AGENDA REPORT

CITY OF SAN CLEMENTE

City Council Meeting

Meeting Date: 6/6/2023

Agenda Item: 10A

Department: Public Works
Prepared By Zak Ponsen, Assistant City Engineer
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Subject:
ADOPTION OF RESOLUTION NO. 23-45, APPROVING THE LOCAL ROADWAY SAFETY PLAN (LRSP)

Fiscal Impact:
None at this time.

Summary:
The Planning Commission and staff recommend that City Council approve the Local Roadway Safety Plan (LRSP).

Background:
A Local Roadway Safety Plan (LRSP) provides a framework to identify, analyze, and prioritize roadway safety improvements on local roads. Its content focuses on local issues and needs resulting in a prioritized list of concerns, risks, actions, and improvements to reduce traffic fatalities and serious injuries on local roads.

The City Council authorized staff to submit a grant application to Caltrans for the LRSP development in February 2020. After the City received the grant, the City Council approved the Professional Services Agreement (PSA) with Kimley-Horn and Associates to prepare the LRSP in April 2021.

The LRSP, provided as Attachment 1, presents the Introduction, Vision and Goals, Process, Safety Partners, Existing Efforts, Data Summary, Collision Analysis Results, Emphasis Areas, Opportunities, and Evaluation and Implementation of the plan. The vision is to enhance the transportation network to reduce traffic fatalities and serious injuries. Under this vision, this report provides four (4) goals:

Goal 1: identify areas with a high risk for collision;
Goal 2: illustrate the value of a comprehensive safety program and systemic process;
Goal 3: plan future safety improvements; and
Goal 4: define safety projects for future Highway Safety Improvement Program (HSIP) and other program funding considerations.

Discussion:
The LRSP identifies engineering and non-infrastructure safety measures that can be implemented throughout the City's transportation network. Furthermore, the report identifies areas with a high risk for collisions, illustrates the value of a comprehensive safety program and the systemic process to identify high-risk locations for collisions, prepares future safety improvements for short and long-term

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implementation, and defines safety projects for HSIP and other program funding considerations. Preparing and approving a LRSP would position the City for future HSIP grant eligibility.

The report includes several specific intersections/areas of concern and provides some preliminary recommendations for future projects to consider. It is important to note that by processing and approving the LRSP, the City Council is not approving any specific projects, obligating any future funding, or acknowledging safety issues in any particular street segment. The LRSP as a tool is beneficial in framing future traffic engineering evaluations. The LRSP helps identify high collision areas, assign a systemic process for future improvements for near-, mid-, and long- term, and defines potential projects for future HSIP funding consideration. Future modifications to street areas will be done based on a wide range of factors, additional studies, and engineering analyses.

During the Planning Commission hearing on May 17, 2023, there was discussion regarding the LRSP and the City's ability to seek additional grants to support future road improvement projects. Discussion included the City's need for a strategic investment in grants.

If the City Council supports the LRSP and implementation by the City's Engineering Division, staff will forward the City Council's action and the LRSP to Caltrans to complete the grant project.

Council Options:
- Adopt Resolution No. 23-45, approving the Local Roadway Safety Program and adoption as a tool to be used to address local roadway safety issues and needs, and future grant funding opportunities.

- Continue the Item and direct staff to provide additional information.

- Deny Resolution No. 23-45 and deny the approval of the Local Roadway Safety Program.

Environmental Review/Analysis:
The Planning Commission and staff recommend that the City Council determine this action to be categorically exempt from the California Environmental Quality Act (CEQA) under Class 6 (Information Collection, 14 CCR section 15306) and Class 1 (Existing Facilities, 14 CCR section 15301.k) of the State CEQA Guidelines.

Recommended Actions:
Planning Commission and Staff recommend that the City Council approve the following actions:

Adopt Resolution No. 23-45, which would:

1. Determine that the project is categorically exempt from the requirements of the CEQA pursuant to CEQA Guidelines Section 15306 (Class 6, Information Collection) and Section 15301 (Class 1, Existing Facilities), of the State CEQA Guidelines.

2. Approve the Local Roadway Safety Plan (LSRP).

3. Approve the LRSP for adoption as a tool to be used to address local roadway safety issues and needs, and future grant funding opportunities.

Attachment:
1. LRSP Report from Kimley-Horn and Associates
2. Resolution No. 23-45

Notification:
None.

City of San Clemente
Local Roadway Safety Plan (LRSP)

December 2022

Prepared By:

Kimley»Horn

Executive Summary

San Clemente has created this local roadway safety plan (LRSP), which incorporates a framework to identify, analyze, and develop traffic safety enhancements on the City's roadway network. The LRSP was developed to address local roadway safety issues and needs. Through the analysis, this report has identified emphasis areas to prioritize for improvement and to inform and further guide safety evaluation and planning for the City's transportation network. The emphasis areas are Impaired Driving, Vulnerable Road Users (Bicyclists and Pedestrians), and Aggressive Driving. The LRSP analyzed collision data on an aggregate basis as well as at specific locations to identify high-crash locations, high-risk locations, and city-wide trends and patters. The analysis of collision 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-collision locations, and 3) develop safety measures using the 5E's of transportation safety: Engineering, Enforcement, Education, Emergency Services, and Emerging Technologies, to encourage safer driver behavior and better severity outcomes.

Previous work conducted by the City of San Clemente has been successful at reducing the number of traffic injuries throughout the City, and this LRSP is the next step in taking those initiatives further. This is demonstrated in its California Office of Traffic Safety (OTS) rankings which identify the City as belonging to the top 40% percentile for safety compared to peer cities in its category. This LRSP analyzes the most recent six-year period of collision data (January 1, 2015 to December 31, 2019) and recent roadway improvements to assess historic trends, patterns, and areas of concern. Because of the unusual traffic conditions in 2020 due to the coronavirus pandemic, 2020 data was reviewed only at a qualitative level.
As part of the LRSP development process, the City drafted a vision for traffic safety and outlined the goals that will help mark plan success. The vision is to enhance the transportation network to continually reduce the number of traffic fatalities and serious injury related collisions. The goals were identified as:

- Identify areas with a high risk for collisions.
- Illustrate the value of a comprehensive safety program and the systemic process.
- Plan future safety improvements for near-, mid- and long-term implementation.
- Define safety projects for HSIP and other program funding consideration.

San Clemente's collision history was analyzed to identify locations with elevated risk of collisions either through their collision histories or their similarities to other locations that have more active collision patterns. Using a network screening process, locations within the City that will most likely benefit from safety enhancements were identified. Using historic collision data, collision risk factors for the entire network were derived. The outcomes informed the identification and prioritization of engineering and non-infrastructure safety measures that address certain roadway characteristics and related behaviors that contribute to motor vehicle collisions with active transportation users. The figures below show the results of collision analysis, including the number of crashes that occurred at each intersection and along each roadway segment in the City.

Number of Collisions per Intersection (2015-2019)
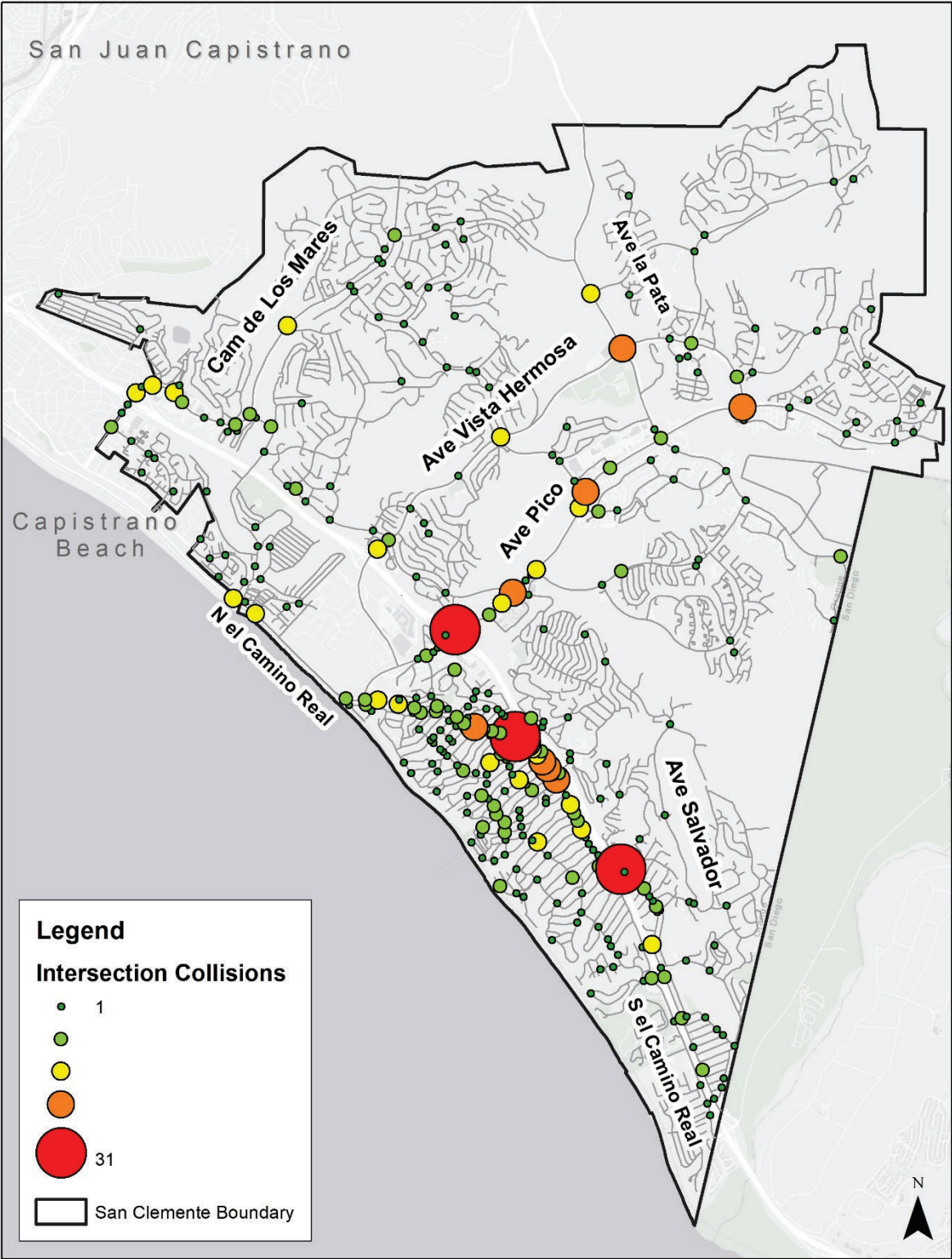
Number of Collisions per Roadway Segment (2015-2019)
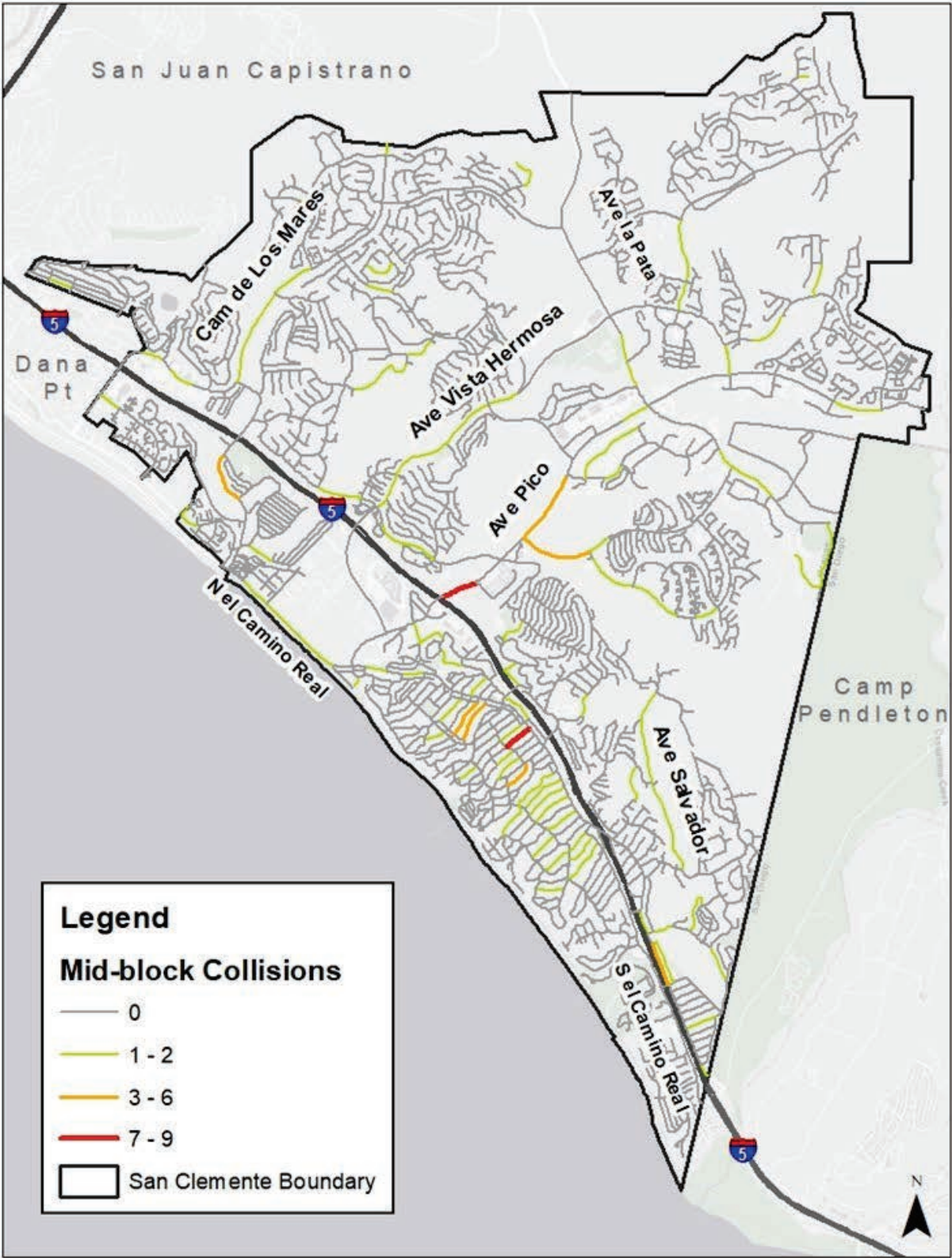
Emphasis areas were developed through coordination with stakeholders, alignment with statewide safety priorities, and evaluation of the types of crashes most common in the City. The emphasis areas that were selected for priority enhancements were:

1. Impaired Driving

2. Vulnerable Road Users (Bicyclists and Pedestrians)

3. Aggressive Driving

The LRSP identified countermeasures for both infrastructure and non- infrastructure improvements. The report then applies Crash Modification Factors (CMFs), which are used to estimate the safety effects of safety improvements to compare and prioritize the improvements. This provides a planning level cost/benefit estimate that the City can use to prioritize improvements.

Site-specific opportunities for improvement were identified for the following 8 case study locations. The case study locations were chosen to be representative of the corridor and intersection designs throughout the City.

1. **Segment:** Calle del Cerro: Avenida Pico to Avenida Vista Montana (W)
2. **Segment:** Avenida Pico: I-5 Freeway to San Clemente High School
3. **Intersection:** I-5 Freeway & Avenida Pico
4. **Intersection:** El Camino Real & Calle Valle
5. **Intersection:** Avenida Palizada & El Camino Real
6. **Segment:** Ave del Mar: El Camino Real & Ola Vista
7. **Segment:** El Camino Real: Escalones to Avenida Barcelona (Downtown San Clemente)
8. **Intersection:** El Camino Real & Esplanade

The report also identifies opportunities that can be implemented systemically throughout the City. These opportunities were assembled into the "countermeasure toolbox" shown below, and include both engineering-based and non-engineering countermeasures. Additionally, this information can be used to help the City apply for grants and other funding opportunities to implement these safety improvements. These measures can be applied where appropriate as part of ongoing City activities to improve overall safety performance.

City-wide Countermeasure Toolbox (Engineering Opportunities)

LRSM ID[1]	Potential Countermeasures	CRF	Per Unit Cost	Unit
[2]2084	Restrict right-turn on red	28%	$10,000	per location
8498	Tighten radius of right-turn lane to increase line of sight	39%	$20,000	per location
NS06	Install/upgrade larger or additional stop signs/other intersections	15%	$1,500	per sign

[1] S01 through S21PB: Intersection Countermeasures (Signalized) (Local Roadway Safety Manual)
 NS01 through NS23PB: Intersection Countermeasures (Unsignalized) (Local Roadway Safety Manual)
 R01 through R38 Roadway Countermeasures (Local Roadway Safety Manual)
[2] Crash Modification Factors Clearinghouse ID-http://www.cmfclearinghouse.org/

LRSM ID[1]	Potential Countermeasures	CRF	Per Unit Cost	Unit
	warning/regulatory signs (stop signs with LED borders)			
NS07	Upgrade intersection pavement markings (to make more visible)	25%	$22,000	per intersection
NS07	Upgrade intersection pavement markings (to make more visible)	35%	$50,000	per mile
NS13	Install splitter-islands on the minor road approaches	40%	$20,000	per intersection
NS15	Create direction median openings to allow/restrict left-turns and U-turns (right-in/right-out)	50%	$15,000	per structure
R01	Add segment lighting	35%	$50,000	per mile
R03	Install Median Barrier	25%	$20,000	per location
R14	Change lane configurations	30%	$12,500	per mile
R22	Install advanced signal warning signage	15%	$1,500	per sign
R23	Install chevron signs on horizontal curves	40%	$1,500	per sign
R26	Install dynamic/variable speed warning systems	30%	$16,000	per sign
R27	install delineators, reflectors, and or object markers	15%	$3,000	per LF
R32PB	Install green paint in bicycle lanes	35%	$15,000	per intersection
R32PB	Install bike lane (class III/sharrows)	35%	$25	per linear foot
S02	Update signal heads to meet current standards	15%	$12,000	per intersection
S03	Improve signal timing (coordination, phasing, red, yellow, operation)	15%	$7,667	per intersection
S07	Provide protected left-turn phase	30%	$60,000	per intersection
S18PB	Install improved pedestrian crossing	25%	$50,000	per intersection
-	Close intersection and allow only pedestrian access to streets	5%*	$15,000	per location
-	Enact ordinance restrict on-street parking where curb lane width is narrow	5%*	$12,000	per location
-	Install back-in packing	5%*	$50,000	per location
-	Install parking meters	5%*	$75,000	per location

*These countermeasures do not have documented CRF's and a conservative 5% CRF was assigned to allow them to show some benefit.

Non-Engineering Safety Strategy Countermeasures:

The identified non-engineering countermeasures below were derived from the collision analysis and build on existing efforts. These relate to the additional Es of Traffic Safety outside of

Engineering. This includes Enforcement, Education, Emergency Services and Emerging Technologies.

