)	• The City of Coachella General Plan was amended most recently in 2015 and plans for the City's growth up to 2035. The plan details the current state of the City's built and natural environment, addresses state mandated issues (land use, housing, transportation, open space, conservation, noise, and safety), and provides an additional element addressing community health and wellness. • The goal of the plan is to provide a binding document that lays a blueprint for the City to grow from a small town to a mid-sized, regionally significant city where people can live, work, and play. • The Mobility Element of the general plan outlines the current transportation system and establishes goals for the City's transportation system moving forward. The Mobility Element presents policies to support complete streets, traffic calming, safe pedestrian and bicycle networks, transit-supportive development, sustainable transportation, and regional connectivity. It also lays out a plan to monitor the success of the implementation of these transportation goals over time.
City of Coachella Active Transportation Plan (2020)	• The City of Coachella Active Transportation Plan covers the City's existing active transportation infrastructure and makes recommendations for improvements. The plan identifies parts of the City's roadway system that need to be improved to encourage more active transportation and make it safer. The plan outlines the benefits of increasing active transportation usage in the city. • The plan illustrates recommended changes and additions (signing, striping, roadway reconfigurations) to specific locations that can be made to improve safety for active transportation users. • The plan also lays out community engagement, regional cooperation, and funding opportunities.
City of Coachella Pavement Management Report (2024)	• The City of Coachella Pavement Management Report analyzes the current condition of the City's pavement and provides guidance for future maintenance. The plan analyzes different maintenance scenarios to provide possible outcomes and recommendations. • The plan's recommendations include putting maintenance responsibility on Homeowners' Associations, establishing a Community Facility District, raising taxes and pursuing grants to fund maintenance, and leveraging the proposed Riverside County Transportation Commission (RCTC) Tax Relief Plan.

Document Name	Summary/Goals
Coachella Valley Association of Governments Non-Motorized Transportation Plan (2010)	• The Coachella Valley Association of Governments Non-Motorized Transportation Plan outlines several objectives and policy guidelines to improve active transportation infrastructure in the region. The plan considers the existing active transportation plans and projects that have been published by cities in the region. • The goals of this plan are to provide concrete guidance on increasing active transportation in the region and to promote cohesion among the active transportation plans and projects developed by cities in the region.
Coachella Valley Association of Governments Pavement Management Analysis Report (2011)	• Coachella Valley Association of Governments Pavement Management Analysis Report outlines the importance of proper investment in pavement maintenance. The plan recommends pavement rehabilitation at intervals that ensure the most cost savings while providing sufficient pavement quality. The plan analyzes the entire road network in terms of maintenance costs. • The goal of the plan is to guide the cities in the region to proper and cost-effective pavement management to provide for a safe and well-maintained street network.
CV Link Conceptual Master Plan (2016)	• The CV Link Conceptual Master Plan provides master plan for CV Link, a proposed multi-use path with various amenities that will span the region and connect cities. The plan describes the characteristics of the path, the characteristics of the communities it intersects, cost estimates for the capital, operations, and maintenance costs, and community engagement that will guide project development. • The goals of this plan are to illustrate a high-level concept for the project, emphasize its importance in improving active transportation in the region, convey the project's feasibility, and detail some proposed design aspects.
Eastern Coachella Valley's Action Plan For Climate Resilience (2019)	• Eastern Coachella Valley's Action Plan For Climate Resilience covers grant opportunities (such as active transportation grants), community engagement strategies, existing climate-focused plans, new and model technology and policy ideas and guidance (such as housing policy guidance), shortfalls of existing policies, and localized recommendations to guide policymakers in the region to make sustainable and resilient decisions for the region. • The goal of the plan is to provide guidance for municipalities in the region to implement policies and make choices that enforce sustainability and climate resilience, both reducing harmful effects on the environment and proactively building infrastructure that provides protection against or is resilient to the worsening effects of climate change, especially in a region that is prone to extreme temperatures.

Document Name	Summary/Goals
Coachella Valley Association of Governments Active Transportation Plan (2019)	• This plan outlines the current and future landscape of active transportation projects and programs in the Coachella Valley region. The plan includes and details individual community bicycle plans, regional funding sources, and design guidance. • The goals of this plan are to create and maintain local and regional bicycle and pedestrian networks, and identify areas of improvement in necessary infrastructure, implement safety programs, and encourage biking and walking through the creation of a friendly cycling and pedestrian environment.
County of Riverside General Plan (2020)	• The purpose of the County of Riverside General Plan is to provide an update to the regions land use and infrastructure needs, update current design standards and guidelines, and create and implement strategies for future developments. • The goals of the circulation chapter of the plan are to describe different classes of bike lanes and paths in the region, implement an integral network of trails in throughout the County, and to consider environmental impacts when planning for future bike/ped infrastructure
Riverside County Long Range Transportation Study (2019)	• The Riverside County Long Range Transportation Study focuses on the long-term growth of transportation and transportation services in the region that includes but limited to transportation planning, regional challenges, funding, capital development for public transit and highways, and local roads improvement and traffic safety. • The goals of this plan include improved quality of life, operational excellence, economy connectivity, and viable partnerships with all levels of government in the state (local, regional, and state) as it pertains to roads, transit, active transportation facilities, grants, and local Measure A Value
Riverside County Regional Park and Open Space District Comprehensive Tails Plan (2018)	• The Riverside County guides the future of bicycle trails in Riverside County and provides an analysis of the current trails in the region. The plan also discusses design guidelines, policy issues, and potential trail partnerships for funding of future trails in the region. • The goals of this plan are to create a network of trails that are line with current other plans and jurisdictions, accessible, and create recommendations for future maintenance and management of trails in the region.

Document Name	Summary/Goals
Riverside County Transportation Commission Traffic Relief Plan (2020)	• The RCTC Traffic Relief Plan is a strategy plan for Riverside County to help alleviate traffic congestion, improve traffic safety, improve transit frequency and reliability, and completing the regional trail system. • The plan includes implementation and improvements to programs such as Safe Routes to School, specialized transit grant programs, and Commuter Assistance Programs

Table 2 – Proposed Roadway Projects

Project Name	Plan/Funding	Project Description and Location	Status
Coachella Valley (CV) Link	CV Link Conceptual Master Plan (2016)	40 miles of Class I multi-use path through the cities of the Coachella Valley, paralleling SR 111 and the Whitewater River	Proposed
Valley Rd. and Cesar Chavez St. Intersection Improvement	City of Coachella Active Transportation Plan (2020)	Improvement of pedestrian safety at Valley Rd. and Cesar Chavez St.	Proposed
Ave. 53 and Calle La Paz Intersection Improvement	City of Coachella Active Transportation Plan (2020)	Improvement of pedestrian safety at Ave. 53 and Calle La Paz	Proposed
Ave. 53 and Calle Bonita Intersection Improvement	City of Coachella Active Transportation Plan (2020)	Improvement of pedestrian safety at Ave. 53 and Calle Bonita	Proposed
9th St. and Pendleton Way Intersection Improvement	City of Coachella Active Transportation Plan (2020)	Improvement of pedestrian safety at 9th St. and Pendleton Way	Proposed
Orchard St. and 8th St. Intersection Improvement	City of Coachella Active Transportation Plan (2020)	Improvement of pedestrian safety at Orchard St. and 8th St.	Proposed
Orchard St. and 3rd St. Intersection Improvement	City of Coachella Active Transportation Plan (2020)	Improvement of pedestrian safety at Orchard St. and 3rd St.	Proposed
Avenida de Oro South of North School Parking Lot Entrance Intersection Improvement	City of Coachella Active Transportation Plan (2020)	Improvement of pedestrian safety at Avenida de Oro South of North School Parking Lot Entrance	Proposed
Valley Rd. between Tripoli Way and Las Palmas St. Intersection Improvement	City of Coachella Active Transportation Plan (2020)	Improvement of pedestrian safety at Valley Rd. between Tripoli Way and Las Palmas St.	Proposed
Van Buren St Sidewalks	City of Coachella Active Transportation Plan (2020)	Sidewalk on both sides of Van Buren St from Ave 51 to existing sidewalks	Proposed

Project Name	Plan/Funding	Project Description and Location	Status
Tyler St Sidewalk	City of Coachella Active Transportation Plan (2020)	Sidewalk on east side of Tyler St. from Ave. 53 to Ave. 54	Proposed
Pendleton Way Sidewalks	City of Coachella Active Transportation Plan (2020)	Sidewalk on west side of Pendleton Way from 8th St. to 9th St.	Proposed
		Sidewalk on west side of Pendleton Way from 7th St. to 130' south	Proposed
Ave. 52 Sidewalk	City of Coachella Active Transportation Plan (2020)	Sidewalk on north side of Ave. 52 from Tyler St. to Education Way	Proposed
Ave. 54 Sidewalk	City of Coachella Active Transportation Plan (2020)	Sidewalk on north side of Ave. 54 from Calle Balderas to Cesar Chavez St.	Proposed
Calhoun St Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Calhoun St from Ave 48 to Ave 49	Completed
		Class II bike lanes on Calhoun St from Ave 49 to 540’ south of Sagrado St (South City Limit)	Completed
		Class II bike lanes on Calhoun St (southbound only) from 1425' North of Ave 50 to Ave 50	Completed
Frederick St	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes from Ave 49 to ¼ mile south of Ave 52	Completed
Ave 49	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 49 from Van Buren St to Grapefruit Blvd.	Completed
Ave 51	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 51 from Van Buren St to Harrison Blvd.	Completed
6th St	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class I sidewalk path on 6th St from Harrison St to Grapefruit Blvd.	Completed

Project Name	Plan/Funding	Project Description and Location	Status
Dillon Rd Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Dillon Rd from Ave 44 to Harrison Pl	Proposed
		Class II bike lanes on Dillon Rd from Whitewater River to Ave 48	Proposed
Harrison St Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II buffered bike lanes/NEV lanes on Harrison St from Hwy 111 to Ave 54	Proposed
Shady Lane Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Shady Lane from Orchard St to Ave 52	Proposed
		Class I bike path on the east side of Shady Ln. from 9th St to Ave 54	Proposed
Ave 52 Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 52 from Coachella Western city limit (Calhoun St) to Harrison St	Proposed
		Class II bike lanes on Ave 52 from Tyler St to Whitewater River	Proposed
		Class II shared bike/NEV lanes on Ave 52 from Tripoli Way to Tyler St	Proposed
		Class II bike lanes on Ave 52 from Whitewater River to SR-86S	Proposed
		Class II bike/NEV lanes on Ave 52* from SR-86S to Eastern end of road	Proposed
		Class II bike/NEV lanes on Ave 52* from Harrison St to Tripoli Way	Proposed
Jackson St Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Jackson St from Ave 48 to Ave 49	Proposed

Project Name	Plan/Funding	Project Description and Location	Status
1st St Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class III bike route on 1st St from Harrison St to Grapefruit Blvd.	Proposed
Hwy 111 Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II buffered bike lanes on Hwy 111 from Ave 54 to 3,520' south of Ave 54 (South City Limit)	Proposed
Industrial Way Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Industrial Way from Enterprise Way to Polk St	Proposed
Polk St Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Polk St from Industrial Way to Ave 54	Proposed
		Class II bike lanes on Polk St from Ave 48 to Ave 52	Proposed
Enterprise Way Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Enterprise Way from Ave 52 to Ave 54	Proposed
Ave 51 Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes from 1330' west of Van Buren St. (West City Limit) to Van Buren St	Proposed
Shadow View Blvd. Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Shadow View Blvd. from Dillon Rd to Tyler St	Proposed
Bagdad Ave Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class III bike route on Bagdad Ave from Douma St to Grapefruit Blvd.	Proposed
SR-86S Expressway Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class III bike route on SR-86S Expressway from Dillon Rd to Airport Blvd. (South City Limit)	Proposed
Frederick St Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class I bike path on Frederick St from Ed Mitchell Dr to Ave 49	Proposed
		Class II bike lanes from Ave 52 to Ave 54	Proposed

Project Name	Plan/Funding	Project Description and Location	Status
Ave 49 Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 49 from Jackson St to Van Buren St	Proposed
Ave 50 Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 50 from 1010' east of Jackson St (West City Limit) to Whitewater River	Proposed
Ave 44 Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 44 from Harrison St to Dillon Rd	Proposed
		Class II buffered bike lanes on Ave 44 from Monroe St to Harrison St	Proposed
Whitewater River Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class I bike/NEV path on Whitewater River from Tyler St to Airport Blvd	Proposed
		Class I bike/NEV path on Whitewater River from 1340' east of Van Buren St (Indio East City Limit) to Tyler St	Proposed
Ave 51/52 Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class I bike path midblock between Ave 51 and Ave 52 from Van Buren St to Frederick St	Proposed
Connector to Coachella Canal	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class I bike path from Polk St to 1930' west of Pierce St	Proposed
Mitchell Dr Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Mitchell Dr from Grapefruit Blvd. to Van Buren St	Proposed
Ave 54 Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 54 from Van Buren St to Whitewater River	Proposed
		Class I bike path on Ave 54 from Harrison St to Tyler St	Proposed