City-wide Countermeasure Toolbox (Non-Engineering Opportunities)

PROPOSED COUNTERMEASURE	POTENTIAL PARTNERS	EXAMPLES OF COUNTERMEASURE
ENFORCEMENT		
Establish enforcement and visibility program for aggressive driving	Local law enforcement; CHP	CHP's Regulate Aggressive Driving and Reduce Speed (RADARS) Program
Continued enforcement in school zones	Local law enforcement; CHP; school districts; OCTA; SCAG	Obtain grant funding for additional personnel in school zones
Increased enforcement of safe driving & active transportation behaviors near busy crosswalk locations	Local law enforcement; CHP	Obtain grant funding for additional enforcement near high pedestrian activity locations
EDUCATION		
Campaign to target aggressive driving and DUIs	Local law enforcement; CHP; California Office of Traffic Safety (OTS)	CHP's Regulate Aggressive Driving and Reduce Speed (RADARS) Program
Bicycle and pedestrian safety campaign	Local law enforcement; OCTA; SCAG	SCAG's 'Go Human' Campaign; ' OTS' 'Ride With Traffic' campaign Planned educational events at high activity locations such as future CV Link locations
Explore safe routes to school education grants to expand program	Local school districts; local law enforcement; OCTA; SCAG	Safe Routes to School Program, funded by Caltrans
Coordinate safety education campaigns with SCAG	SCAG; local law enforcement	Roadway safety fairs at schools Education campaign for aging drivers
EMERGENCY SERVICES		
Continue to work on interdepartmental communication between City staff and City police department and fire department	Local law enforcement & fire department	Incorporate law enforcement/fire department as stakeholders on transportation improvement projects
Incorporate public health agencies and fire departments as stakeholders in safety projects	Local public health agencies and fire departments	Adjust safety project development processes to include public health and fire department feedback
EMERGING TECHNOLOGY		
Continue to use best practices for pedestrian crossings at high pedestrian traffic areas	City Public Works; OCTA; Caltrans	Continuously update pedestrian crossing design standards in accordance with latest best practices
Utilize new data sources to monitor traffic conditions and inform County safety plans	City Public Works; OCTA; Caltrans	Utilization of data from OCTA traffic management center

PROPOSED COUNTERMEASURE	POTENTIAL PARTNERS	EXAMPLES OF COUNTERMEASURE
Identify best practices for e-bike safety and enforcement	City Public Works; local law enforcement	Increased enforcement near e-bike hotspots;

An evaluation and implementation plan were created that identifies actionable items that will help the City achieve the goals and vision set out in this report. This section laid out next steps for the City to continue to capitalize on the analysis and information provided in this report.

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1 <u>Introduction</u>

San Clemente is a lively coastal community in Southern Orange County known for its beaches, vibrant downtown, and rich history. San Clemente has a population of around 64,558 residents with a median age of 44 years old. With an economy based on tourism, retail, and light manufacturing, the City has varied transportation needs.

This Local Roadway Safety Plan (LRSP) identifies emphasis areas to focus and guide further safety enhancement to the City's transportation network. 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 provided the opportunity 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 five E's of safety: Engineering, Enforcement, Education, Emergency Services, and Emerging Technologies to encourage safer driver behavior and reduced collision severities.

The process and analysis performed for the City's LRSP is described in this document. The plan includes a vision and associated goals for safety, crash history analysis, and specific emphasis areas that represent the most challenge for safety in the City. The plan provides a foundation for decision making and prioritization for safety countermeasures and projects that enhance safety for all modes.

San Clemente has been successful at taking steps to enhance safety for all modes throughout the City. This is supported by their California Office of Traffic Safety rankings identifying it amongst the top 40% tier for safety as compared to peer cities in most categories. This LRSP continues these safety efforts through this plan by identifying areas of emphasis and opportunities for system improvement that can be implemented to enhance safety. This LRSP analyzes the most recent 5-year period of available crash data (January 1, 2015 – December 31, 2019) and roadway improvements to assess historic trends, patterns, and areas of elevated collision activity.

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

- Help prioritize investments in traffic safety.

2 Vision and Goals

The San Clemente 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, influences on the roadway network from adjacent municipalities, and the potential benefits of safety countermeasures. This effort is intended to use historical data to identify trends and develop a toolbox of countermeasures applicable to conditions in the City that can be used for proactive identification and implementation of opportunities, without relying solely on a reaction and response to crashes as they occur.

LRSPs have been effective across the country as part of the effort to reduce fatal and severe-injury crashes because they provide a locally developed and customized roadmap to directly address the most common safety challenges in the given jurisdiction. Consistent with these findings, the following Vision, Goals, and Objectives have been established for this project.

> **VISION:** To enhance the transportation network to achieve zero traffic fatalities and serious injury related crashes.

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

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 collisions based on present characteristics closely associated with severe collisions.
- 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 county-wide.

Goal #4: Define safety projects for future 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 funding consideration.

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3 **Process**

The following section describes the analysis process undertaken to evaluate safety within San Clemente at a systemic level. Using a network screening process, locations within the City that will most likely benefit from safety enhancements will be identified. Using historic collision data, collision risk factors for the entire network are derived. The outcomes will inform the identification and prioritization of engineering and non-infrastructure safety measures that address certain roadway characteristics and related behaviors that contribute to motor vehicle collisions with active transportation users.

The following section describes the analysis process undertaken to evaluate safety within San Clemente at a systemic level. Using a network screening process, locations within the City that will most likely benefit from safety enhancements will be identified. Using historic collision data, collision risk factors for the entire network are derived. The outcomes will inform the identification and prioritization of engineering and non-infrastructure safety measures that address certain roadway characteristics and related behaviors that contribute to motor vehicle collisions with active transportation users.

3.1 Existing Guidance

This process uses the latest National and State best practices for statistical roadway analysis described as follows.

3.1.1 Local Roads Safety Manual

The *Local Roadway Safety Manual: A Manual for California's Local Road Owners* (Version 1.5, April 2020) purpose is to encourage local agencies to pursue a proactive approach to identifying and analyzing safety issues, while preparing to compete for project funding opportunities. A proactive approach is defined as analyzing the safety of the entire roadway network through either a one-time, network wide analysis, or by routine analyses of the roadway network.[3]

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 benefit and to be competitive for funding, the analysis leading to countermeasure selection should focus on both intersections and roadway segments and be considerate of roadway characteristics and traffic volumes. The result should be 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 that considers both crash frequency and crash rates. These findings should then be screened for patterns such as crash types and severity to aid in the determination of issues causing higher numbers of crashes and the potential countermeasures that could be most effective. 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 what conditions may increase safety risk at the site and systematic level.

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[3] Local Roadway Safety Manual (Version 1.5) 2020. Page 5.

Countermeasure selection should be supported using Crash Modification Factors (CMFs). These factors are the peer reviewed product of before and after research that quantifies the expected rate of collision reduction that can be expected from a given countermeasure. If more than one countermeasure is under consideration, the LRSM provides guidance on how to apply CMFs appropriately.

3.1.2 Highway Safety Manual

"The 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."[4] This four-part manual is divided into Parts: A) Introduction, Human Factors, and Fundamentals, B) Roadway Safety Management Process, C) Predictive Method, D) Crash Modification Factors.

Chapter 4 of Part B of the HSM discusses the Network Screening process. The Network Screening Process is a tool for an agency to analyze their entire network and identify/rank locations that (based on the implementation of a countermeasure) are most likely to least likely to realize a reduction in the frequency of collisions.

The HSM identifies five steps in this process:[5]

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 principle 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 to identify high risk locations based on overall collision histories. In addition to identifying the total number of collisions, this study uses a method referred to as Critical Crash Rate to analyze the data.

3.2 Analysis Techniques

3.2.1 Collision and Network Screening Analysis

Intersections and roadways were analyzed using four collision metrics:

- Number of Collisions

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

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

- 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 collision analysis established sub-populations of roadway segments and intersections that have similar characteristics. For this study, intersections were grouped by their control type (Signalized, Unsignalized, Roundabout) and segments by their roadway category (Arterial, Collector, Minor Collector, Local). Individual collision 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.

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) collision injury (fatal, serious injury, other visible injury, complaint of pain, property damage only), 2) collision type (broadside, rear-end, sideswipe, head-on, hit object, overturned, bicycle, pedestrian, other), 3) environmental factors (lighting, wet roads), and 4) driver behavior (impaired, aggressive, and distracted driving). With these additional factors, the locations were further analyzed and assigned a new rank.

3.3 Statistical Performance Measures

3.3.1 Critical Crash Rate (CCR)

Reviewing the number of collisions at a location is a good way to understand the cost to society incurred at the local level but 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;
- Collision records in GIS or tabular form including coordinates or linear measures.

Strengths

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

3.3.2 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
  - Roundabout
- Roadway Classification:
  - Other Principal Arterial
  - Minor Arterial

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o   Major Collector
o   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 collision 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. This level of difference is known as Local CCR Differential and is shown in Table 5 and Table 6. After this analysis was completed, the locations were ranked by their categories according to that level of exceedance. A confidence level of 95% was used for the CCR Calculations. Locations where this level of difference is greater than zero are highlighted in gray in Table 5 and 6.

3.3.3 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 collisions 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 collision type at an individual location, then determines the observed proportion of that collision type relative to all collision types at that location. A threshold proportion is then determined for the specific collision type; HSM suggests utilizing the proportion of the collision type observed in the entire reference population (e.g. throughout the entire City of San Clemente).

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

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

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Where:

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

$$p_i = \text{Observed proportion}$$

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

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

Source: Highway Safety Manual

3.3.4 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).

4 <u>Safety Partners</u>

As part of the LRSP, local stakeholders were included in the process to ensure the local perspective was kept at the forefront of this planning effort. In addition to the Project Team which included City Staff, a stakeholder group was organized. This group consisted of members from City departments, Capistrano Unified School District, the City's Public Safety Committee, Orange County Sheriff's Department, Orange County Fire Department, and local pedestrian and bicycle activists.

These leaders in the City and community were called together to offer insight on the safety issues present in the city's transportation network. After the initial network screening and safety analysis, the stakeholder group met to discuss potential countermeasures and challenge areas. The summary of the stakeholder meeting(s) are outlined below.

4.1 Stakeholder Meeting #1 & Field Tour

The first stakeholder meeting was conducted virtually using the Microsoft platform on October 11, 2021. 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 10 "case study" locations that were identified after the initial network screening and crash analysis process. Potential countermeasures were recommended and discussed. Additionally, potential emphasis/challenge areas were proposed during the meeting to include impaired drivers, young drivers, and aggressive drivers.

Following the stakeholder kickoff meeting, a field tour of the "case study" locations was held on October 18, 2021 with members of the stakeholder group. The group visited each location and

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gave feedback on safety issues present at these locations. This feedback helped to develop the countermeasures explored later in the report.

4.2 Stakeholder Meeting #2

A 2nd stakeholder meeting was held on November 4, 2021 to discuss findings of the field tour, and to identify potential countermeasures and other opportunities for improvement at the case study locations and citywide.

Stakeholder feedback regarding the plan and opportunities were reviewed and incorporated into the study process for the development of the LRSP.

5 Existing Efforts

Existing plans, policies, and projects that were recently completed, planned, or are on-going within the City of San Clemente were compiled at the start of the LRSP process in order 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. Information reviewed included the following:

Table 1: Existing Documents Reviewed

Document Name	Document Year	Agency	Document Description
FY 2021 Capital Improvement Plan	July 2019 for Fiscal Year 2020-2021	City of San Clemente	Summary of capital projects for FY 2021
Centennial General Plan (Mobility and Complete Streets Section)	Adopted: February 2014 Amended: December 2016	City of San Clemente	Mobility/complete streets plan
Bicycle and Pedestrian Master Plan	2013	City of San Clemente	Bicycle/Pedestrian Plan
Climate Action Plan	January 2014	City of San Clemente	City Climate Plan
Downtown Paseos Plan	December 2015	City of San Clemente	Design Plan
SCAG Strategic Plan	2018	Southern California Association of Governments (SCAG)	Strategic Plan
Local Profiles Report 2019: Profile of the City of San Clemente	May 2019	SCAG	SCAG Profile of City
Connect SoCal: The 2020-2045 Regional Transportation Plan / Sustainable Communities Strategy of the Southern California Association of Governments	2020	SCAG	SCAG Regional Transportation Plan
OCTA Strategic Plan	2014	OCTA	County Transportation Plan

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6 **Data Summary**

6.1 Roadway Network

The collision analysis is built upon the existing roadway network. The City's Proposed Mobility and Complete Street from the adopted 2014 Centennial General Plan was used at the base network. **Figure 3** illustrates San Clemente's roadway network categorized using Caltrans' Classification System. This classification assigned to each corridor roadway segment as either Other Principal Arterial, Minor Arterial, Major Collector, or Local road is used in the analysis process. Ultimately, corridors will be compared to roadway segments with similar designations.

6.2 Intersections

The collision analysis requires each intersection be classified by type: Signalized, Unsignalized, or Roundabouts. The safety analysis compares intersection safety performance to locations with similar control types. This information is also displayed in **Figure 3**.

6.3 Count Data

Vehicular count data is used as part of the analysis process to evaluate the impact of traffic and understand the natural hierarchy of the roadway network. Traffic volume data utilized for this project was pulled from the Master Plan of Arterial Highways volume model data from OCTA. For locations without volume, other resources were utilized to identify a reasonable assumption for individual corridors and classification types.

6.4 Collision Data

Collision data was collected from Crossroads Software for the period from January 1, 2015 through December 31, 2019 to have a complete set of collision data for analysis. We utilize five-years of data instead of the standard three to provide more history to evaluate trends or patterns. Analysis of the raw collision data is the first step in understanding the specific and systemic challenges faced throughout the City. Analyzing the five years of data provided insight on the following collision trends and patterns. The locations and amount of fatal and severe injury collisions are displayed in **Figure 4**. The density of collisions at intersections and along roadway segments is shown in **Figures 5-8**.

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Figure 3: San Clemente Functional Classification (CRS) and Intersection Type
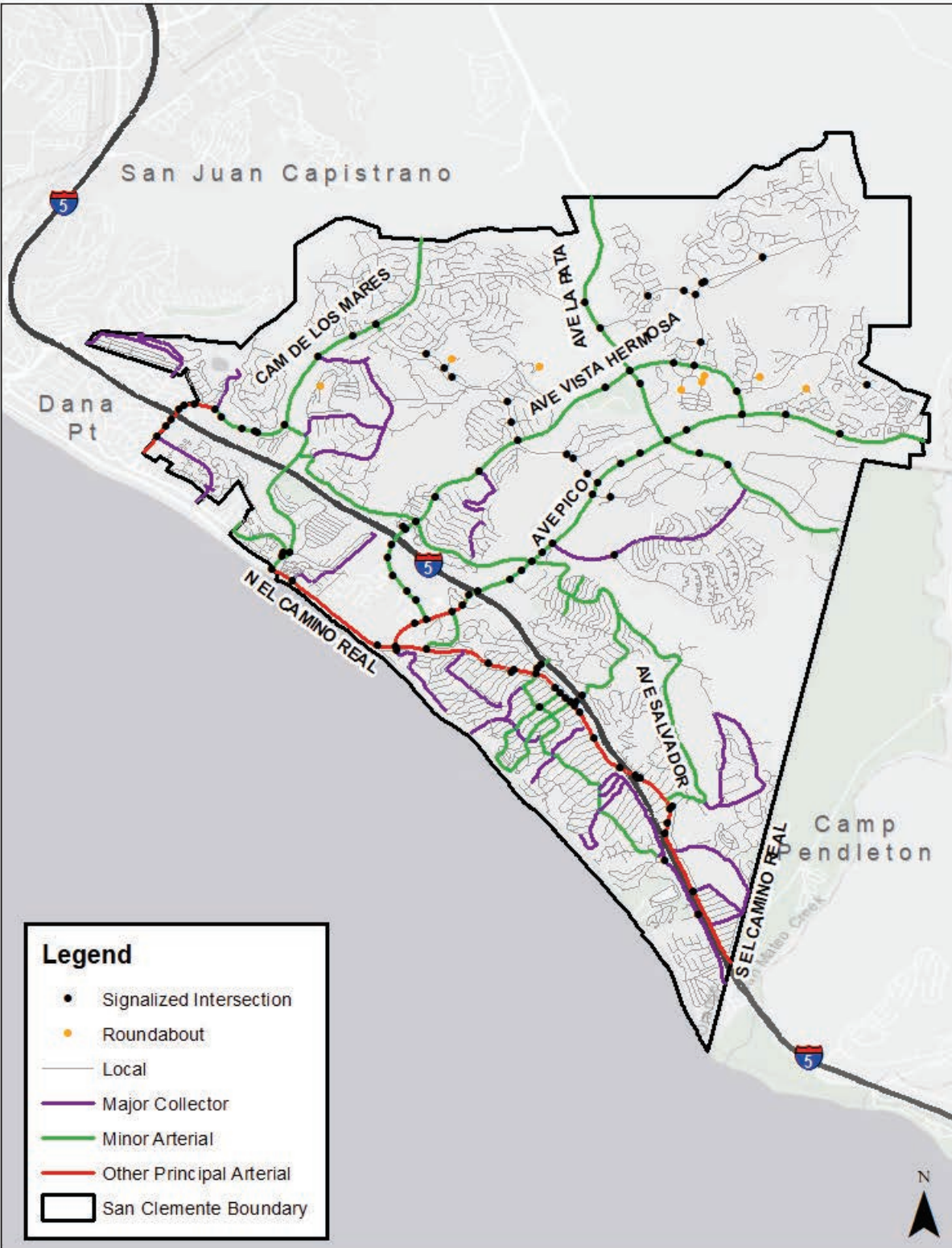
Figure 4: All Collisions and Fatalities (2015-2019)

Legend

Schools

Severe Injury Collision
- 1
- 2
- 3
- 4
- 5

Fatal Collision
- 1

San Clemente Boundary

13
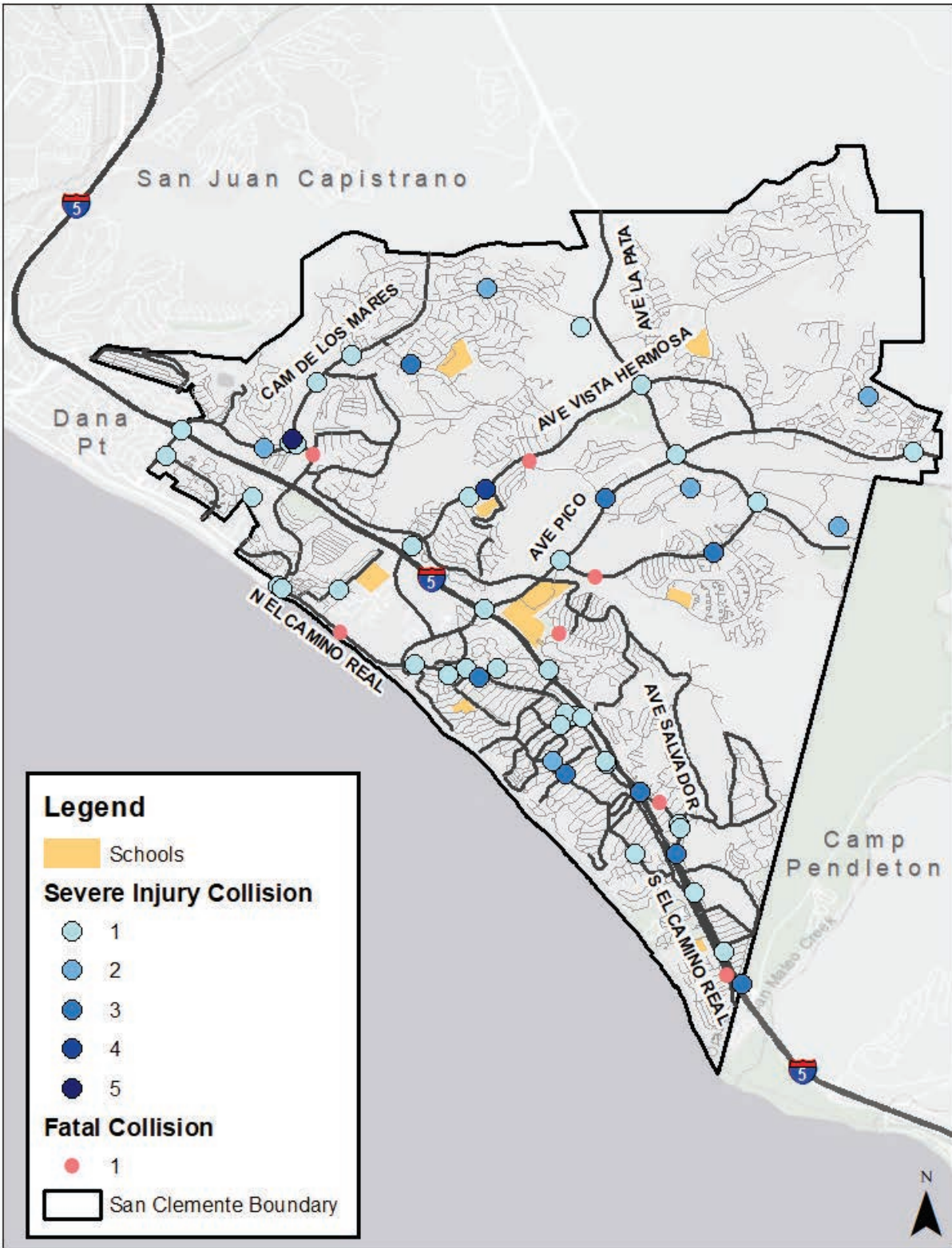
Figure 5: Density of all Collisions at Intersections (2015-2019)

14
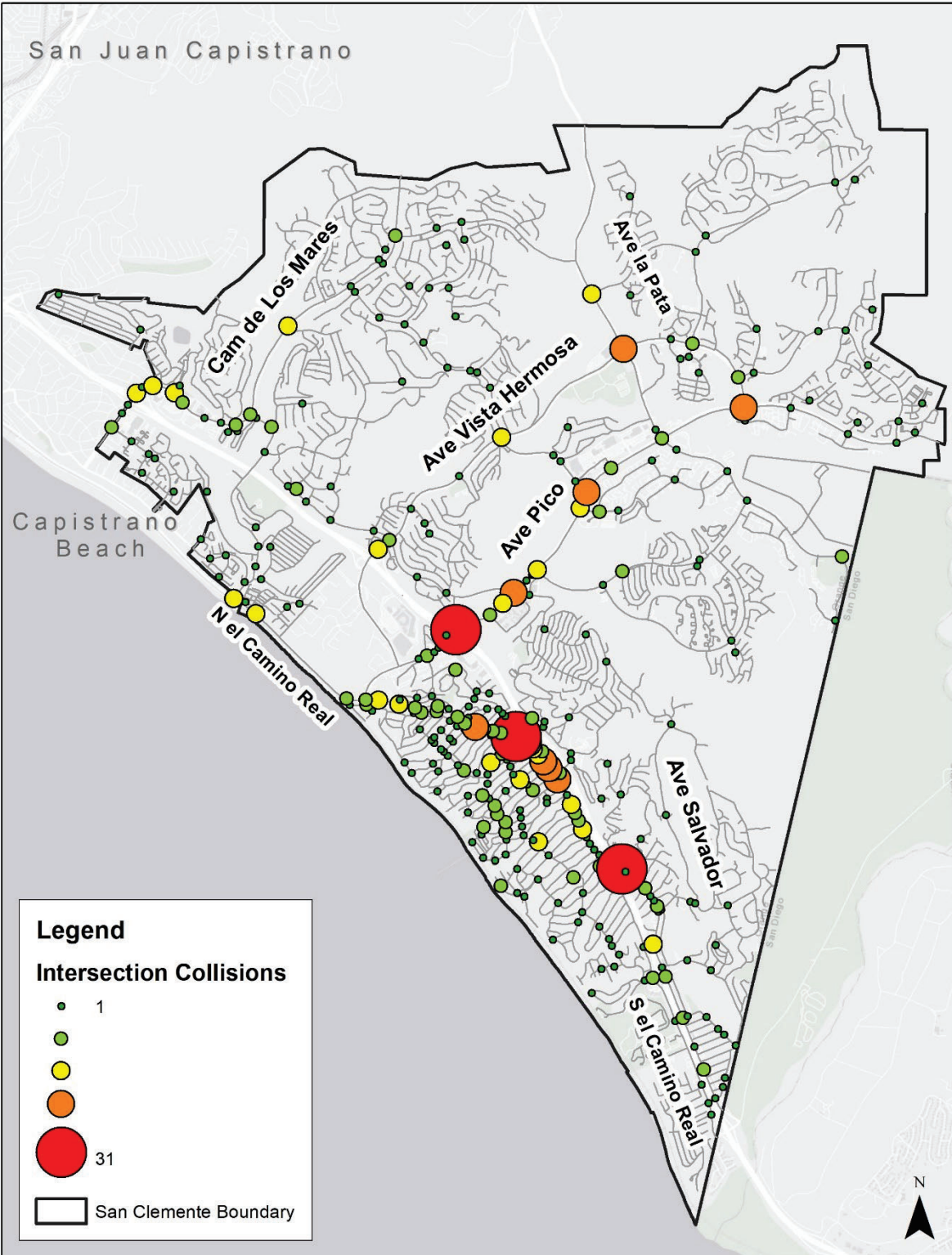
Figure 6: Density of all Collisions at Intersections in Downtown San Clemente (2015-2019)

Figure 7 – Density of all Collisions along Roadway Segments (2015-2019)
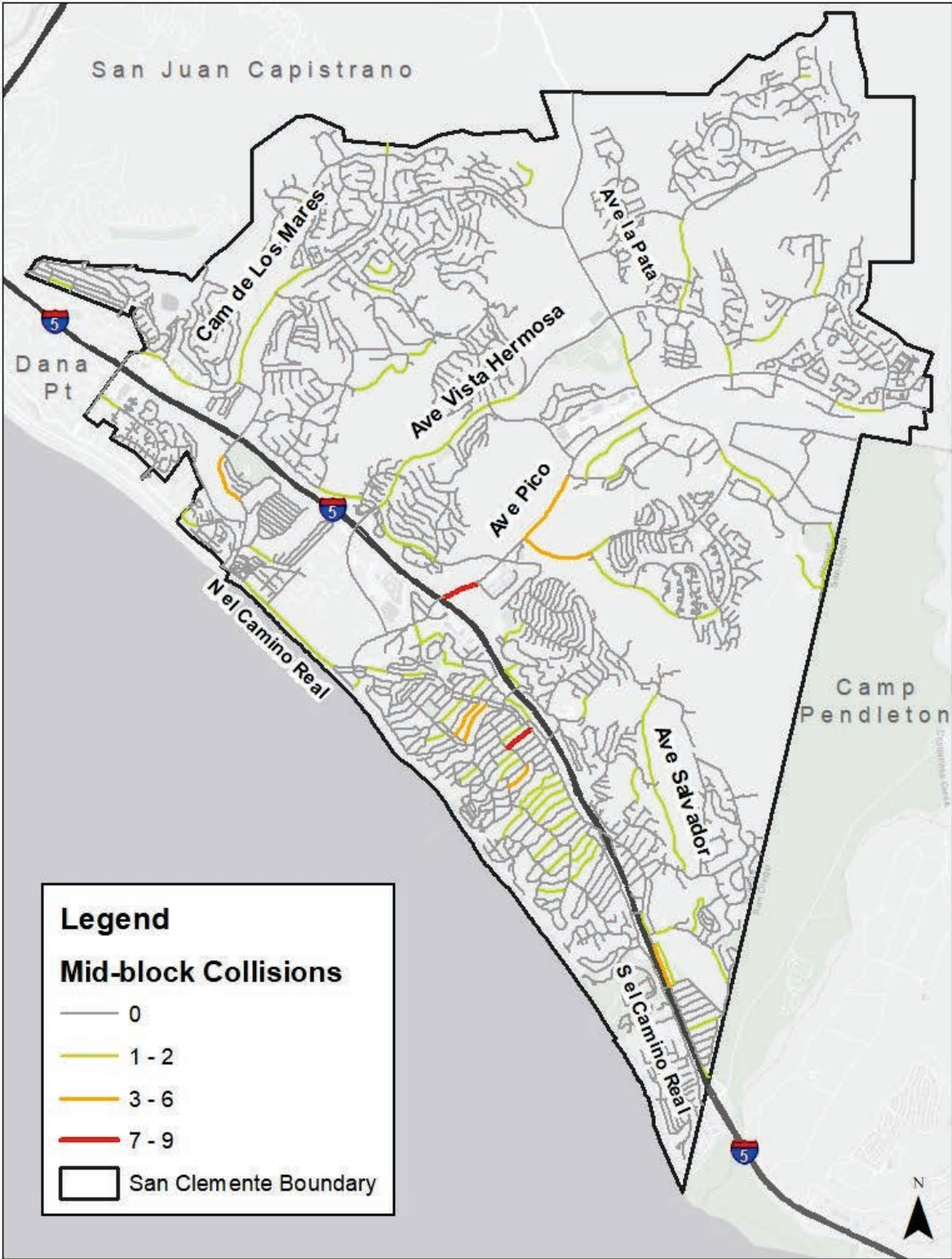
Figure 8: Density of all Collisions along Roadway Segments in Downtown San Clemente (2015-2019)

17
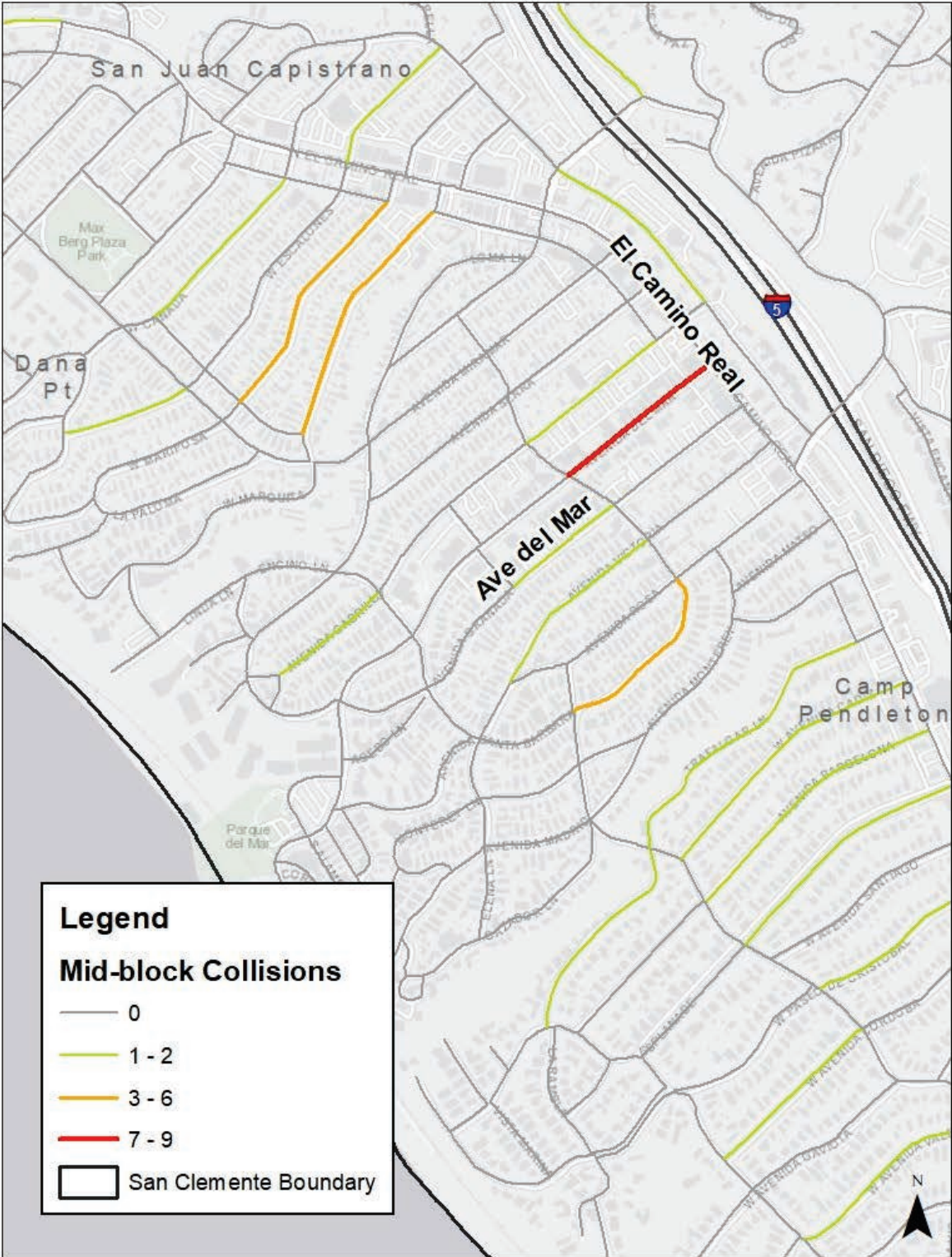
7 Collision Analysis Results

The following section breaks down the collision data by a variety of input factors and user types. This information will be used to highlight areas of concern for the City.

7.1 All Collisions

This report utilized collision data for a five-year period to provide a better understanding of trends and to reflect the patterns in crashes that have occurred on City streets. New data is added to the system in an ongoing basis which means that each time the City updates the analysis, a full 5-year draw from the database, rather than just adding records from the last query should be standard practice. Data used for this report were extracted from Crossroads Software analytics on June 29, 2021 and was current as of that date. Collision data from January 1, 2015 through December 31, 2019 as reported to Crossroads from the local enforcement indicated that during this time there were 1,336 collisions recorded within San Clemente.

The most common occurring collision types were Sideswipe (23%) and Rear-End (21%). The total number of collisions have been trending downward since 2016, with a significant 4% drop from 2016 to 2019[6]. In comparison with other cities nationwide, there has been an increasing trend of collisions from 2015 to 2019.

Figure 9: Collision Type by Year (2015-2019)

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[6] https://cdan.dot.gov/tsftables/National%20Statistics.pdf
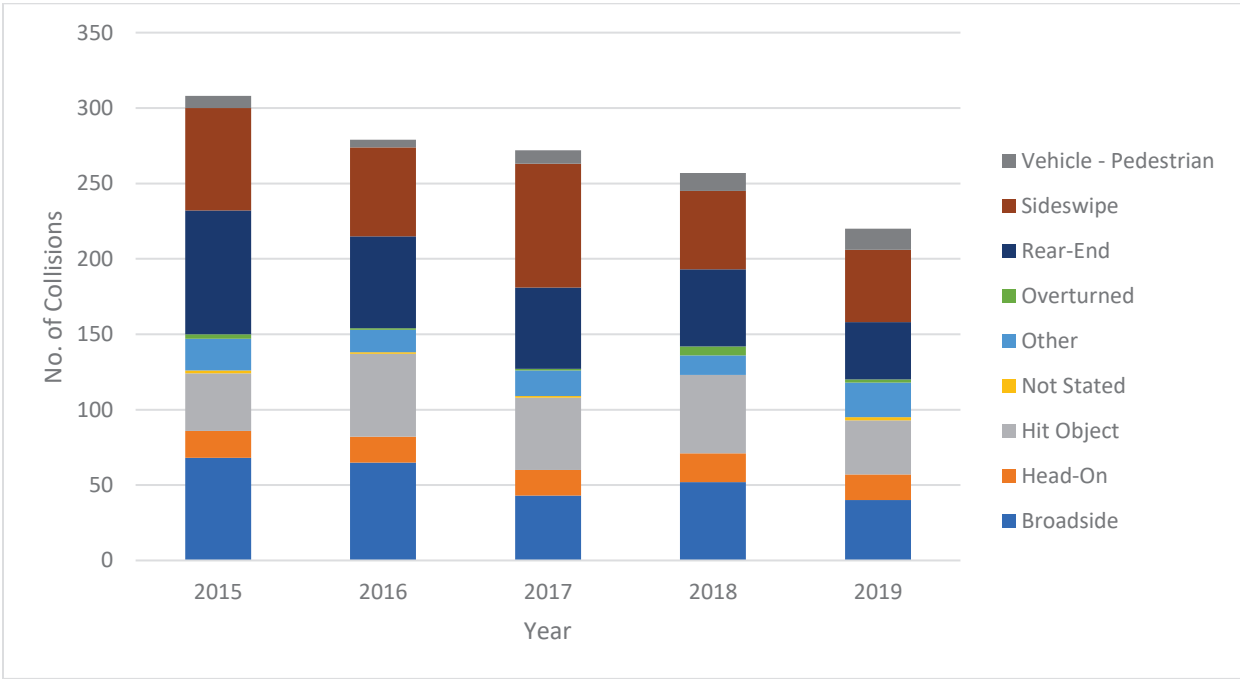
7.2 Fatalities

During the study period, seven (7) fatal and fifty-six (56) severe injury collisions occurred, as seen in **Figure 4**. These collisions were mainly concentrated along the City's arterial roadways, such as El Camino Real, and Avenida Pico. As shown in **Table 2** below, a majority fatal and severe injury collisions solely involved vehicles, but there were several collisions that involved pedestrians and bicyclists.

Table 2: Fatal Collisions Categorized by Modes Involved (2015-2019)

Involved With	# of Fatal Collisions	# of Severe Injury Collisions
Vehicle	5	42
Bicycle	1	5
Pedestrian	1	9

7.3 Injury Levels

Figure 10 reported during the time-period resulted in property damage only. Fatalities and severe injuries totaled less than 5% of all collisions.