Project Name	Plan/Funding	Project Description and Location	Status
Calhoun St Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Calhoun St from San Mateo Ave to South City Limit	Proposed
Van Buren St Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Van Buren St from Ave 48 to Ave 54	Proposed
		Class II bike lanes on Van Buren St from Ave 54 to Airport Blvd.	Proposed
Tyler St Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class I bike path on Tyler St from Dillon Rd to Vista del Norte	Proposed
		Class II bike lanes on Tyler St from Ave 48 to Ave 50	Proposed
		Class III bike route on Tyler St from Ave 50 to Ave 52	Proposed
		Class II bike lanes on Tyler St from Grapefruit Blvd. to 54th Ave	Proposed
		Class I bike path on Tyler St from Ave 54 to Airport Blvd.	Proposed
		Class II bike lanes on Tyler St from Ave 54 to Airport Blvd.	Proposed
Vista del Norte Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Vista del Norte from Tyler St to Coachella Canal	Proposed
Ave 48 Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 48 from Tyler St to Coachella Canal	Proposed
		Class II buffered bike/NEV lanes on Ave 48 from Jackson St to Van Buren St	Proposed

Project Name	Plan/Funding	Project Description and Location	Status
Connector to I-10	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes from Ave 50 to I-10	Proposed
Ave 48 Multipurpose Path	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class I multipurpose path/NEV path on Ave 48 from Van Buren St to Dillon Rd	Proposed
Dillon Rd Sidewalk Path	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class I sidewalk path/NEV path on Dillon Rd from Ave 48 to Whitewater River	Proposed
Dillon Rd* Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike/NEV lanes on Dillon Rd* from Harrison Pl to Whitewater River	Proposed
Grapefruit Blvd. Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Grapefruit Blvd. from Dillon Rd/Ave 48 (West City Limit) to Ave 54 (East City Limit)	Proposed
Spotlight 29 Casino Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike/NEV lanes on access road along east side of Spotlight 29 Casino from just south of I-10 to Harrison Pl	Proposed
Harrison Pl Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike/NEV lanes on Harrison Pl from access road along east side of Spotlight 29 Casino to Dillon Rd	Proposed
Unpaved Road* Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike/NEV lanes on unpaved road from Ave 52 to future extension to La Entrada	Proposed
Ave 45 Bikeway	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Ave 45 from Monroe St to Harrison St	Proposed
Airport Blvd Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes on Airport Blvd from Orange St to Buchanan St	Proposed
		Class II bike lanes on Airport Blvd from Monroe St to Polk St	Proposed

Project Name	Plan/Funding	Project Description and Location	Status
Pierce St Bikeways	Coachella Valley Association of Governments Active Transportation Plan (2019)	Class II bike lanes from Ave 52 to Harrison St	Proposed
		Class I bike path from 1000' North of Ave 55 to Ave 55	Proposed
		Class II bike lanes on Pierce St from 1320' north of Ave 55 (North City Limit) to Ave 55 (South City Limit)	Proposed
Dillon Rd and Lucky Wy	Dillon Rd Street Improvement Plan	New signalized intersection at Dillon Rd and Lucky Wy	Proposed
Van Buren St and Dan Ed Mitchell Dr	Rancho Las Flores Park Project Phase 2	New signalized intersection at Van Buren St and Dan Ed Mitchell Dr adjacent to Rancho Las Flores Park	Proposed
Ave 50 and Tyler St	Avenue 50 Corridor Project	New signalized intersection at Avenue 50 and Tyler St	Proposed
Ave 53 and Calle Empalme	Heptagon Seven on-call engineering services budget	New roundabout at the intersection of Ave 53 and Calle Empalme	Proposed

Table 3 – Review of City Projects from City of Coachella CIP

Project Name	Timeline	Roadway Improvements
City of Coachella Mobility Projects	Completed	New bike lanes, sidewalks, pathways, pedestrian crossings, intersection modifications, signing and lighting improvements completed in 2018 and funded through competitive grants.
City of Coachella Interconnect Project	Completed	Synchronization of traffic signals throughout the city using a fiber optic backbone. Completed in 2016
Avenue 52 Grade Separation	Completed	Grade separation of Ave 52 from SR 111 and railroad tracks and new connector road. Completed in 2015.
Bagdouma Park Improvements	Completed	New park design informed by public outreach. New road along west side of park and two new traffic signals. Completed in 2014.
Rancho Las Flores Park	Completed	Park design and programming informed by public outreach. Funded by Prop 84 grant. Completed in 2012.
Street R.E.A.S. Rehabilitation Project	Under Construction	Slurry seal of the City's roadways using Rubberized Emulsion Aggregate Slurry (REAS).
Avenue 50 Corridor Project	Under Construction	Various intersection and roadway capacity expansions, grade separation from railroad tracks, SR 86 interchange expansion, and extension to I-10.
Dillon Corridor Project	Future	Various roadway capacity and interchange improvements on Dillon Rd from Ave 48 to Vista Del Norte.
Arts and Music Line	Future	9-mile bike route along Ave 48 between Washington St and Dillon Rd, on tothe Whitewater River, spanning the cities of La Quinta, Indio, and Coachella

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 crash analysis requires each intersection to be classified by type: Signalized or Unsignalized. **Figure 3** illustrates the City of Coachella's roadway functional classification and intersection control type, respectively, as used for this study.

6.2 Crash Data

Crash data was collected from the Transportation Injury Mapping System (TIMS) for the period from January 1, 2018, through December 31, 2023. Six years of data are utilized instead of the standard three years to provide more history to evaluate trends or patterns. Analysis of the raw crash data is the first step in understanding the specific and systemic challenges faced throughout the City. Analyzing the six years of data provided insight on the following crash trends and patterns. All crashes analyzed in the study period are shown in **Figure 4**. Analyzing the six years of data provided insight on the crash trends and patterns detailed in **Section 7.** The locations of fatal and severe injury crashes are displayed in **Figure 5.**

Figure 3 – Functional Classification & Signalized Intersections

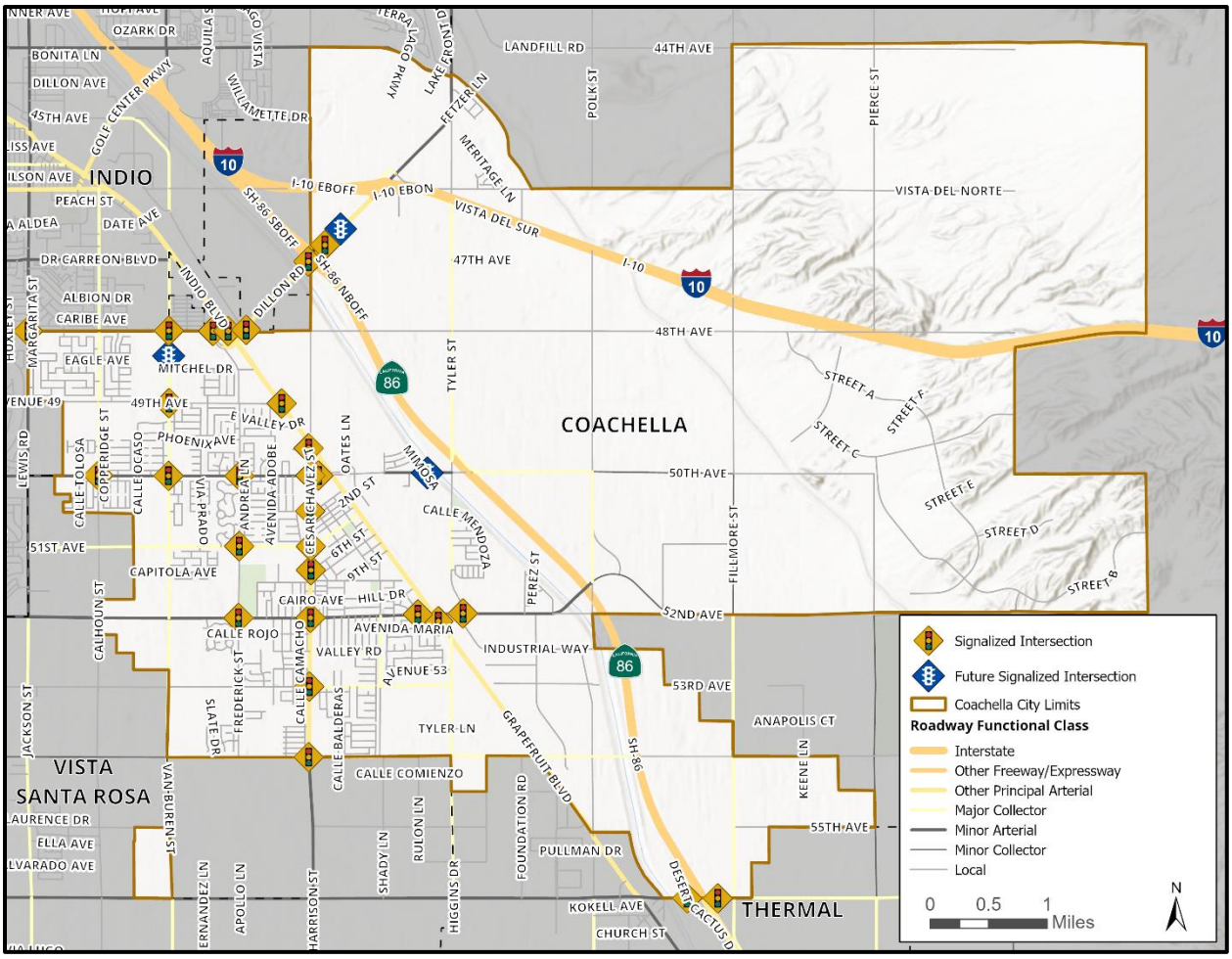


Figure 4 – All Crashes (2018-2023)