Figure 10: Collisions by Injury Levels (2015-2019)
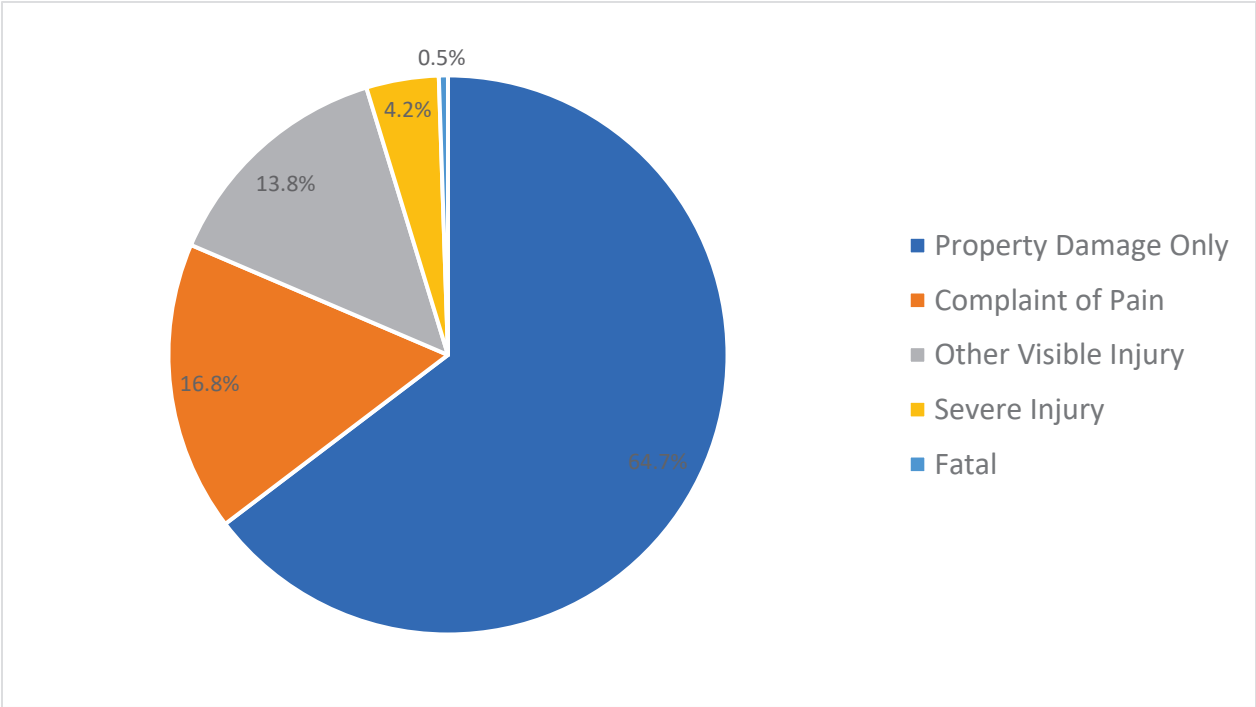
7.4 Cause of Collision

The highest cause of **all** collisions in San Clemente is improper turning at 25%, followed by driving under the influence at 16% and auto right-of-way violation at 15%. Issues with unsafe starting or backing also had a substantial impact on the City, comprising 7% of the collisions.

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Drivers ignoring traffic signals and signs led to 6% of the collisions. shows the distribution of causes of collision in the study period.

Figure 11: Cause of Collisions (2015-2019)
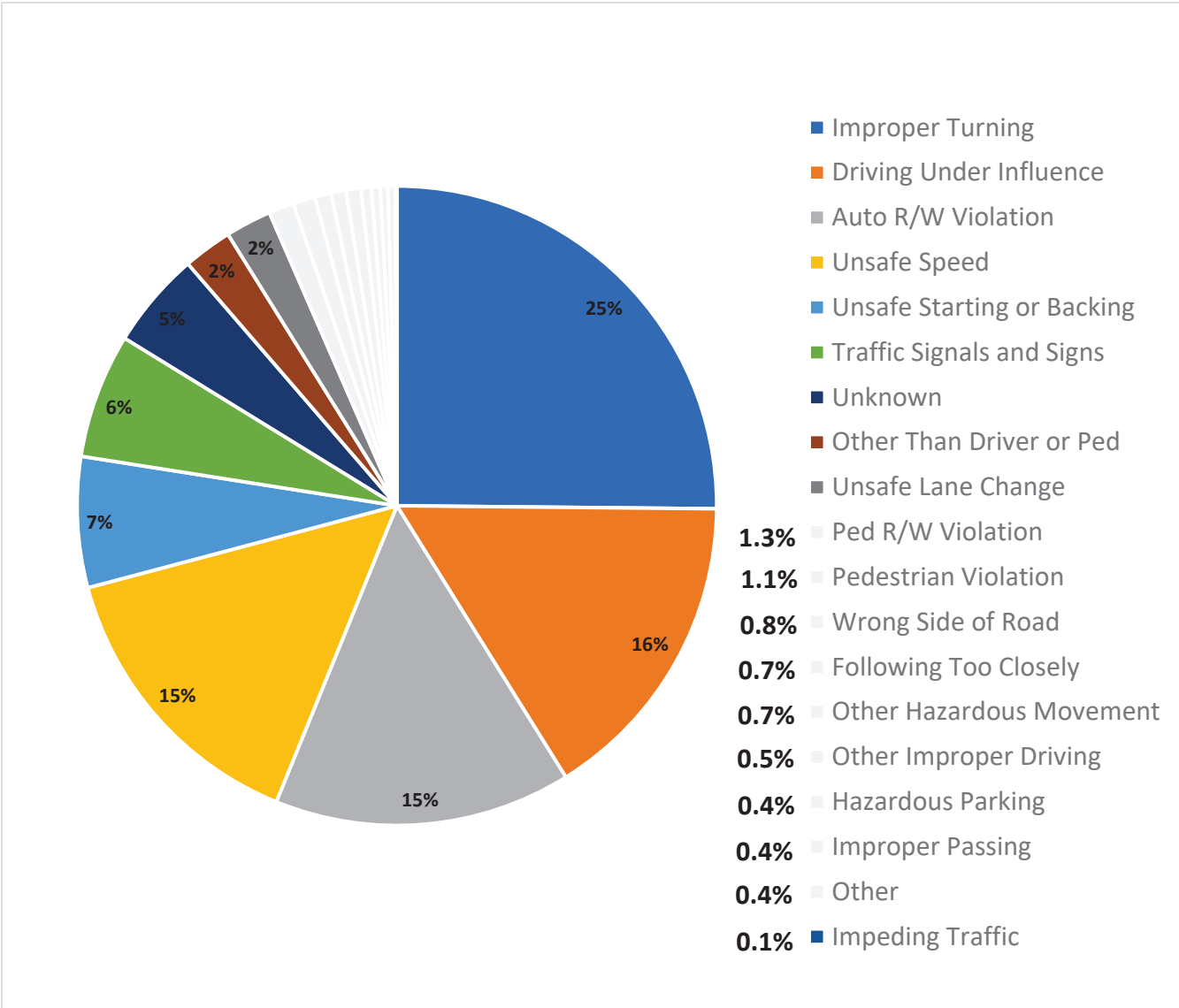
In **Figure 11** above, the bottom 10 causes of collisions are shaded white in the chart, and their percentages are listed in the legend of the chart.

The cause of the fatal & severe injury collisions is shown in **Table 3** below. The most common cause for fatal and severe injury collisions is driving under the influence (71% and 19%, respectively).

Table 3: Fatal & Severe Injury Collisions by Cause (2015-2019)

Collision Cause	# of Fatal Collisions	# of Severe Injury Collisions
Driving Under Influence	5	11

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Collision Cause	# of Fatal Collisions	# of Severe Injury Collisions
Improper Turning[1]	2	5
Auto R/W Violation[2]	-	9
Impeding Traffic[3]	-	1
Other Hazardous Movement	-	3
Other Than Driver or Ped	-	3
Ped R/W Violation	-	1
Pedestrian Violation	-	3
Traffic Signals and Signs[4]	-	3
Unknown	-	8
Unsafe Speed	-	6
Wrong Side of Road	-	3

Figure 12: Fatal & Severe Injury Collisions by Cause (2015-2019)
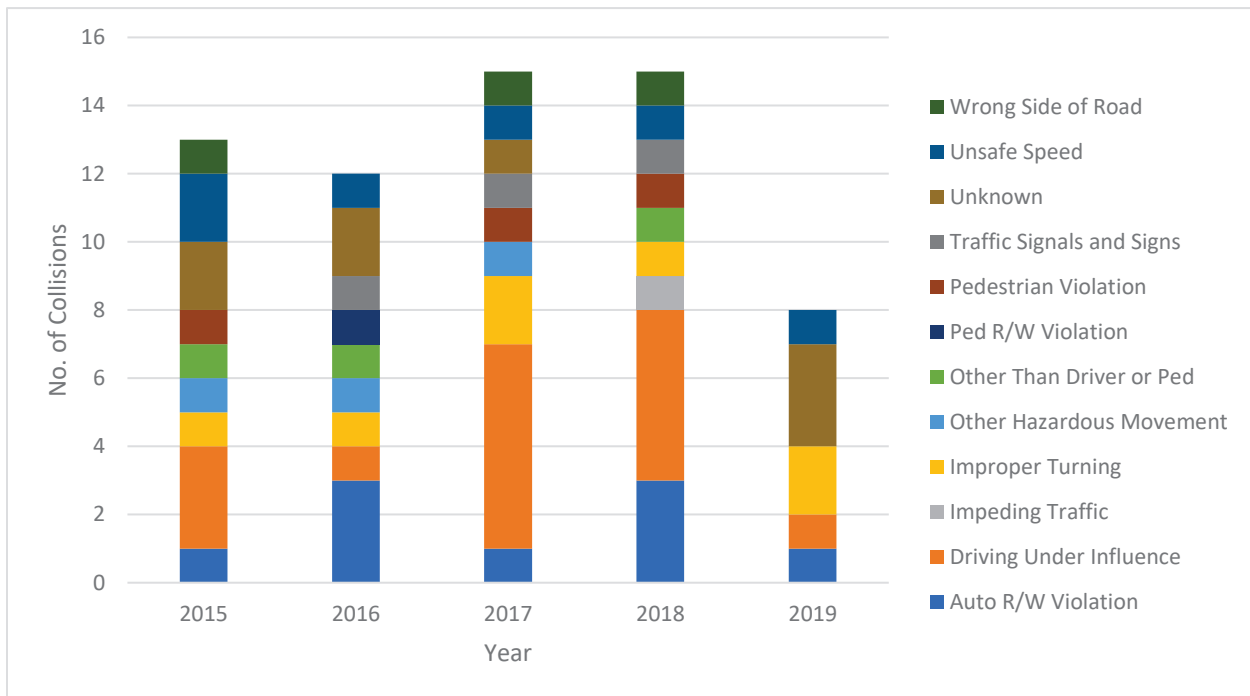
[1] Improper Turning is when a driver moves from a direct course when a movement cannot be made with reasonable safety, as defined by the California Vehicle Code (CVC) Section 22107.
[2] Auto R/W Violation is when a driver fails to yield the right-of-way to a vehicle properly, as defined by CVC Section 21804.
[3] Impeding Traffic is when a driver drives at such a slow speed as to impede or block normal movement of traffic, as defined by CVC Section 22400.
[4] Traffic Signals and Signs is when a driver disobeys any traffic sign, signal or traffic control device, as defined by the CVC Section 38300.

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7.5 Vulnerable Users

7.5.1 Pedestrians

49 pedestrian involved collisions occurred during the study period, resulting in one (1) fatal collision, nine (9) severe injury, and 37 with some form of reported injury or pain. 38% of the pedestrian collisions occurred at night, and about half of these collisions occurred while the pedestrian was crossing the crosswalk.

7.5.2 Bicycle

During the study period, 58 collisions involving bicycles were reported. Of these, one (1) were fatal, and five (5) resulted in severe injuries. The remaining collisions resulted in five (5) property damage only, and 47with some form of reported injury or pain at night. 81% of the collisions occurred during daylight. Most of these collisions were attributed to automobile right-of-way violations.

Figure 13 and Figure 14 show the pedestrian and bicycle collisions in the City during the study period.

Figure 13: Pedestrian and Bicycle Collisions (2015-2019)

23
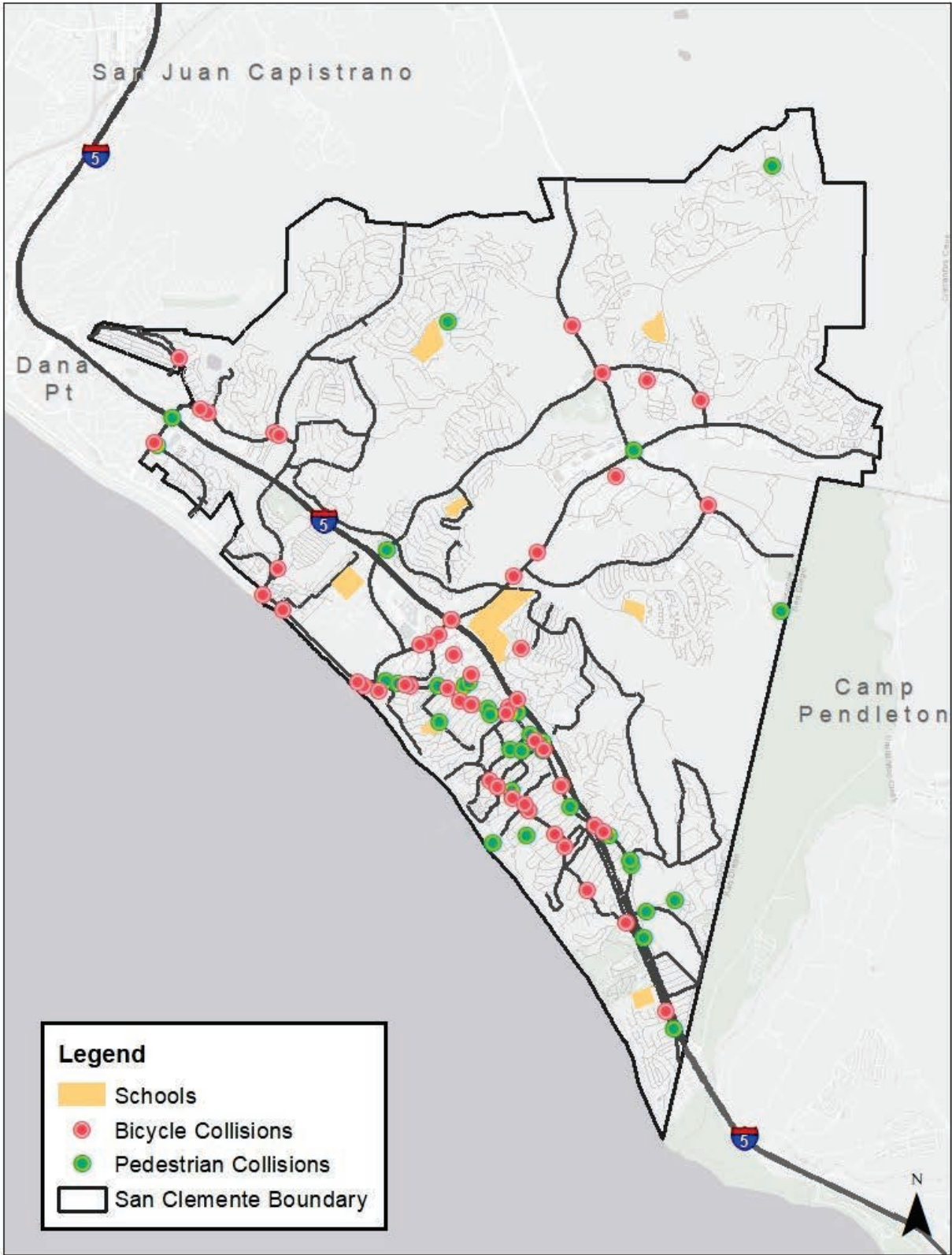
Figure 14: Pedestrian and Bicycle Collisions in Downtown San Clemente (2015 – 2019)

24
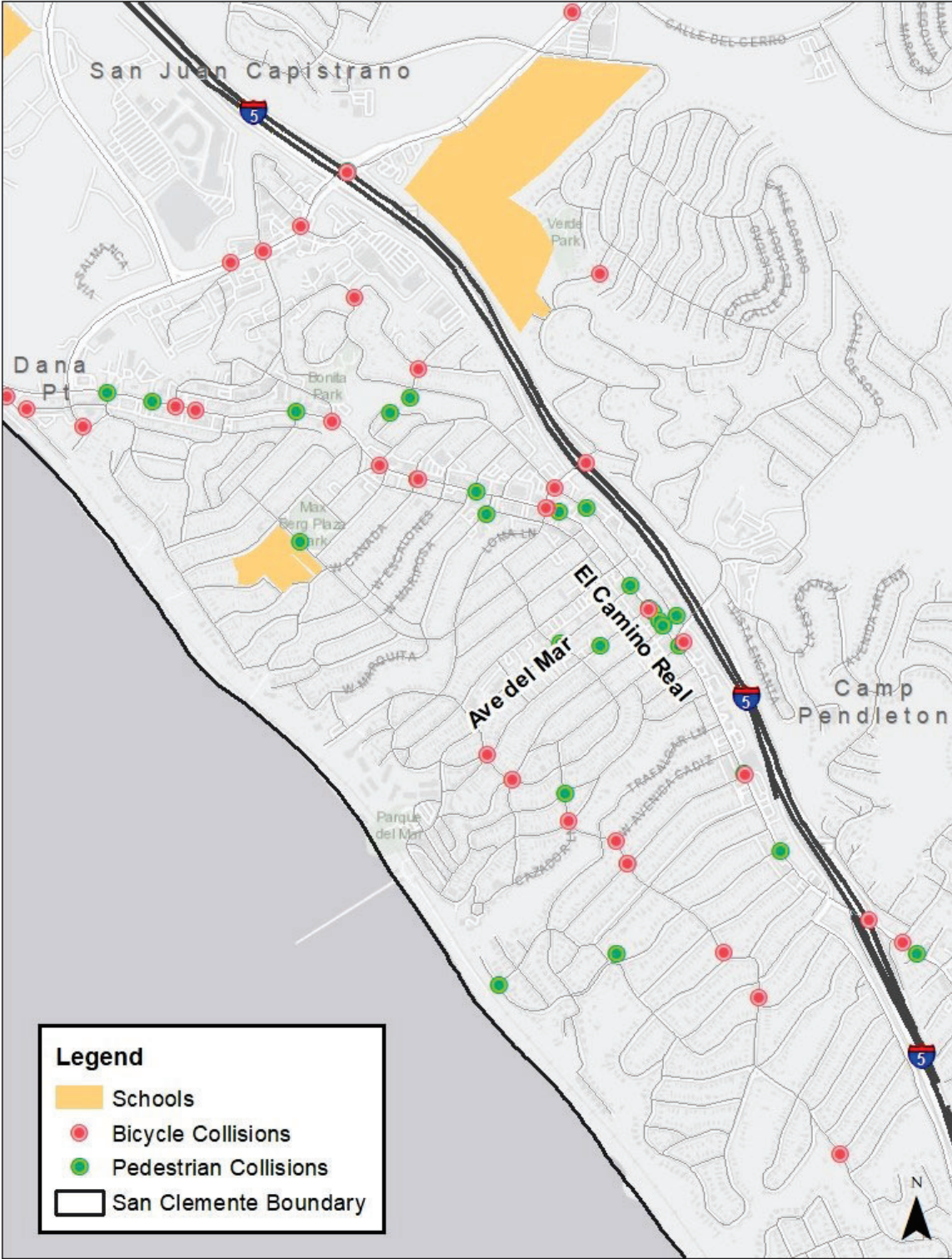
7.6 Significant Trends for Passenger Vehicles

- Twenty-seven (27) percent of "party at fault" was drivers age 16 through 25.
- Seventeen (17) percent of collisions (229) involved hit objects. Although significant in number, there are no discernable patterns to these collisions.
- Nine (9) percent of the "party at fault" was attributed to those age 65 and older. Looking at the expanded range of the "party at fault" for age 55 and older, this group accounts for almost 17% of collisions. Specifics for driver gender was not available in the collision data.
- Only four (4) percent of collisions (64) were recorded as having occurred at night without streetlights, or during dusk/dawn. Many of these collisions still occurred at or near intersections.