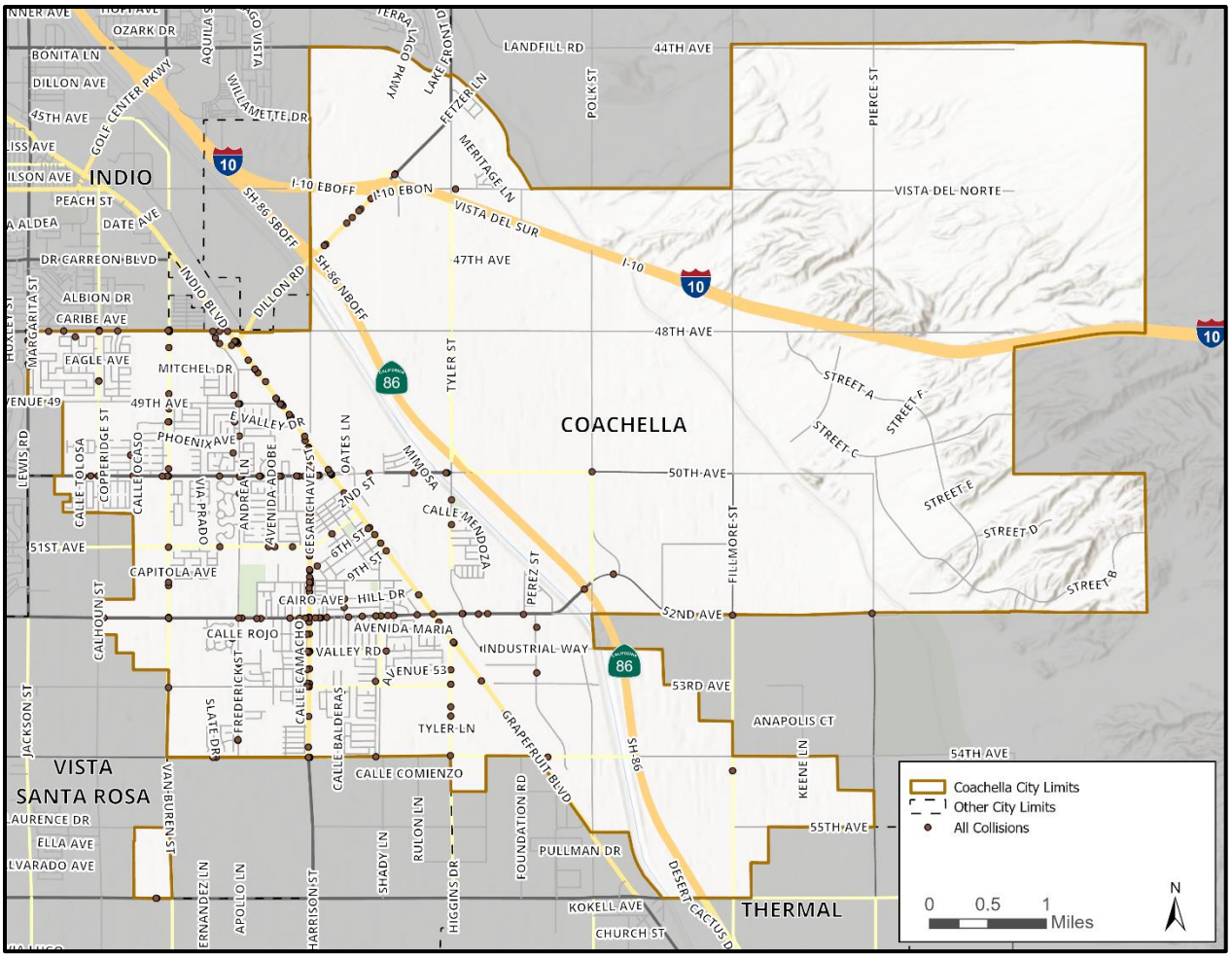
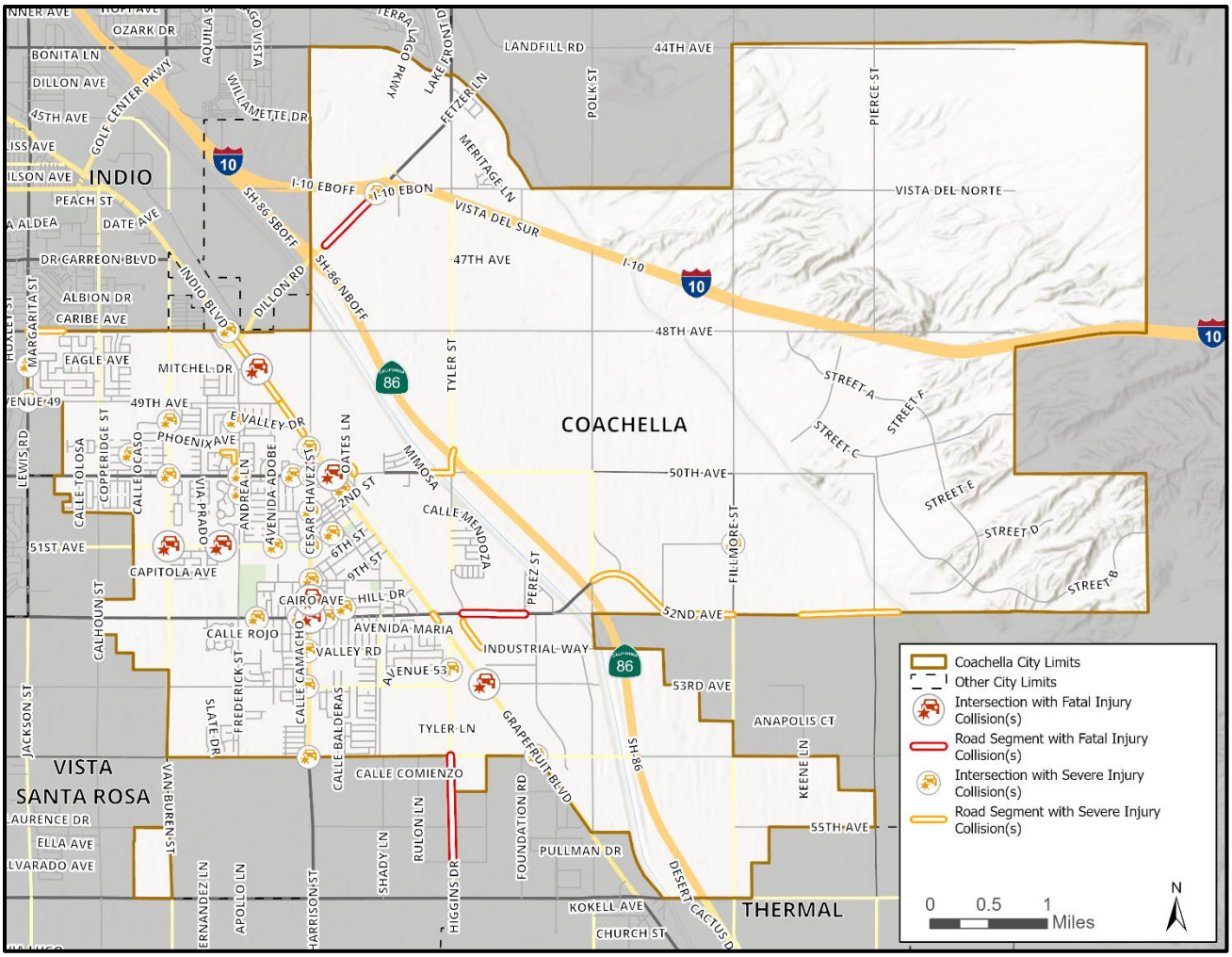


Figure 5 – Fatal & Severe Injury Crashes (Map) (2018-2023)



7. Crash Safety Trends

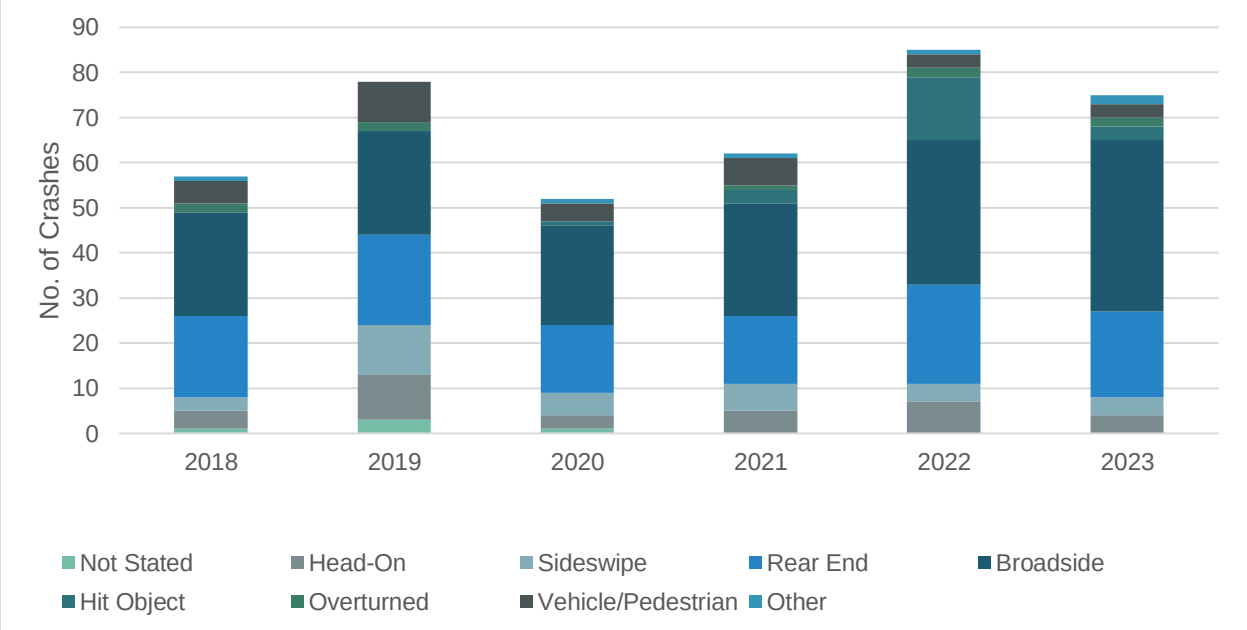
The analysis was conducted using a network screening process for the City-maintained roadway system based on crash records spanning from January 1, 2018, to December 31, 2023. This section contains the results of the analysis, which included the evaluation of Coachella's fatal and serious injury (generally denoted as K+SI) crashes, statewide K+SI crashes, pedestrian crashes, bicycle crashes, crash severity levels, and crash causes.

7.1 All Crashes

This report utilized crash 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 were extracted from TIMS analytics on August 7, 2024, and was current as of that date. Crash data from January 1, 2018, through December 31, 2023, as reported to TIMS from the local enforcement, indicated that during this time there were 409 crashes recorded within Coachella.

During the study period, the most common occurring crash types were Broadsides (40%) and Rear-Ends (27%). The total number of crashes increased between 2018 and 2019, before decreasing in 2020 and then generally increasing until the end of the study period to return to 2019 levels. Total number of crashes in a calendar year peaked in 2022, at 85 crashes. **Figure 6** shows the crash type by year.

Figure 6 – Crash Type by Year (2018-2023)



Source: SWITRS - TIMS Database (2018-2023)

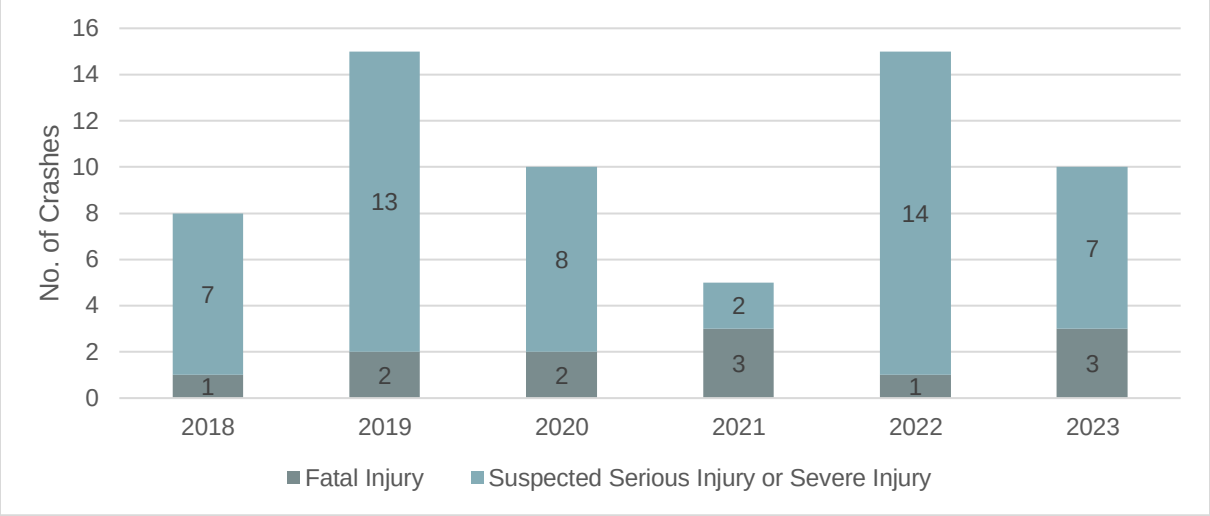
7.2 Fatalities & Severe Injuries

During the study period, 12 fatal crashes and 51 suspected serious or severe injury crashes occurred, as seen in Figure 5**. Table 4** outlines the fatal and severe injury crashes categorized by modes involved.

Table 4 – Fatal and Severe Injury Crashes Categorized by Modes Involved (2018-2023)

Involved with	# of Severe Injury Crashes	# of Fatal Crashes
Bicycle	4	1
Fixed Object	7	1
Motor Vehicle on Other Roadway	1	0
Non-collision	3	0
Other Motor Vehicle	25	6
Other Object	3	0
Parked Motor Vehicle	0	0
Pedestrian	7	4
Not Stated	1	0

Figure 7 – Fatal & Severe Injury Crashes (2018-2023)

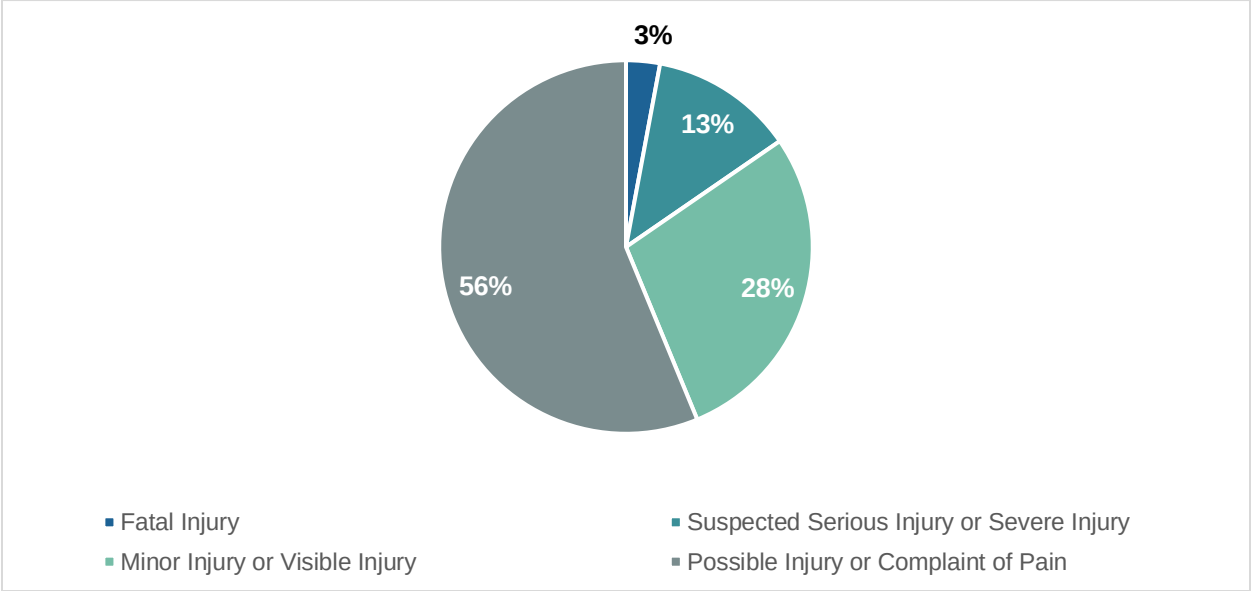


Source: SWITRS - TIMS Database (2018-2023)

7.3 Injury Levels

As shown in **Figure 8**, fatalities and severe injuries totaled 16% of all crashes. Minor or visible injuries totaled 28%, and possible injuries totaled 56%.

Figure 8 – Crashes by Injury Levels (2018-2023)



Source: SWITRS - TIMS Database (2018-2023)

7.4 Cause of Crash

The highest recorded cause of crashes in Coachella during the study period is Unsafe Speed at 24.69%, followed by Automobile Right of Way at 18.34% and Traffic Signals and Signs at 17.11%. Traffic Signals and Signs type occurs at intersections or roadway segments where drivers fail to obey traffic signs or road signs.

Table 5 - Cause of Crashes (2018-2023)

Primary Crash Factor	No. of Crashes	%
Unsafe Speed	101	24.69%
Automobile Right of Way	75	18.34%
Traffic Signals and Signs	70	17.11%
Driving or Bicycling Under the Influence of Alcohol or Drug	39	9.54%
Improper Turning	39	9.54%
Unknown	17	4.16%
Unsafe Lane Change	17	4.16%
Pedestrian Violation	11	2.69%
Unsafe Starting or Backing	8	1.96%
Not Stated	8	1.96%
Pedestrian Right of Way	7	1.71%
Other Hazardous Violation	5	1.22%
Wrong Side of Road	5	1.22%
Other Than Driver (or Pedestrian)	3	0.73%
Following Too Closely	3	0.73%
Improper Passing	1	0.24%
Unsafe Speed	101	24.69%
Automobile Right of Way	75	18.34%
Traffic Signals and Signs	70	17.11%
Driving or Bicycling Under the Influence of Alcohol or Drug	39	9.54%
Improper Turning	39	9.54%
Unknown	17	4.16%
Unsafe Lane Change	17	4.16%
Pedestrian Violation	11	2.69%

Source: SWITRS - TIMS Database (2018-2023)

7.5 Vulnerable Users

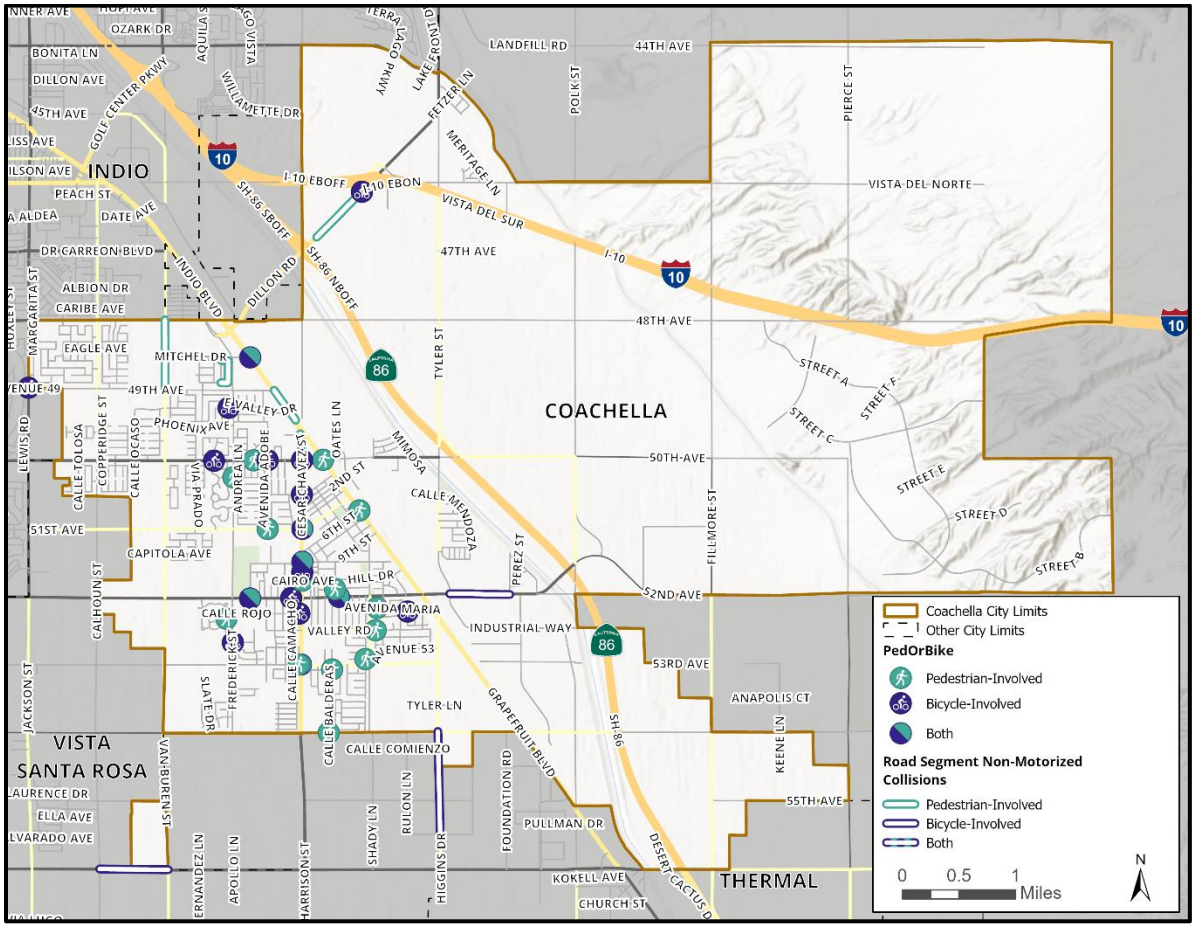
7.5.1 Pedestrian Crashes

28 pedestrian involved crashes occurred during the study period, resulting in 4 fatal crashes, 7 suspected serious or severe injury crashes, 7 minor or visible injury crashes, and 10 possible injury or complaint of pain crashes. **Figure 9** shows the locations of pedestrian crashes during the study period.

7.5.2 Bicycle Crashes

During the study period, 24 crashes involving bicycles were reported. Of these, 1 was fatal, 4 resulted in suspected serious or severe injuries, 12 resulted in minor or visible injuries, and 7 resulted in possible injuries or complaints of pain. **Figure 9** shows the location of bicycle crashes during the study period.

Figure 9 – Pedestrian & Bicycle Crashes (2018-2023)



7.6 Time of Day

Crashes in Coachella occurred more in the PM hours versus the AM hours, with 71.4% of crashes occurring in the PM hours, and 28.6% occurring in the AM hours. The peak period of crash activity was from 1:00 pm to 10:00 pm. A significant number of crashes occurred during nighttime hours. 38.6% of crashes occurred at night or during the dusk/dawn hours. 6.4% of crashes occurred at night where there were no streetlights.

7.7 Time of Year

The total number of crashes vary by month of year. The most common month for crashes was September, with 46 crashes between 2018 and 2023. Crashes tended to occur more frequently in the later half of each calendar year. The month with the fewest number of crashes was February, with 20 total crashes between 2018 and 2023.

7.8 Behavioral Driving

Aggressive driving and impaired driving are two important behavioral factors that often significantly contribute to crash types and severities. These areas are studied in the analysis. Caltrans defines aggressive driving as behaviors that include speeding, tailgating, and running stop signs or red lights. These behaviors were predominant in 42.5% of the crashes in Coachella during the study period.

Impaired driving is defined by Caltrans as any instance where a driver, pedestrian, bicyclists, or motorcyclist is under the influence of alcohol, illicit drugs, or prescribed or over-the-counter medication. 10.8% of the crashes in Coachella during the study period (2018-2023) involved impairment. Impairment was the primary collision factor in 9.5% of the crashes in Coachella during the study period

7.9 Driver Age

Two groups of drivers typically have a higher impact on the number of crashes. Aging Drivers (age 65 and up) and Young Drivers (ages 16-25) are more often found at fault for crashes they are involved in. In Coachella, the crash data for 2018-2023 period indicated that 79% of the crashes within Coachella involved Seasoned/Mature Drivers, 41% involved Young Drivers, and 12% involved Aging Drivers.

7.10 Statewide Comparison

A comparison of fatal & severe injury crash data to the State averages were conducted for data from 2009-2018 (the most recent statewide data available). These numbers may vary slightly from those mentioned previously, due to the differences in the years of the study period. The following are areas where Coachella's crash rates are higher or lower than those of the State. These numbers specifically compare the proportion of fatal and serious injury crashes that have the characteristics listed in **Table 6**.

Table 6 – Comparison of Statewide and Coachella Fatal & Severe Injury Crashes (2009-2018)

Challenge Areas	Statewide		Coachella		
	F+SI Crashes (2009-2018)	% of F+SI Crashes (2009-2018)	F+SI Crashes (2009-2018)	% of F+SI Crashes (2009-2018)	% Point Difference
Total	**133,737**	**100.0%**	**105**	**100.0%**	**-**
Improper Use of Occupant Protection	19,016	14.2%	28	26.7%	**12.4%**
Impaired Driving	33,795	25.3%	38	36.2%	**10.9%**
Intersections	31,587	23.6%	35	33.3%	**9.7%**
Aggressive Driving	44,253	33.1%	43	41.0%	**7.9%**
Driver Licensing	7,428	24.7%	12	32.4%	**7.8%**
Distracted Driving	6,712	5.0%	9	8.6%	**3.6%**
Pedestrians	25,713	19.2%	22	21.0%	**1.7%**
Commercial Vehicles	8,523	6.4%	8	7.6%	**1.2%**
Lane Departure	57,850	43.3%	44	41.9%	-1.4%
Work Zones	1,919	1.4%	34	0.0%	-1.4%
Young Drivers	11,471	13.1%	0	10.5%	-2.6%
Bicyclists	11,088	8.3%	5	4.8%	-3.5%
Aging Drivers (65+)	16,525	12.4%	7	6.7%	-5.7%

7.11 Crash Network Screening Analysis Results

Figure 10 below show the results of the crash network screening analysis, with the number of crashes at both intersections and mid-block roadway segments.