7.7 Behavioral

7.7.1 Driving Under the Influence

235 collisions, 18% of all collisions, were reported as the driver being under the influence of drugs or alcohol. More than half of collisions took place on arterial roads. **Figure 15** and **Figure 16** show the distribution of DUI collisions by time of day and day of the week.

Figure 15: DUI Collision Time of Day

25
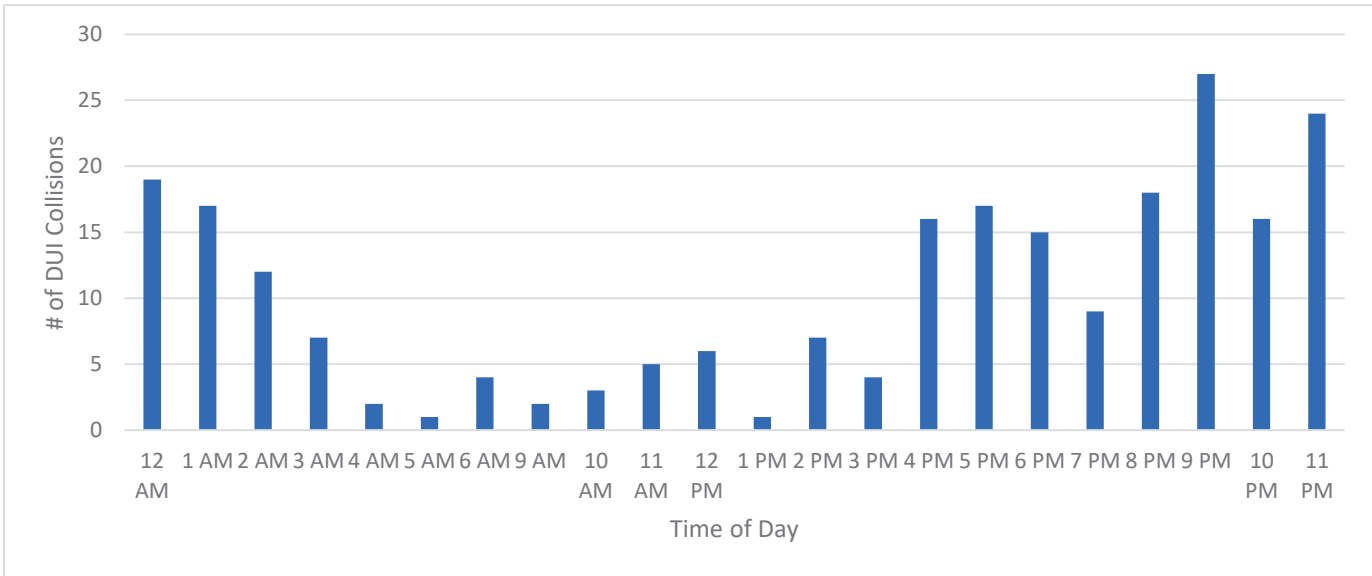
Figure 16: DUI Collisions by Time of Week
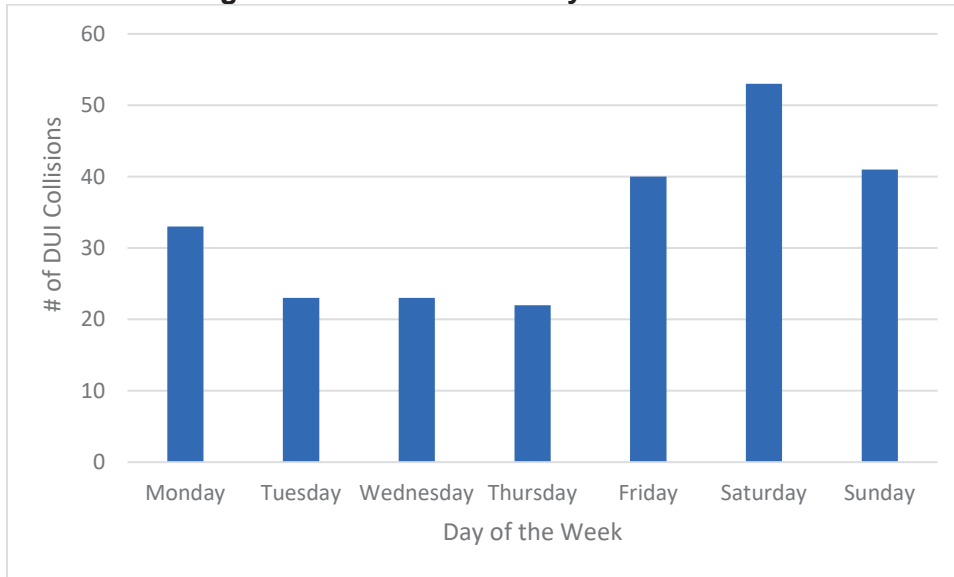
7.7.2 Aggressive Driving

Fifteen (15) percent of the collisions were primarily caused by drivers traveling at unsafe speed or following too closely. These types of collisions are located primarily on major arterials.

7.8 Statewide Comparison

The distribution of San Clemente's fatal and severe injury collisions compared to statewide figures for several Caltrans Strategic Highway Safety Plan (SHSP) challenge areas is shown below in **Table 4.** Following the Caltrans SHSP Implementation Plan guidance, collision data from 2009 to 2018 was reviewed. The figures below may vary slightly from those mentioned previously due to the differences in the years of the study period. Compared to statewide collisions, the City of San Clemente had lower collisions involving commercial vehicles, young drivers, pedestrian, occupation protection, intersections, and aggressive driving. San Clemente had a higher proportion of fatal & severe injury collisions involving work zones, motorcyclists, aging drivers, bicyclists, impaired driving, distracted driving, and lane departures.

Table 4: Comparison of Statewide and San Clemente Fatal and Severe Injury Collisions (2009 - 2018)

Challenge Area	Statewide %	San Clemente %	% Difference
San Clemente has a Higher Percentage of Collisions			
Work Zones	1.5%	10.0%	8.5%
Motorcyclists	20.8%	26.1%	5.3%
Aging Drivers	11.9%	17.1%	5.1%
Bicyclists	8.4%	10.9%	2.5%
Impaired Driving	25.8%	26.5%	0.7%
Distracted Driving	5.2%	5.7%	0.5%
Lane Departure	43.7%	44.1%	0.4%

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Challenge Area	Statewide %	San Clemente %	% Difference
San Clemente has a Lower Percentage of Collisions			
Commercial Vehicles	6.4%	6.2%	-0.2%
Young Drivers	13.6%	13.3%	-0.3%
Pedestrians	19.1%	17.5%	-1.6%
Occupant Protection	14.8%	12.3%	-2.5%
Intersections	23.6%	19.4%	-4.2%
Aggressive Driving	33.2%	26.5%	-6.7%

7.9 Collision Analysis Rankings

Table 5 and **Table 6** show the number of crashes occurring at locations in San Clemente 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 50%.

The tables are ordered by the number of collisions that occurred at that segment or intersection. All intersections and segments with three or more crashes were included. Locations with fewer than three crashes do not have enough data to infer trends. locations where more than two collisions occurred are represented. At locations with two or less collisions, random chance can account for crash history as much or more than specific roadway characteristics.

The tables are separated into sub-sections visible by the blue gradient. The first two columns, Collisions 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 collisions. The second column shows the CCR differential, which highlights whether the collision activity was higher 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 San Clemente crash data to determine what locations might be best to prioritize at the local level. This process highlights locations of collisions that are unusually high for the City to determine intersections and roadway segments that have the greatest risk for users. The remaining columns total collisions by type, to evaluate each sub-population and understand what proportion of crashes in the City are of a particular type. The city-wide 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.

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 San Clemente. Locations with higher than expected crashes of that type were identified by the probability that random chance would not account for exceedances.

The following provides an example of how to read **Table 5** and **Table 6**, which show the top locations by collisions per type

Table Highlights

- Local CCR Differential:
    o Locations with a Local CCR differential of greater than zero are highlighted in Gray
- Fatal and Severe Injuries:
    o Locations with one or more fatal/severe injuries are highlighted in Light Blue
- Remaining Collision Types:
    o Cells highlighted in **Light Green** have a **50% - 75%** probability that this crash type is over-represented on this segment/intersection as compared to other characteristically similar locations within the City of San Clemente (as discussed in Section 4.3). Although these locations have a slightly higher probability of this crash type than their counterparts, they are not necessarily highly significant.
    o **Cells highlighted in Light Yellow have a** 75% or greater probability that this crash type is over-represented on this segment/intersection as compared to other characteristically similar locations within the City of San Clemente (as discuss in Section 4.3). These locations are highly significant in regard to the number of collisions occurring here and should be further investigated.

Table Definitions:

- Total Collisions: Number of collisions observed at the intersection or segment from January of 2015 through December of 2019.
    o It should be noted that roundabouts were not listed in Table 4
- Local Critical Crash Rate (CCR) Differential: The CCR specific to the intersection or segment.
- Severity: The number of severe injury and fatal collisions that occurred at this location in the study period.
- Fatality: The number of fatal collisions that occurred at this location in the study period.
- Broadside, Sideswipe, Rear-End, Head-On, Hit Object, Overturned, Other, Pedestrian, Bicycle: The number of these types of collisions that occurred at this location in the study period.
- Other: The number of miscellaneous collision types (mostly single vehicle) that occurred at this location in the study period.
- Aggressive, Distracted, Impaired, Dark, Wet: The number of the collisions with this factor identified as the cause of collision.

Additionally, it should be noted that the columns for Collision Type, Collisions Involved With, Collision Behavior, Collision Environment, and Collision Severity are additional characteristics of the collisions and should not be counted as a separate collision. The collision categories are labeled and highlighted in the following order:

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Collision Type: Broadside, Sideswipe, Rear-End, Head-on, Overturned, and Other

Collision Involved With: Pedestrian and Bicycle

Collision Behavior: Aggressive, Distracted, and Impaired

Collision Environment: Dark and Wet

Collision Severity: Fatal, Serious Injury, Other Visible Injury, Complaint of Pain, PDO

Table 5: Analysis Rankings – Segments (Top Locations Per Segment Type)

Facility	Limits	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
Other Principal Arterial																							
S el Camino Real	E Ave Magdalena - I-5 Fwy Ramp	6	0.6	190	0	3	1	0	0	0	1	1	0	1	0	1	1	0	0	1	1	2	2
Minor Arterial																							
Ave del Mar	N el Camino Real - N Ola Vista	9	2.8	9	0	3	1	1	2	0	2	0	0	1	0	0	0	2	0	0	0	0	9
Ave Pico	I-5 Ramp - San Clemente High School	9	0.7	29	3	5	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2	6
Ave Pico	Calle del Cerro - Calle Amanecer	4	-0.08	34	0	0	3	0	0	0	1	0	1	3	0	0	0	0	0	0	2	2	0
Ave Santa Barbara	Ave Rosa - S Ola Vista	3	0.5	3	1	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	3
Ave Vaquero	Calle Vista Torito - Calle Arco	3	0.6	13	0	0	2	0	1	0	0	0	0	2	0	1	0	1	0	0	1	0	2
Major Collector																							
Cll del Cerro	Ave Pico - Ave Vista Montana (W)	6	1.2	190	0	1	1	0	4	0	0	0	0	2	0	1	0	1	1	0	1	2	2
Trafalgar Ln	Trafalgar Ln - S Ola Vista	2	0.2	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Local																							
W Marquita	N el Camino Real - Calle Puente	4	6.21	4	0	1	0	1	0	0	2	0	0	0	0	2	0	0	0	0	0	0	4
W Escalones	N el Camino Real - Calle Puente	4	6.51	4	0	0	3	0	1	0	0	0	0	3	0	0	1	0	0	0	0	0	4

1. Local Critical Crash Rate Differential

2. Equivalent Property Damage Only Crashes

	Local CCR Differential is Greater than Zero
	Fatal & Severe Injuries are greater than zero
	50-75% probability that crash type is over-represented
	75+% probability that crash type is over-represented

Table 6: Analysis Rankings – Intersections (Top Locations Per Intersection Type)

Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
Signalized Intersections																						
San Diego Fwy & Ave Pico	31	0.5	275	8	5	7	2	5	0	1	3	2	9	0	3	0	1	0	1	3	10	17
W Ave Palizada & N El Camino Real	22	0.1	57	7	4	5	1	2	0	2	1	2	2	0	6	0	1	0	0	1	5	16
San Diego Freeway & S El Camino Real	21	0.4	412	9	1	3	6	2	0	0	0	1	3	0	4	0	0	0	2	5	3	11
Puerta del Sol & Ave Pico	18	0.2	77	6	0	6	2	4	0	0	0	0	9	0	5	0	0	0	0	4	4	10
Ave la Pata & Ave Vista Hermosa	16	0.1	552	10	1	3	1	0	0	1	0	1	9	0	0	0	3	0	3	2	5	6
Ave Presidio & Ave Pico	16	-0.1	36	1	3	6	0	5	0	1	0	0	7	0	1	0	2	0	0	0	4	12
N el Camino Real & Ave del Mar	14	0.1	198	0	6	4	0	1	0	2	1	0	5	0	2	0	1	0	1	0	4	9
S el Camino Real & Ave Rosa	13	0.0	42	4	1	2	4	0	0	2	1	1	3	0	1	0	1	0	0	3	0	10
Ave Pico & Camino Vera Cruz	13	0.0	211	3	3	3	2	2	0	0	0	0	4	0	1	0	1	0	1	3	1	8
I-5 Freeway & Camino De Los Mares	12	-0.03	191	4	4	1	0	1	1	0	1	0	5	0	3	0	1	0	1	0	3	8
Unsignalized Intersections																						
W Canada & N El Camino Real	19	0.4	79	7	2	5	0	0	0	2	3	2	3	0	2	0	1	0	0	2	8	9
S El Camino Real & Ave Granada	18	0.3	196	3	6	6	0	0	0	1	2	1	6	0	3	0	0	0	1	1	1	15
S El Camino Real & W Esplande	12	0.1	364	8	1	1	0	1	1	0	0	0	0	0	2	0	0	0	2	1	3	6
Ave Barcelona & S Ola Vista	9	0.4	226	0	4	0	1	1	0	2	1	2	1	0	1	0	0	0	1	5	1	2
W Ave Palizada & Loma Ln	9	0.7	9	0	4	3	1	1	0	0	0	0	1	0	3	1	0	0	0	0	0	9
Boca de la Playa & N El Camino Real	9	0.2	178	0	8	0	0	0	0	0	1	0	0	0	3	0	1	0	1	0	1	7

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Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
S El Camino Real & Trafalgar Ln	8	0.1	38	2	2	0	1	1	1	1	0	0	1	0	3	0	0	0	0	2	2	4
N El Camino Real & Ave Serra	8	0.1	13	2	3	2	0	0	0	1	0	0	2	0	0	0	2	0	0	0	1	7
E Marquita & N El Camino Real	7	0.0	27	2	2	2	0	0	0	1	0	0	1	0	2	0	1	0	0	1	2	4
W Escalones & N El Camino Real	7	0.1	7	3	4	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	7

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

	Local CCR Differential is Greater than Zero
	Fatal & Severe Injuries are greater than zero
	50-75% probability that crash type is over-represented
	75+% probability that crash type is over-represented

8 Emphasis Areas

Emphasis Areas are places where the City of San Clemente can strategically focus efforts to have a large impact on transportation safety. Emphasis areas were developed by revisiting the Vision and Goals developed at the onset of this planning process and comparing them with the trends and patterns identified in the crash analysis. Where these areas aligned, or major challenges were observed, Emphasis Areas and strategies were developed.

Emphasis Area #1: Impaired Driving

Description: Impaired driving, as defined by the Caltrans SHSP, includes proof of drug or alcohol use by the driver, even if the driver is not over the legal limit. Approximately 18% of collisions during the study period reported the driver being under the influence of alcohol or drugs. About 14% of the collisions during the study period resulted in being over the legal limit. More than half of these took place on arterial roadways. A majority of impaired driving collisions took place between 8 PM and 3 AM.

Goals for Emphasis Area #1:

- Reduce the incidence and severity of collisions attributed to impaired driving
- Identify hot spots and key corridors for impaired driving
- Apply for funding to implement countermeasures to reduce impaired driving collisions

Strategies for Emphasis Area #1:

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

These strategies will be implemented by the City, law enforcement, and community organizations. Funding sources for these strategies may include Highway Safety Improvement Program (HSIP), Office of Traffic Safety (OTS), and Senate Bill 1 (SB1) grant programs.

Emphasis Area #2: Vulnerable Road Users (Bicycle and Pedestrians)

Description: Pedestrians and bicyclists are classified by Caltrans as vulnerable road users, meaning they have the highest potential for severe harm during a crash. Pedestrian and bicycle activity is high in San Clemente. According to the crash analysis, 8 percent of crashes involved pedestrians and bicycles. 93% of these collisions resulted in some form of injury or pain. 20% of pedestrian collisions resulted in fatalities or severe injuries, and 10% of bicycle injuries resulted in fatalities or severe injuries. Electric bicycle (e-bike) usage is high in the City and special attention should be paid to safety of these users.