Figure 10 – Crash Network Screening Analysis Results (2018-2023)

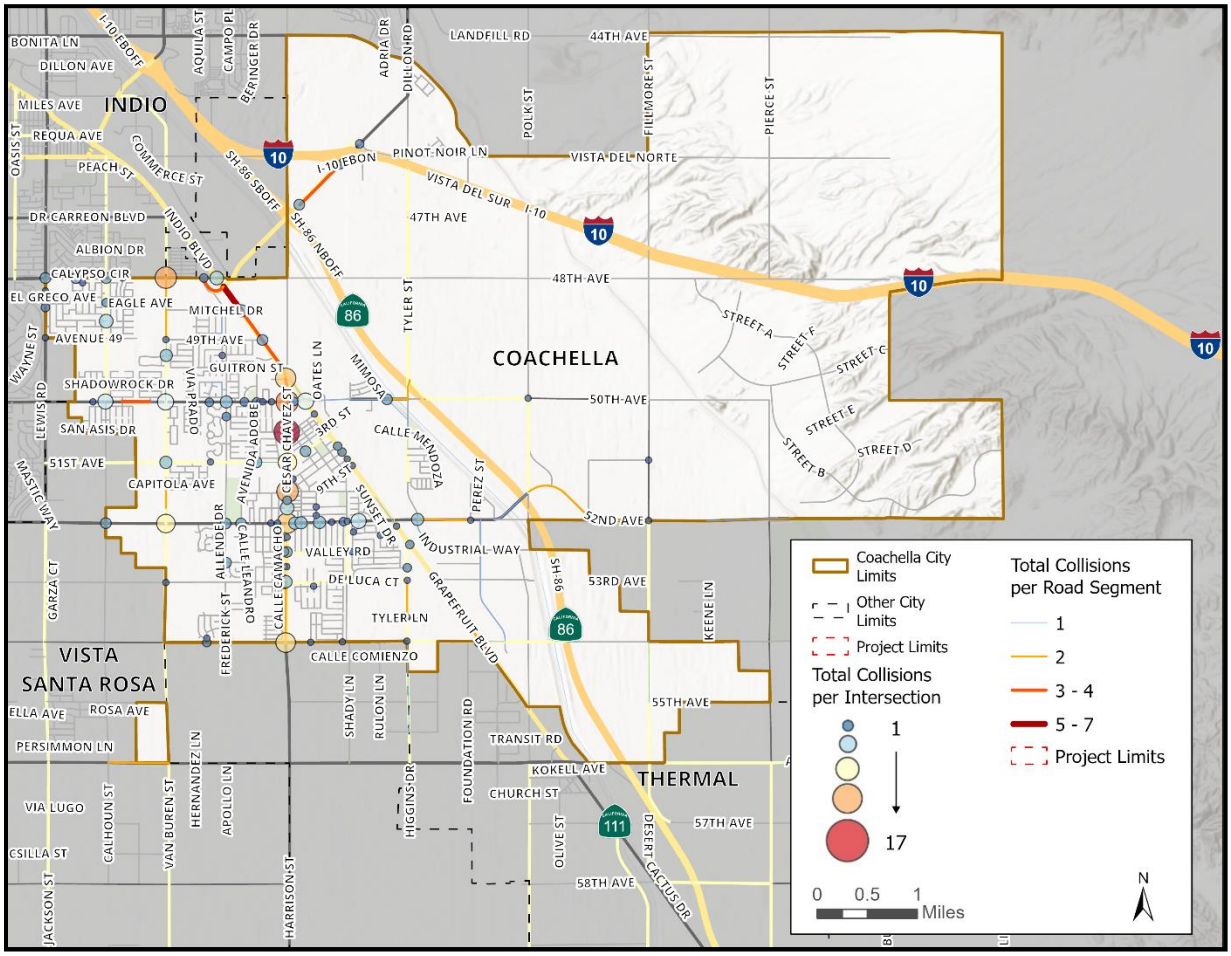


Table 7 and 8 show the number of crashes occurring at the significant locations in Coachella by crash type for the locations that will be studied further in the Report, and highlights locations in which the probability of those crash types exceeding the threshold proportion is greater than 33%.

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

The tables are separated into sub-sections visible by the blue gradient. The first two columns, Crashes and CCR, represent the level of crash activity in absolute terms, and as relative to other similar locations, respectively.

Per guidance from the Local Roadway Safety Manual (LRSM) each sub-population of locations was ranked according to the number of crashes. The second column shows the CCR, which highlights whether or not the crash activity was higher or lower than the average for the sub-population based on the individual segment or intersection volume. This volume was either collected through data count resources or calculated based on the roadway classification. All averages used in the CCR calculation were established based on City of Coachella crash data to determine what locations might be best to prioritize at the local level. This process highlights locations of crashes that are unusual for the City to determine Coachella's challenge areas, and not problems faced by peer cities that do not apply in Coachella. The remaining columns total crashes by type, to evaluate each sub-population and understand what proportion of crashes in the City are of a particular type. The citywide proportion was compared with the local intersection or segment specific proportion to determine which locations have more of a given crash type than would be expected when considering the City average. A confidence level of 95% was used for the CCR Calculations. For this study, two categories of ranges were highlighted:

- **Light Gray:** >50% probability that this crash type is over-represented on this segment/intersection as compared to other characteristically similar locations within the City of Coachella. Although these locations have a slightly higher probability of this crash type than their counterparts, they are not necessarily highly significant.

- **Dark Gray:** >75% probability that this crash type is over-represented on this segment/intersection as compared to other characteristically similar locations within the City of Coachella. These locations are highly significant in regard to the number of crashes occurring here and should be further investigated.

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 Coachella. 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 Crash Severity, Type, Involved With, and Behavior are additional characteristics of the crash and should not be counted as a separate crash.

The following provides an example of how to read **Tables 7 and 8.**

Table Definitions:

- Total Crashes: Number of crashes observed at the intersection or segment from January of 2018 through December of 2023.
- Severity: The number of severe injury and fatal crashes that occurred at this location in the study period.
- Fatality: The number of fatal crashes 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 crashes that occurred at this location in the study period.
- Other: The number of miscellaneous crash types (mostly single vehicle) that occurred at this location in the study period.
- Aggressive, Dark, Wet: The number of the crashes with this factor identified as the cause of crash.

Table 7 – Analysis Results: Intersections

No.	Intersection	Crashes	Local CCR Differential[1]	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
Signalized Intersections																							
1	*Westerfield Way & Cesar Chavez St*	**17**	0.0	276		1	3	13		7	2	5	2	1				2	12	2			
2	*Cesar Chavez St & 50th Ave*	**13**	0.0	265		1	6	6		6	2	4				1		1	7	2	1		
3	*48th Ave & Van Buren St*	**12**	-0.1	78			1	11		5	1	3	3						6	3	1		
4	*52nd Ave & Cesar Chavez St*	**11**	0.0	239	1		3	7		8		3							4		3		
5	*Cesar Chavez St & Park Ln*	**11**	0.0	239		1	3	7		3	1	5	2						7		1		
6	*54th Ave & Cesar Chavez St*	**10**	0.0	392		2	3	5		8		1							5	1	1		
7	*Cesar Chavez St & 51st Ave*	**9**	0.0	232		1	4	4		6		2					1	2	4		1		
8	*52nd Ave & Van Buren St*	**9**	-0.1	69			3	6		2	1	5	1						6	1	1		
9	*50th Ave & Van Buren St*	**7**	0.0	360		2		5		1	1	5							6			1	
10	*50th Ave & Calhoun St*	**6**	-0.1	50			3	3		5	1								3	1			
11	*48th Ave & Grapefruit Blvd*	**5**	0.0	194		1	1	3		2	2		1						1	1			1
12	*53rd Ave & Cesar Chavez St*	**4**	0.0	29			1	3		2							1	1	2				1
13	*51st Ave & Van Buren St*	**4**	-0.1	188	1		1	2		4									2				
14	*Industrial Way & 52nd Ave*	**4**	-0.1	34			2	2		2		1	1						2		1		
15	*50th Ave & Frederick St*	**4**	0.0	188		1	1	2		1	1	1	1						2		1		
Unsignalized Intersections																							
1	*Bagdad Ave & Cesar Chavez St*	**12**	0.0	409		2	4	6		4		3	1			1	3	1	5	1		1	1

No.	Intersection	Crashes	Local CCR Differential[1]	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
2	50th Ave & Grapefruit Blvd	7	-0.1	215	1		3	3		1	1	3	1				1		4	1	1	1	
3	52nd Ave & Genoa Dr	6	-0.1	46			2	4		4		2							5	1			1
4	Cairo Ave & Cesar Chavez St	5	0.0	352	2		1	2		2		2					1		2		1	1	1
5	Calhoun St & San Ignacio Ave	5	-0.1	35			1	4				5							5	2		2	
6	Grapefruit Blvd & 54th Ave	4	0.0	188		1	1	2		1		1	2						1		1	2	
7	52nd Ave & Jennifer Way	4	-0.1	29			1	3		1	1	1		1					2				
8	52nd Ave & Tripoli Way	4	0.0	183		1		3		2	1	1											
9	52nd Ave & Las Palmas St	4	-0.1	29			1	3		1	1						2	1					1
10	Fiesta Rd & Van Buren St	4	0.0	188		1	1	2		3			1							1			
11	Grapefruit Blvd & Mitchell Dr	4	0.0	346	1	1	1	1		2		1					1	1	2			1	
12	52nd Ave & Douma St	3	0.1	494		3									1		2	1	1			1	
13	6th St & Cesar Chavez St	2	0.0	12				2		1		1							1				
14	53rd Ave & Calle Empalme	0	-0.6	0																			

1. Local Critical Crash Rate Differential
2. Equivalent Property Damage Only Crashes

= Local CCR Differential > 1.0

= Local CCR Differential 0.33-1.0

= Local CCR Differential < 0.33

= 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

Table 8 – Analysis Results: Segments

No.	Facility	Limits	Crashes	Local CCR Differential[1]	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
Principal Arterial																								
1	Grapefruit Blvd	Dillon Rd Overpass to Mitchell Dr	**7**	0.1	378		2	4	1		3	1		2	1					2		1		
2	Cesar Chavez St	1st St to 50th Ave	**5**	0.0	198		1	2	2		3		1						1		1			
3	Cesar Chavez St	50th Ave to Grapefruit Blvd	**4**	0.0	192	1		2	1		3							1						
4	Dillon Rd	Harrison Pl to Vista Del Sur	**4**	0.1	188	1		1	2		2	1						1					1	
5	Grapefruit Blvd	Mitchell Dr to 49th Ave	**3**	-0.1	177		1		2				2		1					2		1		
6	Grapefruit Blvd	49th Ave to Gateway Center Southern Driveway	**3**	-0.1	177		1		2				2					1		2	1			
7	Dillon Rd	48th Ave to Grapefruit Blvd Underpass	**3**	0.1	18				3			1			2									
8	Cesar Chavez St	53rd Ave to 54th Ave	**2**	-0.2	12				2				2							1				
9	Grapefruit Blvd	Gateway Center Southern Driveway to Park Ln	**2**	-0.1	12				2				2							1		1		
10	Grapefruit Blvd	53rd Ave to 54th Ave	**2**	-0.2	17			1	1				1		1					1	1			
11	Dillon Rd	Grapefruit Blvd Underpass	**2**	5.8	12				2			1	1							1			1	

No.	Facility	Limits	Crashes	Local CCR Differential[1]	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
12	Cesar Chavez St	4th St to 6th St	**2**	-0.2	17			1	1				2							2				
Minor Arterial																								
1	50th Ave	Hornblend St to Calle Puesta del Sol	**3**	0.2	27			2	1				1	1		1				1		1	1	
2	52nd Ave	Industrial Wy to La Ponderosa Dr	**2**	0.1	171	1			1		1				1				1			1		
3	Airport Blvd	Calhoun St to Van Buren St	**2**	0.2	21			2			2								1	1				
4	50th Ave	Kenmore St to Cesar Chavez St	**2**	0.2	17			1	1			1												
5	50th Ave	Magnolia/Tyler St to Tyler St/50th Ave	**2**	0.0	329		2						1			1				2			1	
6	52nd Ave	Hernandez St to Polk St	**1**	-0.1	11			1			1										1			
Major Collector																								
1	Van Buren St	48th Ave to 49th Ave	**2**	-0.1	12				2			1	1					1		1				
2	Van Buren St	Private Rd to Manhattan Dr	**2**	0.1	17			1	1		1				1							1		
3	Tyler St	Tyler Ln to 53rd Ave	**2**	1.1	12				2			2										1	1	
Minor Collector																								

No.	Facility	Limits	Crashes	Local CCR Differential[1]	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
1	52nd Ave	Polk St to Fillmore St	**2**	0.1	175		1	1							1	1						1	1	

1. Local Critical Crash Rate Differential
2. Equivalent Property Damage Only Crashes

= Local CCR Differential > 1.0

= Local CCR Differential 0.33-1.0

= Local CCR Differential < 0.33

= 90-100% probability that crash type if 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 9 identifies existing plans and policies that were recently completed, or are planned, or on-going within the City of Coachella. 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 9 – 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, the City does not have an Active Transportation Coordinator	Develop an Active Transportation Coordinator role; Plan to maintain the role through personnel changes
Does the City have a Safety or Active Transportation Advisory Committee?	No, the City does not have a Safety or Active Transportation Advisory Committee	Develop a committee and have board committee meetings to discuss roadway and transportation safety issues and efforts
Does the City have an Active Transportation Safety Education Program?	No, the City does not have an Active Transportation Safety Education Program	Develop an Active Transportation Safety Education Program
POLICY / PLANS		
Does the City have a Complete Streets Plan?	No, the City does not have a Complete Streets Plan	Develop a Complete Streets Plan; Continue to plan for complete streets improvements as part of regular planning process
Does the City assess Traffic Impact Fees?	Yes, the City currently assesses impact fees	Continue to assess Traffic Impact Fees and apply funding to transportation improvements
Does the City have a Safe Routes to School program?	Yes, although the current plan is outdated and most of the projects listed in the plan have been completed	Continue following recommendations laid out in current plan; Develop an updated Safe Routes to School program with funding, utilize crash analyses to refocus efforts
Does the City implement Traffic Calming Policies?	Yes, the City has installed median refuge islands, RRFBs, curb extensions, and speed bumps at strategic locations	Continue to implement traffic calming policies where necessary

Does the City regularly conduct Speed Surveys?	No, the City does not regularly conduct Speed Surveys	Develop a plan to conduct regular speed surveys required by California Vehicle Code; Identify opportunities for speed limit reduction per new law, AB 43.
Does the City utilize Warrants for Stop Signs and Signals?	Yes the City utilizes Warrants for Stop Signs and Signals	Continue to utilize warrants for stop signs and signals
Does the City have Transportation Demand Management (TDM) or Vehicle Miles Travelled (VMT) Reduction policies?	No	Develop policies that align with state TDM and VMT guidelines
Does the City perform Traffic Crash Monitoring?	No	Utilize Crossroads or TIMS database for spot monitoring; complete citywide monitor on regular basis
Does the City have an Active Transportation Master Plan?	Yes	Continue to implement Active Transportation Plan
Does the City have CAMUTCD-compliant Pedestrian Signal Timing?	Unknown	Verify that pedestrian signals are CAMUTCD-compliant and upgrade those which are not; Continue to update pedestrian signal timing as new standards are developed; Explore the implementation of bicycle signal timing and bicycle detection at key locations.
Does the City implement Crosswalks at high pedestrian locations?	Yes	Continue to implement these improvements where feasible; keep updated with best practices regarding pedestrian improvements
What type of traffic enforcement does the City conduct?	Enforcement is contracted through the Riverside County Sheriff's department	Continue to enforce traffic laws at key locations; Apply for OTS funding to expand enforcement activities; Consider in-house enforcement and/or targeted enforcement strategies
What is the City's Bicycle Policy?	The City does not have a Bicycle Policy	Develop a Bicycle Master Plan and Program, considering city and regional Active Transportation Plans; Utilize crash analysis to focus efforts
What types of transit does the City have?	Sunline Transit Agency provides public transit	Identify areas of high transit usage and focus crash analysis efforts at these locations

What types of wayfinding does the City have?	Minimal wayfinding signs throughout the City - mainly on Grapefruit Blvd	Identify areas where wayfinding can be expanded, including pedestrian and destination wayfinding
DATA COLLECTION / INVENTORY		
Does the City have an Inventory of Pedestrian Signs and Signals?	Inventory of pedestrian signals; not signs	Continue to take inventory of these signals as they are updated/installed; Incorporate inventory into GIS database; Develop inventory of pedestrian signs
Does the City have an Inventory/Mapping of Active Transportation Routes?	There is an active transportation map	Continue to update inventory as active transportation routes are expanded; Incorporate into GIS database
Does the City utilize Crossroads Database for crashes?	No	Utilize Crossroads or TIMS database for spot monitoring; complete citywide monitor on regular basis
Does the City have Active Transportation Volume Counting?	No	Begin monitoring active transportation volumes; Incorporate into GIS database
COORDINATION / FEEDBACK		
What ways can citizens give feedback about roadway safety?	Online on City's website	Continue to expand ways that citizens can give feedback. Incorporate requests into GIS maps to show hotspots for requests.
What types of Coordination with other City organizations does your department perform?	The engineering department coordinates with most departments throughout the City for various projects	Continue to engage across departments and organizations; continue to involve these organizations in crash analysis and countermeasure development process
What types of School Engagement does the City perform?	The City attends active transportation workshops at the schools	Continue school engagement processes
What types of Law Enforcement/Emergency Service Engagement does the City perform?	Through the Riverside County Sheriffs department	Continue to engage law enforcement and fire department in roadway safety planning

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.

8.2.4 Emphasis Area #1: Improper Use of Occupant Protection

Description: Occupant protection refers to various measures and system designs to ensure the safety of occupant in vehicles. This includes areas such as seat belts, child car seats, and automatic protection systems. Proper use of seat belts and other occupant safety devices is an important component of the "Safer Vehicles" and "Safer People" layer of protection. City of Coachella accounted for 28 crashes (26.7%) involving occupant protection related fatal and serious injuries. The City should aim to implement countermeasures to further protect these users from injury.

Goals for Emphasis Area #1:

- Increase occupant protection use by children
- Increase seat belt compliance
- Increase child safety seat usage
- Apply for HSIP, ATP, SS4A, and other funding to implement countermeasures to address vulnerable road user crashes

Strategies for Emphasis Area #1:

- Support policies, education, training, programs, and activities that promote and increase seat belt and child safety seat use. These programs should target various audiences including parents, caregivers, and teenagers.
- Collaborate with campaigns and programs in promoting and/ or increase occupant protection use
- Increase enforcement presence

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.

8.2.1 Emphasis Area #2: 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. 9.5% were reported as the driver being under the influence of alcohol or drugs.

Goal for Emphasis Area #2:

- 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 #2:

- 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 #3: Intersection Improvements

Description: Crashes involved at intersections, interchanges, and other roadway access. About 79% of total of crashes took place at or near intersections. 39.06% of the fatal and severe injury crashes in Coachella took place at or near intersections, compared to 23.60% statewide.

Goal for Emphasis Area #3:

- Reduce the number of crashes at intersections, interchanges, and other roadway access.
- Identify hot spots and prioritize locations for intersection improvements.
- Apply for funding and implement countermeasures to address crashes at intersections for improvement.

Strategies for Emphasis Area #3:

- Engineering improvements are not limited but could include:
    - backplates with reflective borders
    - left-and right turn lanes at two-way controlled intersections
    - protected left-turn movements
    - battery back-up systems
    - intersection safety lighting
    - high visibility crosswalks
- Collaborate with Caltrans to prioritize safety at interchanges and promote walking and bicycling

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

8.2.3 Emphasis Area #4: Aggressive Driving

Description: Aggressive driving, as defined by the Caltrans SHSP, includes several behaviors including speeding, tailgating, and ignoring traffic signals and signs. Aggressive driving behaviors (unsafe speed or following too closely) accounted for 42.5% of crashes.

Goal for Emphasis Area #4:

- Reduce the number of crashes due to aggressive driving in the City
- Identify hot spots and priority corridors for aggressive driving
- Apply for funding and implement countermeasures to address aggressive driving

Strategies for Emphasis Area #4:

- Educational campaign to target aggressive drivers
- Increased law enforcement presence near aggressive driving hotspots
- Increased coordination with law enforcement and other community organizations
- Evaluate opportunity to reduce posted speed limits based on new law (AB 43)
- Engineering strategies such as:
    - Dynamic speed feedback signs
    - Temporary speed radar trailers

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. Funding Sources & Next Steps

9.1 Funding Sources

Competitive funding resources are available to assist in the development and implementation of safety projects in Coachella. 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 Coachella. This section provides a high-level introduction to some of the main funding programs and grants for which the City can apply.

9.1.1 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 13 applications open in September 2026.

9.1.2 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/.

9.1.3 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

9.1.4 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

9.1.5 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

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

This program has allocated $1B annually from 2022 to 2026 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 Spring 2025.

9.1.7 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.

9.2 Implementation Plan

Once the Local Roadway Safety Plan has been completed, the City can plan to regularly review and monitor crash data for trends and changes. The City can also plan to prioritize and implement certain improvements that were identified in this plan.

9.2.1 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 every second year. The City can also meet with the Sheriff department quarterly to discuss roadway safety issues and compare to the latest crash analysis.

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

9.2.2 Analysis Update

The City can plan to update the analysis every two years as part of a monitoring program, as described in **Section 9.2.1**. Every 4 years the City will perform a major update to the analysis and the Local Roadway Safety Plan by performing the following steps. This update will maintain eligibility for the HSIP grant funding for the City. This analysis should continue to focus on both systemic and location-specific safety needs.

1. Obtain updated Statewide Integrated Traffic Records System (SWITRS) crash data
2. Identify new or changing hot spots through GIS mapping. Review crash data in changing trends, new land uses, and evolving driver behavior.
3. Update the roadway shapefile with any new or upgraded roadways
4. Update the intersection shapefile with any new or upgraded intersections
5. Evaluate crash trends to determine whether new emphasis areas are emerging
6. Document implemented countermeasures and review changes in crash activity
7. Review the Crash Toolbox to determine if any additional countermeasures should be considered for implementation in the City

9.2.3 Implementation Strategies

The opportunities identified in this report provide systemic and location-specific countermeasures that can be implemented within the City. Implementation will be dictated by funding and available resources; this guidance is preliminary and subject to change. Over the near-term and mid-term, the City can concentrate its efforts on the following emphasis areas.

- Vulnerable Road Users (Pedestrians and Bicyclists)
- Aggressive Driving

- Impaired Driving
- Intersection Improvements

Analysis conducted at the citywide level indicated that these factors were some of the most frequent influences contributing to crashes within the City. The countermeasure opportunities previously discussed in this report for both systemic and project-specific improvements can be used as a basis for developing projects at locations where addressing these focus areas would be of the most benefit. Projects that address these focused areas citywide can be developed with a high benefit-to-cost ratio (by applying City-wide crash rates), allowing competitive projects to be developed even at sites with little to no direct crash history, but with conditions that might contribute to future crashes. For location-specific improvements, the City can utilize benefit-cost ratio calculations to help prioritize projects as funding and resources become available.

This project prioritization process will help the City be ready for the funding opportunities identified in Section 9.1. Project prioritization will also help to guide the projects as they are taking into the design and construction project. Coordination with City departments will be key in the completion of these implementations.

The City can also plan to implement the non-engineering improvements identified throughout this report, including actions related to Enforcement, Education, and Emergency Services. These actions will require coordination with internal and external stakeholders, such as City departments, law enforcement, local government organizations, and local community organizations. Early buy-in and engagement from these stakeholders will be key to the success of these actions.

9.3 Next Steps

The City has completed this LRSP to guide the process of future transportation safety improvements for years to come. In addition to the actions identified in the Implementation Plan, the City can perform the following to guide the success of this LRSP and the safety efforts overall.

- Develop investment program to help achieve the City's Vision Zero goals
- Work with state and partner agencies on implementation of large-scale programs and policies
- Incorporate safety analysis findings in future updates of safety programs
- Monitor statewide safety priorities, guidance, and funding opportunities

APPENDIX A – CASE STUDY SHEETS

Case Study Sheet: Location #1

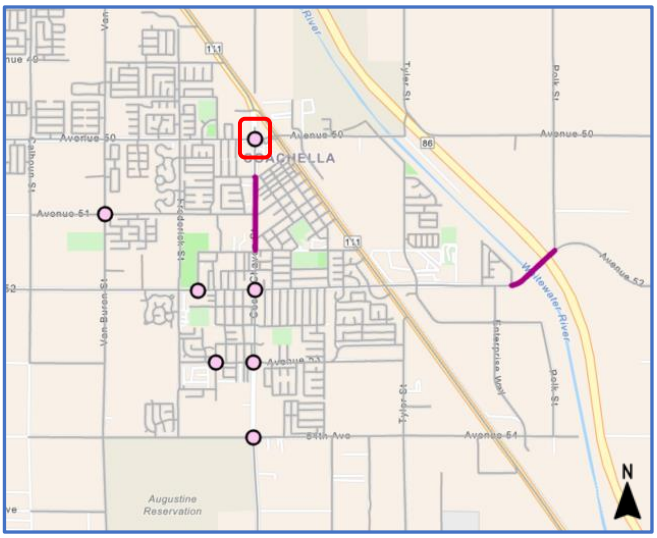
Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmons, PE
Email: asimmons@coachella.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

SIGNALIZED INTERSECTION

Project Location, Description & Maps

Intersection: Avenue 50 & Cesar Chavez St



Kimley»Horn

Case Study Sheet: Location #1

Project Location, Description & Maps

Collision Data	
Total Collisions	13
Fatal and Severe Injury Collisions	1
Top 3 Collision Types (%)	Broadside (46%) Rear-End (31%) Sideswipe (15%)
Dark Collisions	0
Impaired Collisions	1

Collision Data		
Number of Approaches	4	
Total Entering Vehicles	40,459	
Crosswalk Condition	Good	
Control Type	Signalized	
Lighting	Well Lit (Illuminated in each corner)	
Highest Posted Speed Limit	45	
Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
12	0	1