Goal for Emphasis Area #2:

- Reduce the number of collisions involving vulnerable road users
- Identify hot spots and priority corridors for addressing vulnerable road user collisions
- Apply for funding and implement countermeasures to address pedestrian & bicyclist collisions

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- Implement pedestrian and bicycle countermeasures at key locations

- Install active transportation counters to identify high volume locations and implement infrastructure improvements at these locations

- Establish education and training programs to improve vulnerable road user safety citywide, including focus on electric bicycles

These strategies can 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 Highway Safety Improvement Program (HSIP), Active Transportation Program (ATP), State Transportation Improvement Program (STIP), and Senate Bill 1 (SB1) grand funding programs.

Emphasis Area #3: 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 15 percent of collisions. 3 percent of these collisions resulted in a severe injuries, 33 percent of these collisions resulted in some other form of injury.

Goal for Emphasis Area #3:

- 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 #3:

- Educational campaign to target aggressive drivers
- Increased law enforcement presence near aggressive driving hotspots
- Increased coordination with law enforcement and other community organizations

These strategies will be implemented by the City, law enforcement, and community organizations. Funding sources for these strategies may include Highway Safety Improvement Program (HSIP), Office of Traffic Safety (OTS) and Senate Bill 1 (SB1) grant programs.

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9 **Opportunities**

The following provides more information on general identified issues, crash modification factors, improvements, and countermeasures identified for the City of San Clemente, as well as for specific project locations identified as part of this analysis.

9.1 Infrastructure Improvements

9.1.1 Countermeasure Selection Process
Part D of the HSM provides information on Crash Modification Factors (CMF) for roadway segments, intersections, interchanges, special facilities, and road networks. CMFs are used to estimate the safety effects of highway improvements and apply CMFs to compare and select highway safety improvements. A CMF less than 1.0 indicates that a treatment has the potential to reduce collisions. A CMF greater than 1.0 indicates that a treatment has the potential to increase collisions. The application of an appropriate CMF can influence the decision to implement a particular project, and the misapplication of CMFs can lead to misinformed decisions. Key factors to consider when applying CMFs include:

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

Examples of Safety Countermeasures can be found through several sources. This Report utilizes the countermeasures found in the California LRSM (https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2020/lrsm2020.pdf) and the CMF Clearinghouse (CMF CH) website (http://www.cmfclearinghouse.org/).

Countermeasures for each of the Safety Project Case Studies are based on the data analysis and site visits. Additional countermeasures were identified for the high-level issues on a city-wide level and are discussed in *General City-Wide Safety Project Recommendations* Section 9.3 of this Report.

9.1.2 Safety Project Case Studies
From the city-wide analysis, ten project case study locations were selected for further analysis and recommendation. For each of these locations, Safety Project Case Studies were developed to provide a case study to organize projects when applying for funding. These locations were identified through the analysis process based on their collision histories, the observed crash patterns, and their differing characteristics to provide the most insight into potential systemic safety countermeasures that the City can employ to achieve the most cost-effective safety benefits.

A Safety Project Case Study was developed for these locations:

1. **Segment:** Calle del Cerro: Ave Pico to Ave Vista Montana (W)
2. **Segment:** Ave Pico: I-5 to San Clemente High School
3. **Intersection:** I-5 Fwy & Ave Pico
4. **Intersection:** El Camino Real & Calle Valle
5. **Intersection:** Ave Palizada & El Camino Real

6. **Segment:** Ave del Mar: El Camino Real & Ola Vista
7. **Segment:** El Camino Real: Escalones to Avenida Barcelona (Downtown San Clemente)
8. **Intersection:** El Camino Real & Esplanade

Appendix A contains the Case Study pages which summarize conditions at each location, and potentially beneficial countermeasures. Countermeasures were subjected to a benefit/cost assessment and scored according to their potential return on investment. These case studies can be used to select the most appropriate countermeasure, and to potentially phase improvements over the longer-term. The potential benefit of these countermeasures at locations with similar design characteristics can then be extrapolated regardless of crash history. These case study sheets can also be used to position the City for future grant funding opportunities.

9.2 Non-Infrastructure Improvements

Non-Infrastructure recommendations have also been proven to impact safety conditions of the transportation network. These education and enforcement measure recommendations are developed to target specific behavior types and populations. Based on a review of the existing plans, policies, and programs within the City, the following topics have been reviewed to identify areas where the City can implement or enhance safety efforts.

Table 7: Summary of Programs, Policies, and Practices for the City of San Clemente

Topic	Initiatives/ Current Status	Implement or Enhance
COMMITTEES / ROLES		
Active Transportation Coordinator	Yes, Senior Traffic Engineering and others fulfill this role	Continue to grow this role
Safety or Active Advisory Committee	Yes, the City has a Public Safety Committee	Continue regular Public Safety Committee meetings
Active Transportation Safety Education Program	Sherriff & Schools work together for bicycle safety education (bike safety rodeo); possible opportunities for additional training related to e-bikes	Continue to expand program for active transportation safety
POLICY / PLANS		
Complete Streets Plan	Yes, City Complete Streets Plan is part of the City's General Plan.	Identify roadways that are good candidates for complete street implementation consistent with guidance provided in these plans
Traffic Impact Fees	Yes	Continue to assess traffic impact fees

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Topic	Initiatives/ Current Status	Implement or Enhance
Safe Routes to School Program	Multiple Safe Routes to School grant funding projects implemented in the past; opportunity: comprehensive SRTS plan	Complete a comprehensive Safe Routes to School Plan
Traffic Calming Policies	Yes	Continue to implement traffic calming interventions where appropriate
Speed Surveys	Yes, the City conducts Speed Surveys every 7 years	Continue to update as required by California Vehicle Code; review new guidance from Assembly Bill 43
Warrants for Stop Signs and Signals	Yes, the City uses Warrants from the CA MUTCD.	Continue to use CA MUTCD warrants; identify areas where additional warrants can be used
Planning for Density and Walkable Areas	Yes	Continue to identify areas for density and walkable development
Transportation Demand Management (TDM)/Vehicle Miles Travelled (VMT) Reduction Policy	Currently providing shuttle services down El Camino Real; SC Rides, shuttles where there are no bus routes	Continue to implement policies that reduce VMT
Traffic Crash Monitoring	No	Implement a formal traffic crash monitoring program
Active Transportation Master Plan	Yes, the City has Bicycle and Pedestrian Master Plan (BPMP).	Continue to regularly update BPMP and implement interventions laid out in plans
Does the City have CA MUTCD-compliant Pedestrian Signal Timing?	Yes	Continue to be aware of CA MUTCD updates and update timing regularly
Crosswalks at High Pedestrian Locations	Yes	Maintain and improve crosswalks where appropriate
Traffic Enforcement	The City contracts with the Orange County Sheriff for traffic enforcement. Traffic enforcement type includes speeding, parking, stop sign violation, and all services under the California Vehicle Code and San Clemente Municipal Code.	Continue to work with law enforcement to enforce traffic safety; identify hot spots and increase enforcement

Topic	Initiatives/ Current Status	Implement or Enhance
Bicycle Policy	City Bicycle Policy is in the City's Bicycle and Pedestrian Master Plan	Continue to update bicycle policy and implement bicycle interventions where appropriate
Transit	Regional Rail Services (Metrolink and Amtrak), OCTA buses, City trolleys, SC Rides (supplementary to reduced OCTA routes; through Lyft/Butterfly); Senior Mobility Program through Yellow Cabs	Improvements to shuttle service along El Camino Real.
Wayfinding	City has a Master Wayfinding Sign Program for directional signs for visitors to downtown, beaches, pier, public parking and train station.	Continue wayfinding program; continually update system
DATA COLLECTION / INVENTORY		
Inventory of Pedestrian Signs and Signals	Asset management program, constantly updated. Currently working on signage	Assemble inventory of pedestrians signs/signals
Inventory/Mapping of Active Transportation Routes	No comprehensive map; mapped on several different maps. GIS/asset management programs to work on compiling for sidewalks	Assemble comprehensive GIS of active transportation routes, including bikeways and sidewalks
City Collision Database	No, utilize Sherriff's and TIMS	Implement City collision database with Sheriff and TIMS data; update regularly
Active Transportation Volume Counting	Ped/bike volumes are separated on some volume counts	Continue counting active transportation volumes; assemble database of AT volumes
COORDINATION / FEEDBACK		
Citizen Feedback	The public can send feedback to the City by phone calls, emails or City website.	Continue to solicit citizen feedback
Institutional Coordination	The City coordinates with Caltrans and other Agencies on various type of projects as needed.	Continue interdepartmental coordination

Topic	Initiatives/ Current Status	Implement or Enhance
School Engagement	City provides adult school crossing guards to elementary and middle schools; coordinates with the school staff and PTA on traffic and transportation related projects and issues.	Continue to engage local school districts
Enforcement/Emergency Service Engagement	The City law enforcement services are provided by the Orange County Sheriff. Law enforcement services include investigations, traffic enforcement, community support, drug education, parking control, and crime prevention.	Continue to engage with local law enforcement

9.3 General City-wide Countermeasure Toolbox

This evaluation considered city-wide trends to identify countermeasures that would likely provide the most benefit with widespread implementation. Countermeasures for each of the 5E Safety Strategies (Engineering, Enforcement, Education, Emergency Services, and Emerging Technologies) were identified. These include both infrastructure recommendations and non-infrastructure recommendations. **Table 9** outlines the city-wide safety project recommendations, which is also referred to as the "Countermeasure Toolbox". Within the toolbox, the description of the countermeasure along with its Local Road Safety Manuel (LRSM) ID number is listed. The next column, Crash Reduction Factor (CRF) also known as Crash Modification Factor (CMF), are "multiplicative factors used to estimate the expected number of crashes after implementing a given countermeasure at a specific site (the lower the CMF, the greater the expected reduction in crashes)[7]."

For each of these countermeasures, a planning level benefit/cost analysis was completed. Applying the benefit/cost at the city-wide level was estimated assuming some randomness in crash distribution. The location characteristics, such as whether there is a traffic signal, and the type of crashes, were used at the city-wide level to calculate an average cost of crashes that the countermeasure might reduce. The benefit per location was then factored out to a 20-year life-cycle savings, with an Opinion of Project Probable Cost (OPCC) for the initial installation costs and a per-year maintenance cost estimate. The cost shown in **Table 9** should be considered initial planning costs using 2020 dollars and not assumed final.

In addition to countermeasures from the LRSM which are included in Table 4, the following engineering improvements are recommended for consideration by the City for implementation.

- Posting full time or part time "No Right Turn on Red" signs based on the frequency of collisions. Potential use of blankout signs at signalized intersection should be considered as they can be extended to part time No U Turn restrictions.
- Implementation of CAMUTCD compliant signal timing at all intersections which has been shown in recent studies to help reduce pedestrian related collisions.
- Policy to regularly evaluate sight distance and visual clearance issues within the City. In addition to built obstructions, landscaping has become an increasingly important issue and is a factor in collisions.
- Restriping corridors to narrow travel and turn lanes widths, using the additional space to stripe wider bicycle facilities.
- Installation of bike detection and bike call buttons at signalized intersections.

Table 10 describes additional recommendations for the remaining categories of traffic safety which includes Enforcement, Education, Emergency Services, and Emerging Technology.

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[7] LRSM Version 1.5 (2020), Page 27

Table 8: City-wide Recommended Safety Projects (Countermeasure Toolbox)

LRSM/ CMF ID	Potential Countermeasures	CRF	Per Unit Cost	Unit
2084	Restrict right-turn on red	28%	$10,000	per location
8498	Tighten radius of right-turn lane to increase line of sight	39%	$20,000	per location
NS06	Install/upgrade larger or additional stop signs/other intersections warning/regulatory signs (stop signs with LED borders)	15%	$1,500	per sign
NS07	Upgrade intersection pavement markings (to make more visible)	25%	$22,000	per intersection
NS07	Upgrade intersection pavement markings (to make more visible)	35%	$50,000	per mile
NS13	Install splitter-islands on the minor road approaches	40%	$20,000	per intersection
NS15	Create direction median openings to allow/restrict left-turns and U-turns (right-in/right-out)	50%	$15,000	per structure
R01	Add segment lighting	35%	$50,000	per mile
R03	Install Median Barrier	25%	$20,000	per location
R14	Change lane configurations	30%	$12,500	per mile
R22	Install advanced signal warning signage	15%	$1,500	per sign
R23	Install chevron signs on horizontal curves	40%	$1,500	per sign

LRSM/ CMF ID	Potential Countermeasures	CRF	Per Unit Cost	Unit
R26	Install dynamic/variable speed warning systems	30%	$16,000	per sign
R27	install delineators, reflectors, and or object markers	15%	$3,000	per LF
R32PB	Install green paint in bicycle lanes	35%	$15,000	per intersection
R32PB	Install bike lane (class III/sharrows)	35%	$25	per linear foot
S02	Update signal heads to meet current standards	15%	$12,000	per intersection
S03	Improve signal timing (coordination, phasing, red, yellow, operation)	15%	$7,667	per intersection
S07	Provide protected left-turn phase	30%	$60,000	per intersection
S18PB	Install improved pedestrian crossing	25%	$50,000	per intersection
-	Close intersection and allow only pedestrian access to streets	5%*	$15,000	per location
-	Enact ordinance restrict on-street parking where curb lane width is narrow	5%*	$12,000	per location
-	Install back-in packing	5%*	$50,000	per location
-	Install parking meters	5%*	$75,000	per location

*These countermeasures do not have documented CRF's and a conservative 5% CRF was assigned to allow them to show some benefit.

Non-Engineering Safety Strategy Countermeasures:

These recommended countermeasures were derived from the collision analysis and build on the actions identified in Section 9.2. These relate to the additional Es of Traffic Safety outside of Engineering. This includes Enforcement, Education, Emergency Services and Emerging Technologies.

Table 9: Non-Engineering Safety Strategy Countermeasures

PROPOSED COUNTERMEASURE	POTENTIAL PARTNERS	EXAMPLES OF COUNTERMEASURE
ENFORCEMENT		
Establish enforcement and visibility program for aggressive driving	Local law enforcement; CHP	CHP's Regulate Aggressive Driving and Reduce Speed (RADARS) Program
Continued enforcement in school zones	Local law enforcement; CHP; school districts; OCTA; SCAG	Obtain grant funding for additional personnel in school zones
Increased enforcement of safe driving & active transportation behaviors near busy crosswalk locations	Local law enforcement; CHP	Obtain grant funding for additional enforcement near high pedestrian activity locations
EDUCATION		
Campaign to target aggressive driving and DUIs	Local law enforcement; CHP; California Office of Traffic Safety (OTS)	CHP's Regulate Aggressive Driving and Reduce Speed (RADARS) Program
Bicycle and pedestrian safety campaign	Local law enforcement; OCTA; SCAG	SCAG's 'Go Human' Campaign; ' OTS' 'Ride With Traffic' campaign. Planned educational events at high activity locations such as future CV Link locations
Explore safe routes to school education grants to expand program	Local school districts; local law enforcement; OCTA; SCAG	Safe Routes to School Program, funded by Caltrans
Coordinate safety education campaigns with SCAG	SCAG; local law enforcement	Roadway safety fairs at schools. Education campaign for aging drivers
EMERGENCY SERVICES		
Continue to work on interdepartmental communication between City staff and City police department and fire department	Local law enforcement & fire department	Incorporate law enforcement/fire department as stakeholders on transportation improvement projects

PROPOSED COUNTERMEASURE	POTENTIAL PARTNERS	EXAMPLES OF COUNTERMEASURE
Incorporate public health agencies and fire departments as stakeholders in safety projects	Local public health agencies and fire departments	Adjust safety project development processes to include public health and fire department feedback
EMERGING TECHNOLOGY		
Continue to use best practices for pedestrian crossings at high pedestrian traffic areas	City Public Works; OCTA; Caltrans	Continuously update pedestrian crossing design standards in accordance with latest best practices
Utilize new data sources to monitor traffic conditions and inform County safety plans	City Public Works; OCTA; Caltrans	Utilization of data from OCTA traffic management center
Identify best practices for e-bike safety and enforcement	City Public Works; local law enforcement	Increased enforcement near e-bike hotspots;

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10 Evaluation & Implementation

10.1 Evaluation

The success of the LRSP will be evaluated using the preliminary process outlined below. This process will be useful to ensure proper implementation of goals and to determine when updates are needed.

- Quarterly progress meetings will be conducted to track the implementation of the plan. In addition, the success of the plan will be evaluated on an annual basis.
- An update to the plan should be considered after no more than five years.
- Continued monitoring and recording of traffic incidents on local roadways by law enforcement.
- Maintain a list of focus areas where there are transportation safety concerns.

10.2 Implementation

The opportunities identified in this report provide more of the systemic countermeasures that can be applied within the City. Over the next three to five years, the City has the opportunity to concentrate its efforts on the emphasis areas:

1. Impaired Driving

2. Vulnerable Road Users (Bicyclists and Pedestrians)

3. Aggressive Driving

Analysis conducted at the citywide level indicated that these factors were some of the most frequent influences contributing to collisions 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 can be developed with a high benefit-to-cost ratio (by applying City-wide collision rates), allowing projects to be developed even at sites with little to no direct collision history, but with conditions that might contribute to future collisions.

10.3 Funding Opportunities

Competitive funding resources are available to assist in the development and implementation of safety projects in San Clemente. 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 San Clemente. The following is a high-level introduction into some of the main funding programs and grants for which the City can apply. The City should also work with regional agencies such as OCTA and SCAG to identify and apply for safety improvement funding.

10.3.1 Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) is a Federal program housed under Fixing America's Surface Transportation (FAST) Act. This program 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. Example safety improvement projects eligible for this funding include:

- New or upgraded traffic signals
- Upgraded guard rails
- Pedestrian warning flashing beacons
- Marked crosswalks

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.

10.3.2 Caltrans Active Transportation Program

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

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

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

10.3.3 State Transportation Improvement Program

The State Transportation Improvement Program (STIP) provides state and federal gas tax money for improvements both on and off the state highway system. STIP programming occurs every two years. The programming cycle begins with the release of a proposed fund estimate, followed by California Transportation Commission (CTC) adoption of the fund estimate. The fund estimate serves to identify the amount of new funds available for the programming of transportation projects. Once the fund estimate is adopted, Caltrans and the regional planning agencies prepare transportation improvement plans for submittal. Caltrans prepares the Interregional Transportation Improvement Program (ITIP) using Interregional Improvement Program (IIP) funds, and regional agencies prepare Regional Transportation Improvement Programs (RTIPs) using Regional Improvement Program (RIP) funds. The STIP is then adopted by the CTC.

10.3.4 California Senate Bill 1 (SB 1)

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:

- 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 Active Transportation Program (ATP).
- Local Planning Grants: $25 million

10.3.5 California Office of Traffic Safety (OTS) Grants

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

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

10.3.6 SCAG Sustainable Communities Program (SCP)

This program is an innovative vehicle for promoting local jurisdictional efforts to test local planning tools. The 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

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- Green Region
  - Natural Resource Plans
  - Climate Action Plans (CAPs)
  - Green House Gas (GHG) Reduction programs

10.4 Next Steps

The City of San Clemente has completed this LRSP to guide the process of future transportation safety improvements for years to come. The data-driven analysis process identified collision types, related primary collision factors, and locations of many collisions. Based on this process, Emphasis Areas were developed. These Emphasis Areas will guide corridor improvements, education programs, and capital improvements for the City.