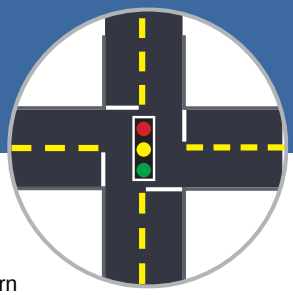
Field Visit Notes

- After widening at this intersection there will be synchronization at this location
- No APS pedestrian push buttons
- Several broadside collision at this location

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Install Leading Pedestrian Intervals (LPI)	60% (SI19PB)	$1,314,000	$64,000	20.53
Install Pedestrian Countdown Signal Heads	25% (SI18PB)	$547,500	$131,200	4.17
Install ADA Pedestrian Push Buttons	5%	$109,500	$40,000	2.74

Case Study Sheet: Location #2



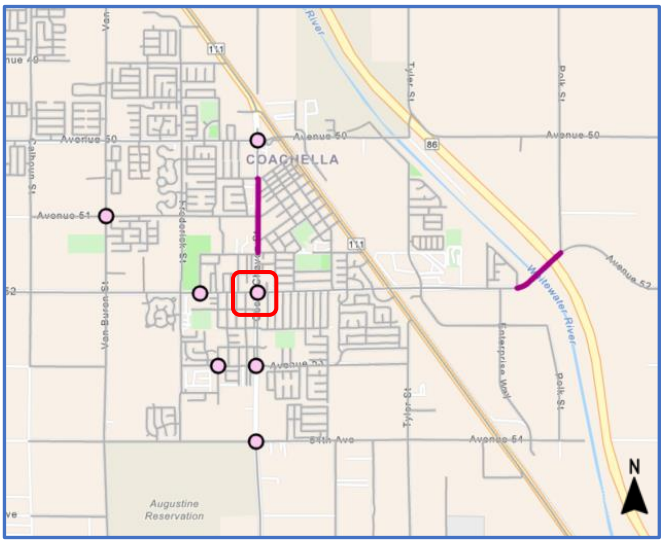
Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmions, PE
Email: asimmons@coachella.org

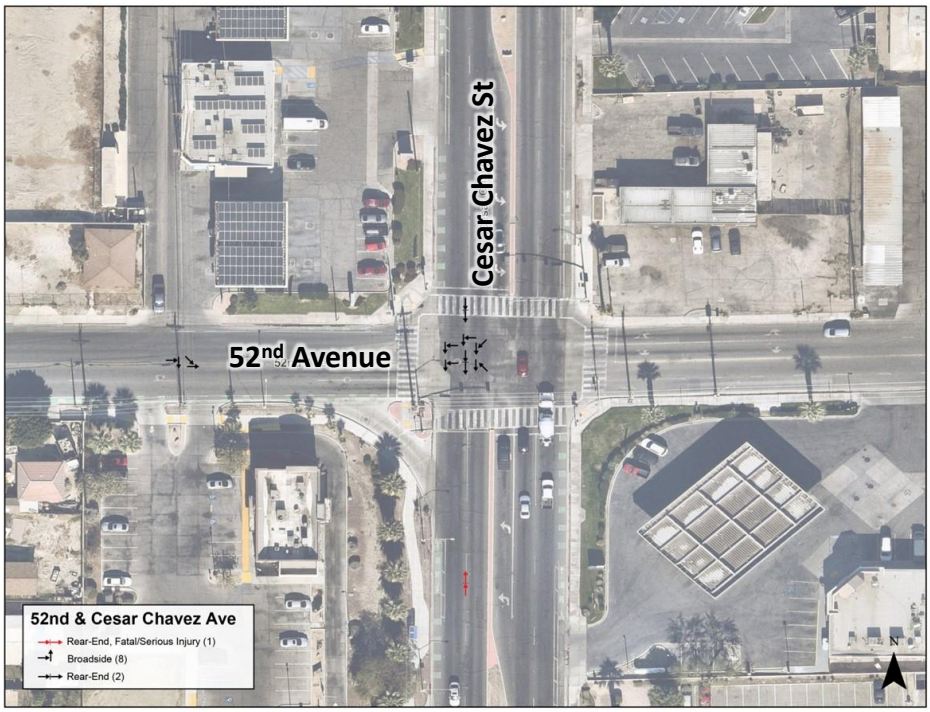
Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

SIGNALIZED INTERSECTION

Project Location, Description & Maps

Intersection: Avenue 52 & Cesar Chavez Avenue





Kimley»Horn

Case Study Sheet: Location #2

Project Location, Description & Maps

Collision Data	
Total Collisions	11
Fatal and Severe Injury Collisions	1
Top 3 Collision Types (%)	Broadside (72%) Rear-End (27%)
Dark Collisions	0
Impaired Collisions	3

Collision Data		
Number of Approaches	4	
Total Entering Vehicles	33,221	
Crosswalk Condition	Good (Continental)	
Control Type	Signalized	
Lighting	Well Lit (Illuminare at each corner)	
Highest Posted Speed Limit	45	
Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
11	0	0

Field Visit Notes

- Not a complete crosswalk at this intersection
- Two schools near the intersection
- New development coming in on the North/East corner of the intersection

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Install raised pavement markers and striping (through the intersection)	10% (SI08)	$219,000	$32,400	6.76
Upgrade crosswalk restriping	35% (R35PB)	$109,500	$30,000	0.91

Case Study Sheet: Location #3

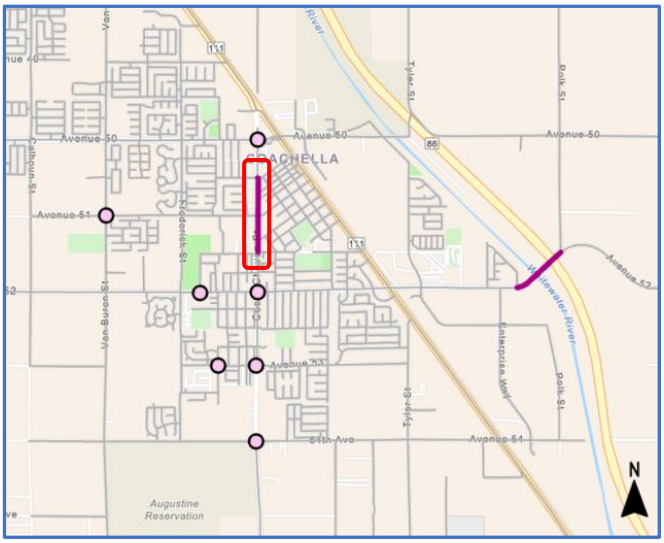
ROADWAY SEGMENT

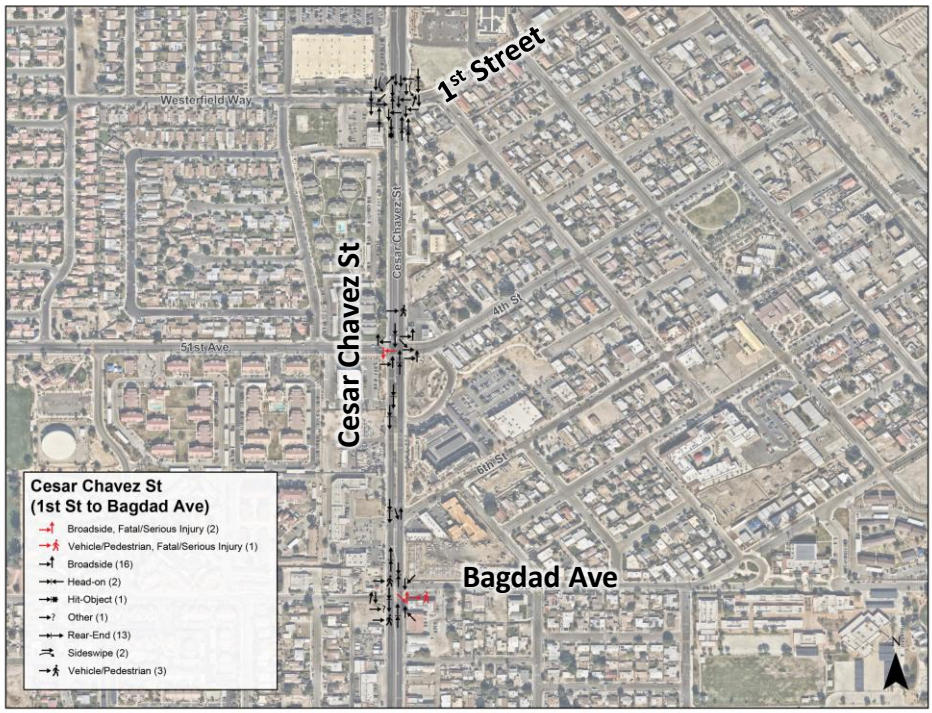
Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmons, PE
Email: asimmons@coachella.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

Project Location, Description & Maps

Segment: Cesar Chavez Street: 1st Street to Bagdad Avenue





Kimley»Horn

Case Study Sheet: Location #3

Project Location, Description & Maps

Collision Data	
Total Collisions	41
Fatal and Severe Injury Collisions	3
Top 3 Collision Types (%)	Broadside (44%) Rear-End (32%) Vehicle/Pedestrians (9%)
Dark Collisions	16
Impaired Collisions	1

Collision Data	
Average Daily Traffic (ADT)	74,269
Lighting	Well-lit
Median	Raised Median
Highest Posted Speed Limit	40

Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
32	4	5

Field Visit Notes

- RRFB
- Several pedestrian and bicycle collisions
- High speeds for this entire arterials

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Install Dynamic/Variable Speed Warning Signs	30% (R26)	$2,056,380	$45,600	37.0
Pull back the existing median at Cesar Chavez St & 1st Street	5%	$342,730	$20,000	14.0
Modify Signal Phasing to Implement a Leading Pedestrian Interval (LPI)	60% (SI22PB)	$3,942,000	$45,600	13.3

Countermeasure Evaluation (continued)

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Install pedestrian countdown signal heads	25% (R26)	$1,642,500	$43,680	5.8
Install pedestrian signal (including pedestrian hybrid beacon (HAWK))	55% (NS25PB)	$3,613,500	$228,000	2.4
Install audible pedestrian push button systems	5%	$328,500	$20,000	1.2
Pedestrian Bridge at Cesar Chavez & Bagdad	5%	$342,730	$700,000	0.07

Case Study Sheet: Location #4

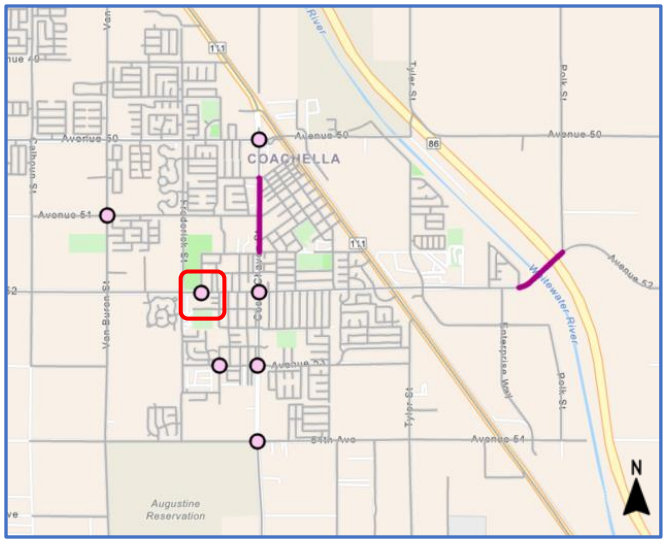
Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmons, PE
Email: asimmons@coachella.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

TWO-WAY STOP CONTROL INTERSECTION

Project Location, Description & Maps

Intersection: 52nd Avenue & Douma Street



Kimley»Horn

Case Study Sheet: Location #4

Project Location, Description & Maps

Collision Data	
Total Collisions	3
Fatal and Severe Injury Collisions	3
Top 3 Collision Types (%)	Overturned (33%) Vehicle/Pedestrian (33%) Other (33%)
Dark Collisions	2
Impaired Collisions	0

Collision Data		
Number of Approaches	3	
Total Entering Vehicles	11,873	
Crosswalk Condition	Good	
Control Type	Rectangular Rapid Flashing Beacon (RRFB)	
Lighting	Well Lit	
Highest Posted Speed Limit	40	
Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
0	2	1

Field Visit Notes

- RRFB
- Several pedestrian and bicycle collisions
- High speeds for this entire arterials

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Installed pedestrian crossing at uncontrolled locations (with enhanced safety features)	35% (R32PB)	$2,299,500	$45,600	50.4
Install Dynamic/Variable Speed Warning Signs	30% (NS03)	$1,971,000	$45,600	43.2
Install Pedestrian Signal (including Pedestrian Hybrid Beacon (HAWK))	25% (NS20PB)	$3,613,500	$228,000	15.9