Using the analyzed data and outputs from this LRSP, the City has the opportunity to complete the following tasks:

- 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
- Iteratively evaluate existing and proposed transportation safety programs and capital improvements to design a safer transportation network in San Clemente
- Continually review collision data and update the analysis performed in this report
- Monitor collision activity at locations where improvements were made to determine their impacts

The City also plans to have the City Council formally approve and adopt the Local Road Safety Plan (LRSP) in 2021. Based on current Caltrans guidelines, the City can plan to update the LRSP in five years in 2026.

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Appendix A: Case Study Sheets
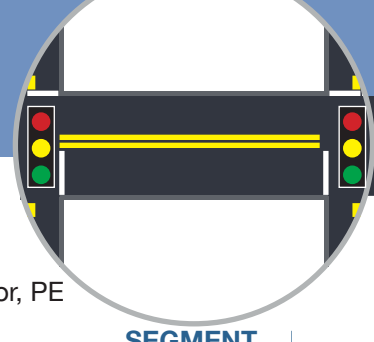
Project Template: Location #1

Project Name: San Clemente LRSP
Agency Name: San Clemente
Contact Name: Saeedeh Farivar
Email: FarivarS@san-clemente.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: November 2022

Project Location Description & Maps:

Segment: Calle Del Cerro: Avenida Pico to Ave Vista Montana (W)
Similar Segments: Calle Frontera: Ave Pico to Ave Fuentes/Ave Faceta; Camino Vera Cruz: Ave Vista Hermosa to Calle Paradiso
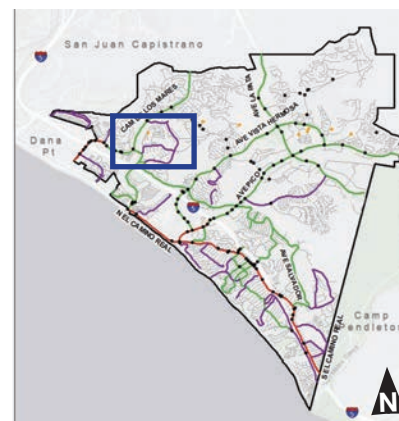
Traffic and Geometric Data:

Collision Data	
Total Collisions (2015-2019)	6
Fatal and Injury Collisions	Fatal Injury - 1 Severe Injury - 0 Visible Injury - 1
Top 3 Collision Types (percentage)	Hit-Object (66%) Rear-End (16%) Sideswipes(16%)
Total Nighttime Collisions	3
Wet Surface Collisions	1

Traffic Data	
Average Daily Traffic (ADT)	32,713
Lighting	Yes
Highest Posted Speed Limit	35 MPH

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
6	-	-

Collision Trends:
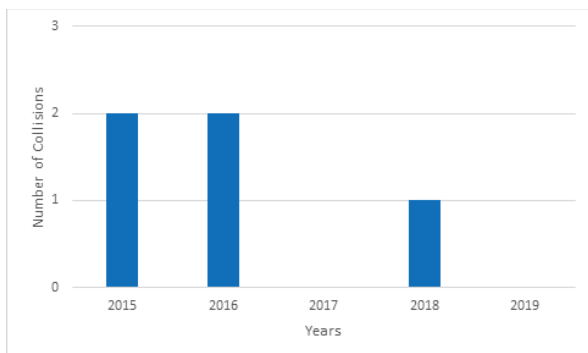
Type of Collision	Total
Hit-Object	4
Rear-End	1
Sideswipe	1

Additional Notes:

- Trucks restrictions (no trucks over 4 tons)
- Bike lanes prefer uphill instead of downhill
- Tree removal from medians, causing roads to lift
- Speed feedback signs could have more visibility
- Lighting is an issue here when there is weather

A-1

Primary Issues	Potential Countermeasures	Crash Modification Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
All	Install/upgrade signs with new fluorescent sheeting (regulatory or warning)	0.85 (R22)	$1,512,420	$1,500	1008.28
All	Install Chevron signs on horizontal curves	0.60 (R23)	$4,033,120	$9,000	448.12
All	Install curve advance warning signs	0.75 (R24)	$2,520,700	$6,000	420.12
All	Install dynamic/variable speed warning signs	0.70 (R26)	$3,024,840	$16,000	189.05
All	Install delineators,reflectors and/or object markers	0.85 (R27)	$1,512,420	$20,000	75.62
Dark	Perform lighting study; install additional lighting if necessary	-	-	$50,000	-
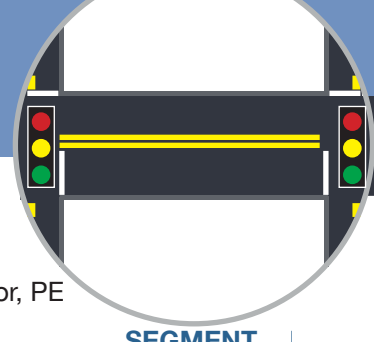
Project Template: Location #2

Project Name: San Clemente LRSP
Agency Name: San Clemente
Contact Name: Saeedeh Farivar
Email: FarivarS@san-clemente.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: November 2022

Project Location Description & Maps:

Segment: Avenida Pico: I-5 NB to San Clemente High School
Similar Segments: Ave Pico: Calle Frontera to Calle del Cerro; Ave Vista Hermosa: Camino Vera Cruz to Sports Park
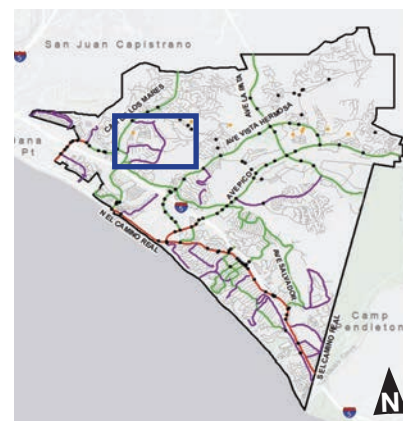
Traffic and Geometric Data:

Collision Data	
Total Collisions (2015-2019)	9
Fatal and Injury Collisions	Fatal Injury - 0 Severe Injury - 0 Visible Injury - 0
Top 3 Collision Types (percentage)	Broadside (33%) Sideswipes (33%) Hit-Objects (22%)
Total Nighttime Collisions	2
Wet Surface Collisions	0

Traffic Data	
Average Daily Traffic (ADT)	42,481
Lighting	Yes
Highest Posted Speed Limit	35 MPH

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
9	-	-
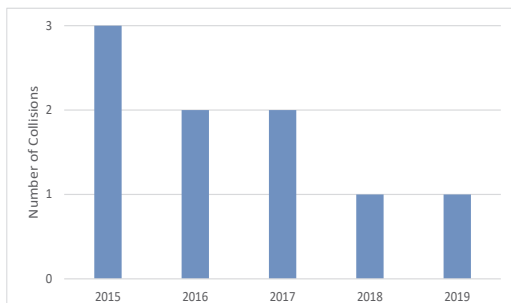
Collision Trends:

Type of Collision	Total
Broadside	3
Sideswipe	3
Hit-Object	2
Rear-end	1

Additional Notes:

- Bike lane on WB segment does not extend past east of I-5.
- If we installed a bike lane on southern side, there may be a right turn conflict by high school

Before Median Implementation (2014)	5 collisions
After Median Implementation (2015-2019)	9 collisions

A-3

Countermeasure Evaluation

Primary Issues	Potential Countermeasures	Crash Modification Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Ped & Bike	Install bike lanes on northern side of Ave Pico	0.65 (R32PB)	-	$15,000	-
Ped & Bike	Install crosswalk by San Clemente High School (Avenida Pico & San Clemente High school)	0.75 (S18PB)	-	$50,000	-

A-4

Case Study Sheet: Location #3

Project Name: San Clemente LRSP
Agency Name: San Clemente
Contact Name: Saeedeh Farivar
Email: FarivarS@san-clemente.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: November 2022
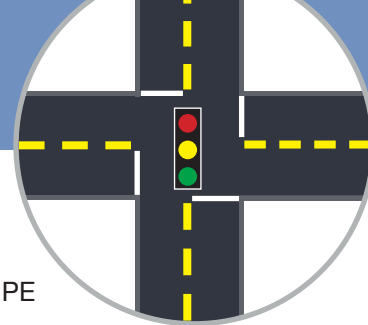
Project Location Description & Maps:

Intersection: I-5 (San Diego Fw) + Ave Pico
Examples of Similar Intersections: I-5 & El Camino Real; I-5 & Camino de Estrella
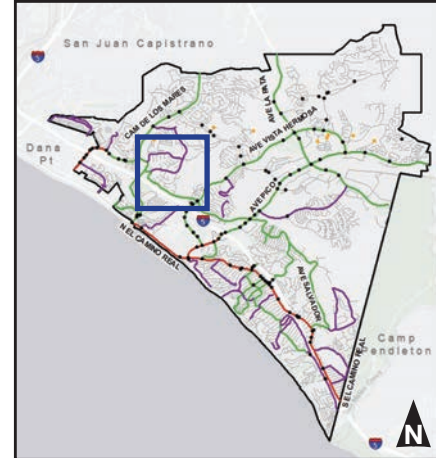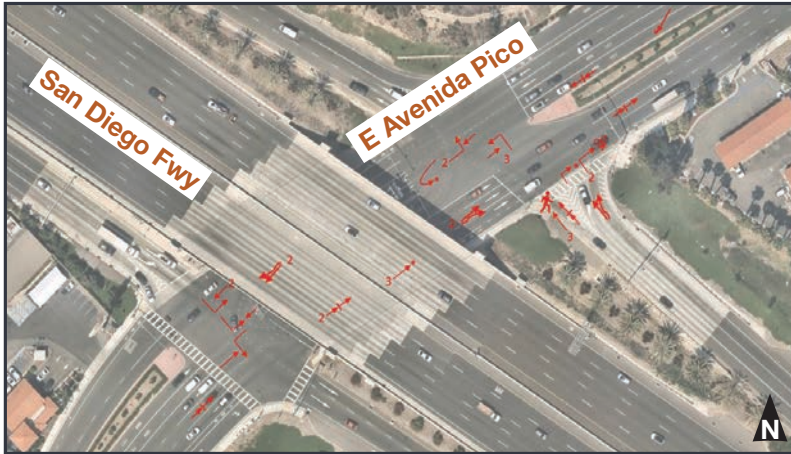
Traffic and Geometric Data:

Collision Data	
Total Collisions(2015-2019)	31
Fatal and Injury Collisions	Fatal Injury - 0 Severe Injury - 1 Visible Injury - 3
Top 3 Collision Types	Broadside (25%) Rear-end (22%) Sideswipe (16%)
Total Nighttime Collisions	8
Wet Surface Collisions	1

Traffic Data	
Number of Approaches	6
Total Entering Vehicles	42,481
Crosswalk Condition	Crosswalk
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	35MPH
Median	East & West approaches

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
26	3	2

Collision Trends:

Type of Collision	Total
Broadside	8
Rear-End	7
Hit-Object	5
Sideswipe	5
Vehicle-Pedestrian	3
Head-On	2
Other	1

Collision Trends:

A-5
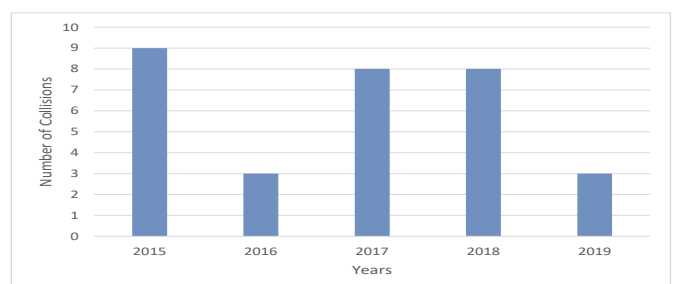
Additional Notes:

- Opportunities for intersection control analysis and queue analysis
- Caltrans and City coordination necessary for this location

Countermeasure Evaluation

Primary Issues	Potential Countermeasures	Crash Modification Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Right-Turn from I-5 Ramp	Restrict right turns on red from NB Off-Ramp	0.73 (CMF 2084)	$2,601,610	$10,000	260.16
All	Tighten radius on right turn(I-5NB off-ramp)	0.61 (CMF 8498)	$3,689,556	$20,000	184.48

A-6

INTERSECTION

Case Study Sheet: Location #4

Project Name: San Clemente LRSP
Agency Name: San Clemente
Contact Name: Saeedeh Farivar
**Email:** FarivarS@san-clemente.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: November 2022

Project Location Description & Maps:

Intersection: El Camino Real + Calle Valle
Examples of Similar Intersections: El Camino Real & Calle Las Bolsas; El Camino Real & Calle Lago
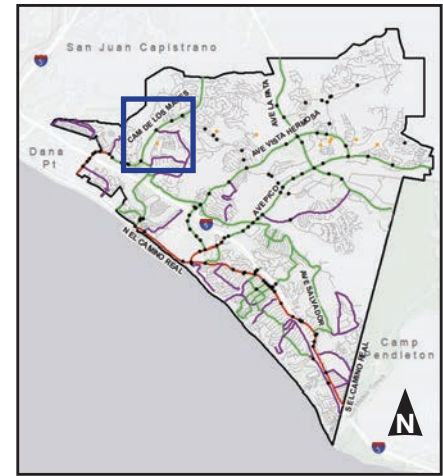
Traffic and Geometric Data:

Collision Data	
Total Collisions(2015-2019)	3
Fatal and Injury Collisions	Fatal Injury - 0 Severe Injury - 0 Visible Injury - 1
Top Collision Types	Other (33%) Sideswipe (66%)
Total Nighttime Collisions	0
Wet Surface Collisions	0

Traffic Data	
Number of Approaches	3
Total Entering Vehicles	25,500
Crosswalk Condition	East side crosswalk
Control Type	Unsignalized
Lighting	Yes
Highest Posted Speed Limit	35MPH
Median	None

Collision Breakdown		
Veh vs. Veh	Veh vs. Ped	Veh vs. Bike
2	0	1

Collision Trends:
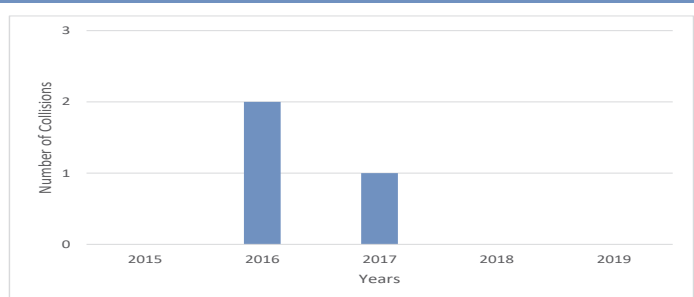
Additional Notes:

- Steep grade
- Blind side – left turn
- Potential exit closure

Type of Collision	Total
Sideswipe	2
Other	1

A-7

Countermeasure Evaluation

| Primary Issues	Potential Countermeasures	Crash Modification Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
All	Install median to restrict left-turns from El Camino Real to Calle Valle	40% (NS13)	$270,240	$25,000	10.81

A-8

Case Study Sheet: Location #5

Project Name: San Clemente LRSP
Agency Name: San Clemente
Contact Name: Saeedeh Farivar
Email: FarivarS@san-clemente.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: November 2022

Project Location Description & Maps:

Intersection: W Ave Palizada+ El Camino Real
Examples of Similar Intersections: El Camino Real & Avenida Presidio; El Camino Real & Avenida Valencia
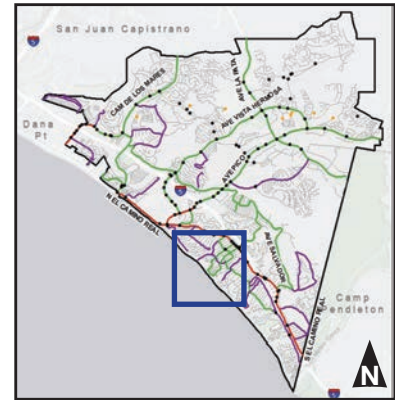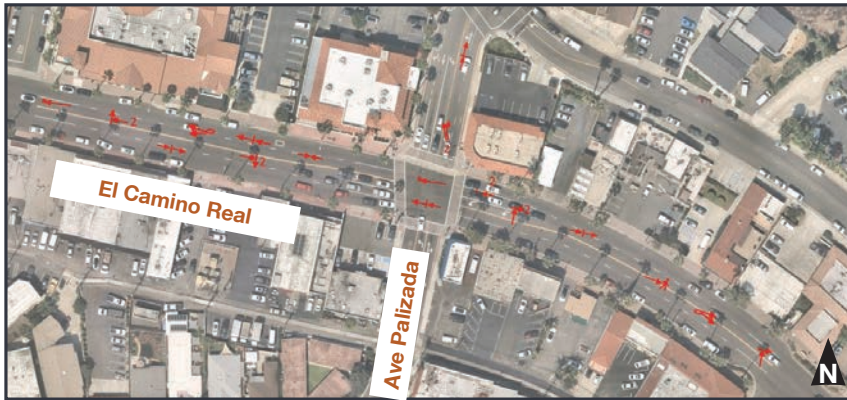
Traffic and Geometric Data:

Collision Data	
Total Collisions(2015-2019)	22
Fatal and Injury Collisions	Fatal Injury - 0 Severe Injury - 0 Visible Injury - 1
Top 3 Collision Types	Broadside (31%) Rear-end (22%) Sideswipe (18%)
Total Nighttime Collisions	8
Wet Surface Collisions	0

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	34,500
Crosswalk Condition	Crossing with pedestrian timing
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	30MPH
Median	None

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
19	1	2

Collision Trends:
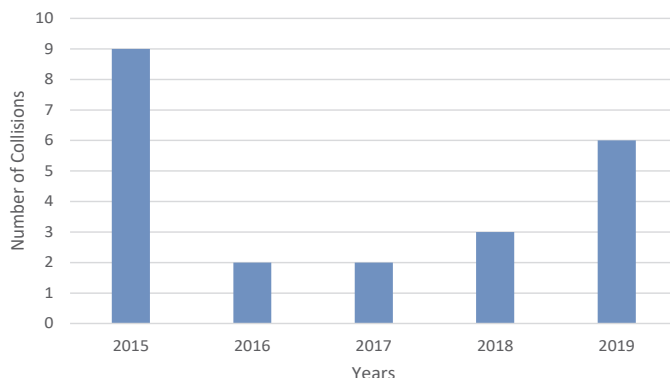
Type of Collision	Total
Broadside	7
Rear-End	5
Sideswipe	4
Other	4
Hit-Object	2
Head-On	1
Pedestrain-Vehicle	1