Case Study Sheet: Location #5

Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmons, PE
Email: asimmons@coachella.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

SIGNALIZED INTERSECTION

Project Location, Description & Maps

Intersection: Avenue 51 & Van Buren Street

Kimley»Horn

Case Study Sheet: Location #5

Project Location, Description & Maps

Collision Data	
Total Collisions	4
Fatal and Severe Injury Collisions	1
Top 3 Collision Types (%)	Broadside (100%)
Dark Collisions	0
Impaired Collisions	0

Collision Data	
Number of Approaches	4
Total Entering Vehicles	13,009
Crosswalk Condition	Good
Control Type	Unsignalized
Lighting	Well Lit
Highest Posted Speed Limit	45

Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
4	0	0

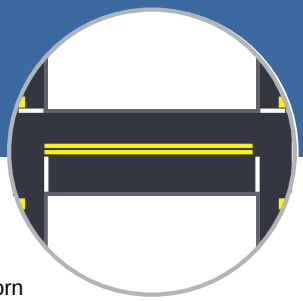
Field Visit Notes

- Several broadside collisions
- School zone intersection
- High speeds
- Curvy roads leading up to this intersection

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Install raised median	25% (R08)	$654,225	$81,000	8.1
Install Pedestrian Crossing (S.I)	25% (SI19PN)	$654,225	$74,400	8.8
Install sidewalk/pathway (to avoid walking along roadway)	80% (R35PB)	$2,093,520	$15,600	134.2

Case Study Sheet: Location #6



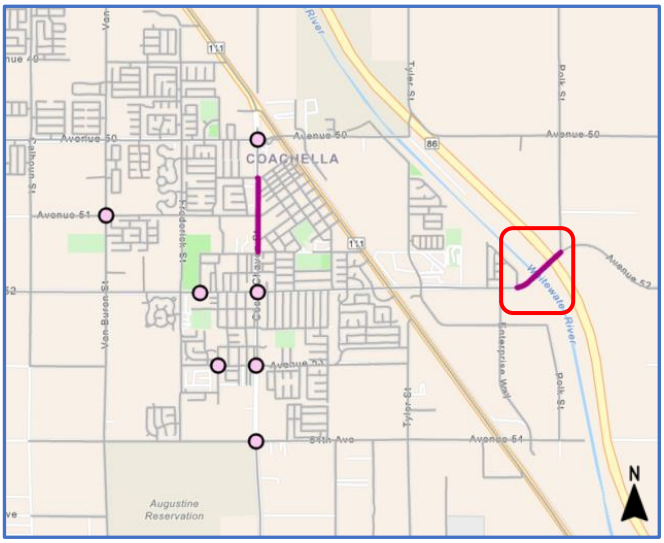
Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmons, PE
Email: asimmons@coachella.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

ROADWAY SEGMENT

Project Location, Description & Maps

Segment: 52nd Avenue: Hernandez Street and Polk Street



Kimley»Horn

Case Study Sheet: Location #6

Project Location, Description & Maps

Collision Data	
Total Collisions	1
Fatal and Severe Injury Collisions	0
Top 3 Collision Types (%)	Broadside (100%)
Dark Collisions	11
Impaired Collisions	0

Collision Data	
Average Daily Traffic (ADT)	6,142
Lighting	Well-lit
Median	Double yellow
Highest Posted Speed Limit	35

Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
1	0	0

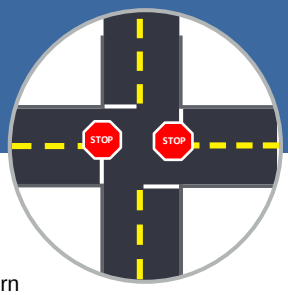
Field Visit Notes

- Upcoming construction and development
- Future connector to CV link
- High speeds along curvy road

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Install Dynamic/Variable Speed Warning Signs	30% (R26)	$24,270	$45,600	0.94
Install Pedestrian Crossing (S.I)	25% (SI19PN)	$20,225	$74,400	0.48
Install Pedestrian Signal (including Pedestrian Hybrid Beacon (HAWK))	55% (NS25PB)	$44,495	$228,000	0.34
Road Diet (Reduce Travel Lanes and Add a Two Way Left-Turn and Bike Lanes)	35% (R14)	$28,315	$158,400	0.31

Case Study Sheet: Location #7



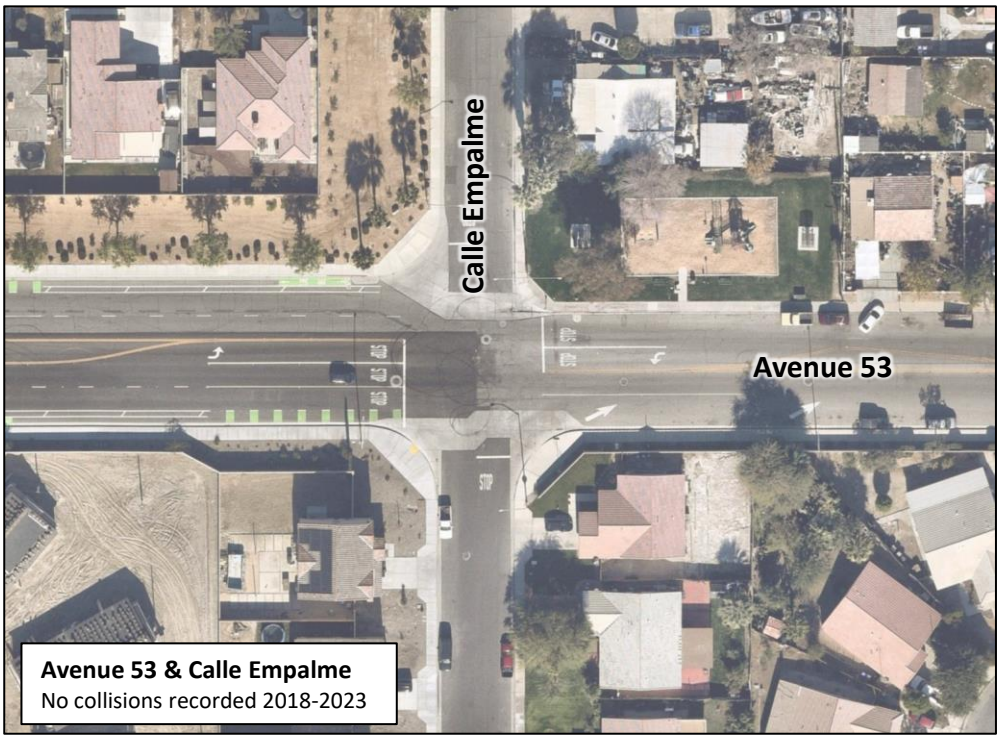
Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmons, PE
Email: asimmons@coachella.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

ALL-WAY STOP INTERSECTION

Project Location, Description & Maps

Intersection: Calle Empalme & Avenue 53



Avenue 53 & Calle Empalme
No collisions recorded 2018-2023

Kimley»Horn

Case Study Sheet: Location #7

Project Location, Description & Maps

Collision Data	
Total Collisions	0
Fatal and Severe Injury Collisions	0
Top 3 Collision Types (%)	-
Dark Collisions	0
Impaired Collisions	0

Collision Data	
Number of Approaches	4
Total Entering Vehicles	600
Crosswalk Condition	Good
Control Type	Hawk Signal
Lighting	Well Lit
Highest Posted Speed Limit	35

Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
0	0	0

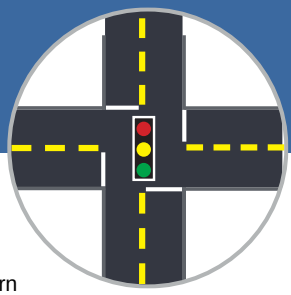
Field Visit Notes

- Several broadside collisions
- APS and Leading Pedestrian Interval
- High speeds for this entire arterials

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Convert Intersection to mini/compact roundabout (from all way stop)	NS07RA	-	-	-
Install Raised median on approaches	45% (NS21PB)	-	-	-

Case Study Sheet: Location #8



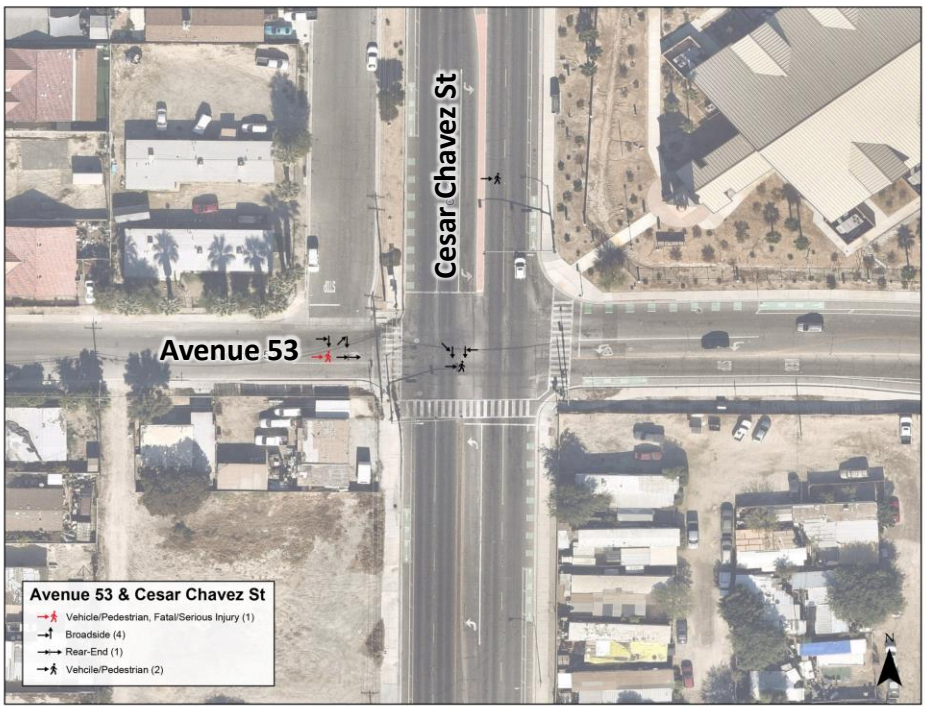
Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmons, PE
Email: asimmons@coachella.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

SIGNALIZED INTERSECTION

Project Location, Description & Maps

Intersection: Avenue 53 & Cesar Chavez Street



Kimley»Horn

Case Study Sheet: Location #8

Project Location, Description & Maps

Collision Data	
Total Collisions	8
Fatal and Severe Injury Collisions	1
Top 3 Collision Types (%)	Broadside (50 %) Vehicle/Pedestrian (37%)
Dark Collisions	0
Impaired Collisions	0

Collision Data	
Number of Approaches	4
Total Entering Vehicles	20,844
Crosswalk Condition	Good
Control Type	Hawk Signal
Lighting	Well Lit
Highest Posted Speed Limit	35

Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
5	2	1

Field Visit Notes

- Several broadside collisions
- APS and Leading Pedestrian Interval
- High speeds for this entire arterials

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
ADA Compliant Curbs	5%	$140,885	$29,400	4.79
Install Pedestrian Signal (including Pedestrian Hybrid Beacon (HAWK))	30% (NS03)	$1,549,735	$228,000	6.80

Case Study Sheet: Location #9

Project Name: Coachella LRSP
Agency Name: City of Coachella
Contact Name: Andrew Simmons, PE
Email: asimmons@coachella.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: 2024

SIGNALIZED INTERSECTION

Project Location, Description & Maps

Intersection: 54th Avenue & Cesar Chavez Street

Kimley»Horn

Case Study Sheet: Location #9

Project Location, Description & Maps

Collision Data	
Total Collisions	10
Fatal and Severe Injury Collisions	2
Top 3 Collision Types (%)	Broadside (80 %) Rear-End (10%) Unknown (10%)
Dark Collisions	0
Impaired Collisions	1

Collision Data	
Number of Approaches	4
Total Entering Vehicles	17,526
Crosswalk Condition	None
Control Type	Signalized
Lighting	Well Lit
Highest Posted Speed Limit	50

Collisions Involved With		
Vehicular	**Pedestrian**	**Bicycle**
9	0	0

Field Visit Notes

- Several broadside collisions
- High speed and aggressive driving
- Congested intersection during peak hours

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C Ratio
Convert Intersection to Roundabout from Signal	65% (SI16RA)	$3,387,410	$1,500,000	2.26
Install delineators, reflectors, and/or object markers	30% (R27)	$1,563,420	$32,400	48.25