A-9

Additional Notes:

- Left turns at Ave Palizada and Ave de la Estrella create queues
- Restriping needed
- Lane configuration upgrades possible

Countermeasure Evaluation

Primary Issues	Potential Countermeasures	Crash Modification Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
All	Enact ordinance restrict on-street parking where curb lane width is narrow	0.95	$151,920	$12,000	12.66
Collisions at Old Town Plaza Entrance	Install "keep clear" marking for left turn into Old Town Plaza	0.95	$40,340	$15,000	2.69
All	Intersection control evaluation (including reconfiguration and re-striping)	-	-	$30,000	-
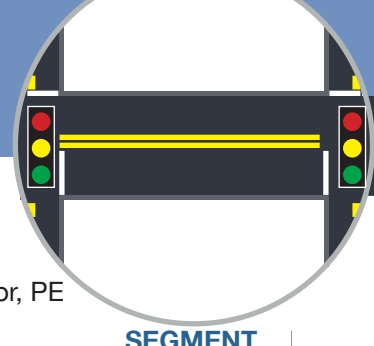
Project Template: Location #6

Project Name: San Clemente LRSP
Agency Name: San Clemente
Contact Name: Saeedeh Farivar
Email: FarivarS@san-clemente.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: November 2022

Project Location Description & Maps:

Segment: Ave Del Mar: N El Camino Real to N Olas Vista
Similar Segments: Avenida del Mar: Ola Vista to Calle Seville; Avenida Victoria: Monterey Ln to Alameda Ln

Traffic and Geometric Data:

Collision Data	
Total Collisions(2015-2019)	9
Fatal and Injury Collisions	Fatal Injury - 0 Severe Injury - 0 Visible Injury - 0
Top 3 Collision Types (percentage)	Sideswipe (33%) Other (22%) Head-On (11%)
Total Nighttime Collisions	1
Wet Surface Collisions	2

Traffic Data	
Average Daily Traffic (ADT)	18,000
Lighting	Yes
Highest Posted Speed Limit	35 MPH

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
9	-	-
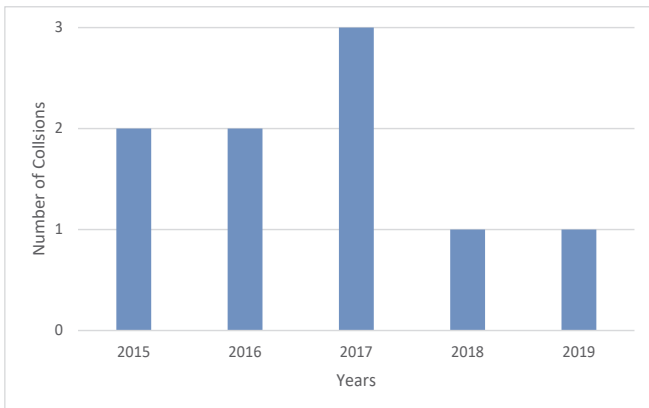
Collision Trends:

Collision Trends

Type of Collision	Total
Sideswipe	3
Other	2
Broadside	1
Hit-Object	1
Rear-End	1
Head-On	1

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Additional Comments

- Back up parking spots
- Parking meters

Countermeasure Evaluation

| Primary Issues	Potential Countermeasures	Crash Modification Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
All	Install back-in angle parking along Avenida Del Mar	0.95	$478,800	$50,000	9.58
All	Implement paid parking (funding going to support enhanced shuttle services)	0.95	$478,800	$75,000	6.38
All	Implement/enhance parking shuttle services in Downtown Area	0.95	$478,800	$100,000	4.79
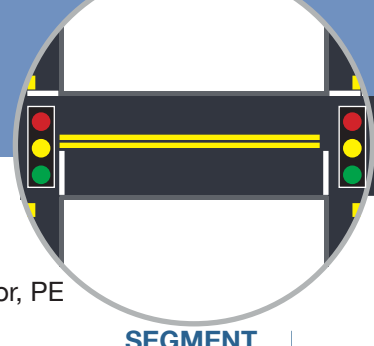
Project Template: Location #7

Project Name: San Clemente LRSP
Agency Name: San Clemente
Contact Name: Saeedeh Farivar
Email: FarivarS@san-clemente.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: November 2022

Project Location Description & Maps:

Segments: El Camino Real: W Escalones to Avienda Barcelona (Downtown San Clemente)
Similar Segments: El Camino Real: Avenida Algodon to Avenida Valenica
El Camino Rea: Avenida Pico to El Portal

Traffic and Geometric Data:

Collision Data	
Total Collisions(2015-2019)	146
Fatal and Injury Collisions	Fatal Injury - 0 Severe Injury - 2 Visible Injury - 17
Top 3 Collision Types (percentage)	Sideswipe (28%) Broadside (25%) Rear-end (19%)
Total Nighttime Collisions	58
Wet Surface Collisions	19

Traffic Data	
Average Daily Traffic (ADT)	18000
Lighting	Yes
Highest Posted Speed Limit	30 MPH

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
130	11	5

Collision Trends:
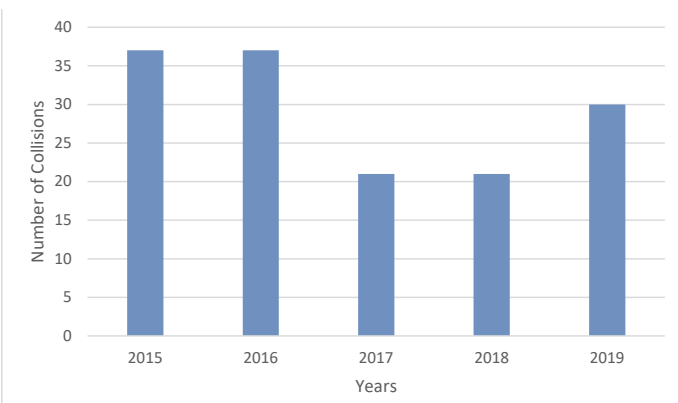
Collision Trends:

Type of Collision	Total
Broadside	37
Sideswipe	41
Rear-End	29
Other	12
Vehicle-Pedestrain	10
Head-On	9
Hit-Object	7
Overturned	1

Additional Notes:

- Two lanes in each direction with turning lanes for businesses, commerical, and residential
- Signal coordination

Countermeasure Evaluation

Primary Issues	Potential Countermeasures	Crash Modification Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
All	Adjust roadway alignment (one lane in each direction with a two-way left-turn lane)	0.70 (R14)	$11,889,360	$12,500	951.15
All	Install consistent signage	0.85 (R22)	$5,944,680	$15,000	396.31
All	Implement ordinance to prohibit parking when lane width is narrow	0.95	$1,981,560	$12,000	165.13
All	Improve signal coordination along El Camino Real (Escalones to Ave Barcelona)	0.85 (S03)	$5,944,680	$46,000	129.23
All	Implement central parking lots & parking shuttle in Downtown area	0.95	$1,981,560	$300,000	6.61

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Case Study Sheet: Location #8

Project Name: San Clemente LRSP
Agency Name: San Clemente
Contact Name: Saeedeh Farivar
Email: FarivarS@san-clemente.org

Prepared by: Kimley-Horn
Checked by: Jason Melchor, PE
Date: November 2022

Project Location Description & Maps:

Intersection: El Camino Real + Esplande
**Examples of Similar Intersections:** El Camino Real & Avenida Cabrillo; El Camino Real & Avenida Miramar
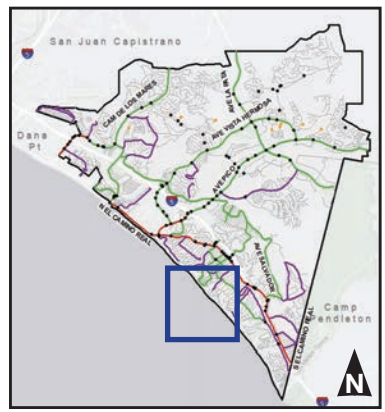
Traffic and Geometric Data:

Collision Data	
Total Collisions(2015-2019)	12
Fatal and Injury Collisions	Fatal Injury - 0 Severe Injury - 2 Visible Injury - 1
Top 3 Collision Types	Broadside (66%) Rear-end (8%) Sideswipe (8%)
Total Nighttime Collisions	4
Wet Surface Collisions	0

Traffic Data	
Number of Approaches	3
Total Entering Vehicles	9000
Crosswalk Condition	None
Control Type	unsignalized
Lighting	Yes
Highest Posted Speed Limit	30MPH
Median	None

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
12	0	0

Collision Trends:
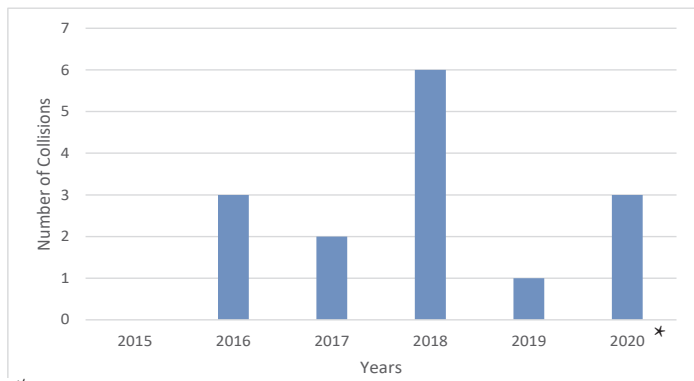
* Left-turn restriction was implemented in 2020

A-15

Collision Trends

Type of Collision	Total
Broadside	8
Hit Object	1
Rear-End	1
Sideswipe	1
Overturned	1

Additional Notes:

- Left turn restriction from Esplande onto El Camino Real: people are making left turn regardless of restriction

Countermeasure Evaluation

Primary Issues	Potential Countermeasures	Crash Modification Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Broadsides	Install median to restrict left turns from Esplanade	0.50 (NS15)	$9,448,000	$25,000	377.92

Appendix B: Full Analysis Rankings Table – Intersection and Segments

Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
Signalized Intersections																						
San Diego Fwy & Ave Pico	31	0.5	275	8	5	7	2	5	0	1	3	2	9	0	3	0	1	0	1	3	10	17
W Ave Palizada & N El Camino Real	22	0.1	57	7	4	5	1	2	0	2	1	2	2	0	6	0	1	0	0	1	5	16
San Diego Freeway & S El Camino Real	21	0.4	412	9	1	3	6	2	0	0	0	1	3	0	4	0	0	0	2	5	3	11
Puerta del Sol & Ave Pico	18	0.2	77	6	0	6	2	4	0	0	0	0	9	0	5	0	0	0	0	4	4	10
Ave la Pata & Ave Vista Hermosa	16	0.1	552	10	1	3	1	0	0	1	0	1	9	0	0	0	3	0	3	2	5	6
Ave Presidio & Ave Pico	16	-0.1	36	1	3	6	0	5	0	1	0	0	7	0	1	0	2	0	0	0	4	12
N el Camino Real & Ave del Mar	14	0.1	198	0	6	4	0	1	0	2	1	0	5	0	2	0	1	0	1	0	4	9
S el Camino Real & Ave Rosa	13	0.0	42	4	1	2	4	0	0	2	1	1	3	0	1	0	1	0	0	3	0	10
Ave Pico & Camino Vera Cruz	13	0.0	211	3	3	3	2	2	0	0	0	0	4	0	1	0	1	0	1	3	1	8
I-5 Freeway & Camino De Los Mares	12	-0.03	191	4	4	1	0	1	1	0	1	0	5	0	3	0	1	0	1	0	3	8
Coast Hwy & Ave Mendocino	11	0.13	387	5	3	1	0	2	0	0	0	0	1	0	2	0	2	0	2	5	0	4
Cll de Los Molinos & N el Camino Real	11	0.00	65	4	0	3	1	1	0	1	1	3	1	0	0	0	0	0	0	4	3	4
Ave Pico & Cll del Cerro	11	-0.09	200	4	1	3	0	2	1	0	0	0	6	0	2	0	0	0	1	1	3	6
Cam Vera Cruz & Ave Vista Hermosa	11	-0.02	195	2	0	6	1	2	0	0	0	0	5	0	2	0	2	1	0	1	2	7
San Diego Fwy & Ave Vista Hermosa	11	-0.08	185	4	1	2	0	2	1	0	1	0	4	0	1	0	0	0	1	0	2	8
N el Camino Real & Ave Cabrillo	10	0.00	29	3	3	4	0	0	0	0	0	0	1	0	3	0	0	0	0	2	0	8
Cam Capistrano & N el Camino Real	10	0.03	189	1	1	6	0	2	0	0	0	0	5	0	1	0	1	0	1	0	3	6
Ave Pico & San Clemente HS	10	-0.11	35	8	0	2	0	0	0	0	0	0	9	0	0	0	2	0	0	1	3	6
N Ola Vis & Ave del Mar	9	0.01	19	2	4	0	0	1	0	1	1	0	0	0	1	0	0	0	0	1	0	8
N Ave de la Estrella & E Ave Palizada	9	0.20	19	2	3	3	1	0	0	0	0	1	3	0	2	0	0	0	0	0	2	7

Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
Dolphin Dr & N el Camino Real	9	0.03	29	0	1	3	0	3	0	2	0	1	3	0	2	0	2	0	0	1	2	6
Ave Pico & Cll Amanecer	9	-0.09	39	5	1	1	0	1	0	0	0	0	6	0	0	0	0	0	0	1	4	4
Cll Agua & Cam de Estrella	9	-0.09	38	2	0	2	1	4	0	0	0	1	2	0	1	0	1	0	0	3	0	6
Cam de Los Mares & Calle Nuevo	9	-0.08	53	2	1	1	0	3	0	0	0	0	2	0	1	0	0	0	0	3	3	3
S El Camino Real & E Ave San Juan	8	0.00	38	1	1	4	1	0	0	1	0	1	4	0	1	0	0	0	0	2	2	4
Ave la Pata & Cll Saluda	8	0.38	18	1	1	2	0	4	0	0	0	1	1	0	3	0	0	0	0	0	2	6
Cam de Estrella & Cam de los Mares	8	-0.11	32	0	1	6	0	1	0	0	0	0	5	0	0	0	1	0	0	2	1	5
Ave Barcelona & Ave Cadiz	7	-0.08	22	1	1	0	1	2	0	1	1	1	2	0	2	0	0	0	0	1	1	5
Ave Estacion & N el Camino Real	7	-0.06	42	2	1	3	0	0	1	0	0	1	2	0	2	0	0	0	0	2	3	2
Ave Vista Hermosa & Calle Frontera	7	-0.15	22	2	1	2	1	1	0	0	0	0	2	0	0	1	1	0	0	0	3	4
Ave la Pata & Ave Pico	7	-0.10	191	2	0	2	1	1	0	0	1	0	2	0	1	0	0	0	1	0	4	2
Cam de Los Mares & Ave Vaquero	7	-0.11	355	0	0	2	1	2	1	1	0	1	3	0	2	0	1	0	2	0	4	1
S El Camino Real & Coast Hwy	6	-0.12	40	2	0	3	1	0	0	0	0	0	2	0	3	0	0	0	0	3	1	2
S el Camino Real & Ave Victoria	6	-0.13	35	0	1	1	0	1	0	0	3	0	1	0	2	0	0	0	0	3	0	3
W Mariposa & N el Camino Real	6	-0.14	30	1	3	1	0	0	0	0	1	0	0	0	3	0	0	0	0	2	1	3
Ave Pico & Cll Deshecha	6	-0.04	25	0	0	2	0	4	0	0	0	0	1	0	2	0	2	0	0	2	0	4
Ave Pico & N el Camino Real	6	-0.14	6	2	3	1	0	0	0	0	0	0	1	0	2	1	0	0	0	0	0	6
Ave Talega & Ave Vista Hermosa	6	-0.07	21	3	0	1	2	0	0	0	0	0	4	0	0	0	0	0	0	0	3	3
Cam de los Mares & Ocean View Pl	6	-0.13	36	1	1	0	3	0	1	0	0	0	3	0	0	0	0	0	0	1	4	1
S el Camino Real & San Diego Fwy Ovp	5	-0.13	35	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0
Ave del Presidente & Ave Califia	5	0.12	24	1	2	0	1	1	0	0	0	1	1	0	1	0	1	0	0	2	0	3
Cll de Los Molinos & Ave Pico	5	-0.15	25	3	0	2	0	0	0	0	0	1	3	0	0	0	0	0	0	0	4	1

Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
Ave Pico & San Clemente HS (S)	5	-0.17	15	0	3	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	3
Plaza Pacific & Ave Pico	5	-0.14	20	3	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0	1	1	3
Ave Presidio & Ave Victoria	4	0.72	177	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	2
Ave del Poniente & N el Camino Real	4	-0.18	28	1	0	0	0	2	0	1	0	1	1	1	1	0	0	0	0	2	1	1
Cll Negocio & Cll Amanecer	4	0.46	9	2	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	3
Cam de Estrella & Cam Mira Costa	4	-0.17	177	1	0	0	0	1	0	1	1	1	0	0	1	0	1	0	1	1	0	2
Ave Vista Hermosa & Cam la Padriza	4	-0.12	14	1	0	1	0	1	0	1	0	1	4	0	0	0	1	0	0	1	0	3
Coast Hwy & E Ave San Gabriel	3	-0.19	176	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	1
Cll de Industrias & Ave Pico	3	-0.20	13	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	2	1
Ave Vista Montana & Cll del Cerro	3	-0.01	8	0	0	2	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1	2
Ave Vista Hermosa & Cam Laurel	3	-0.20	3	0	0	2	1	0	0	0	0	0	3	0	1	0	0	0	0	0	0	3
Cam Vera Cruz & Plaza Pacifica	3	0.18	3	1	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3
Cll Allcante & Ave Pico	3	-0.19	18	1	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	1	1	1
Cll Sarmentoso & Cam Vera Cruz	3	0.36	13	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
Ave Pico & I-5 S	3	-0.20	8	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
Ave Pico & Gateway Village	3	-0.20	13	0	0	0	0	2	0	1	0	1	2	0	0	0	0	0	0	1	0	2
Cam de Estrella & Ave de la Palmas	3	-0.20	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Cam de Estrella & Calle Naranja	3	-0.20	3	0	0	2	0	1	0	0	0	0	1	0	2	0	0	0	0	0	0	3
Cam de los Mares & San Clemente Professional Plaza	3	-0.20	8	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Unsignalized Intersections																						
W Canada & N El Camino Real	19	0.4	79	7	2	5	0	0	0	2	3	2	3	0	2	0	1	0	0	2	8	9
S El Camino Real & Ave Granada	18	0.3	196	3	6	6	0	0	0	1	2	1	6	0	3	0	0	0	1	1	1	15

Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
S El Camino Real & W Esplande	12	0.1	364	8	1	1	0	1	1	0	0	0	0	0	2	0	0	0	2	1	3	6
Ave Barcelona & S Ola Vista	9	0.4	226	0	4	0	1	1	0	2	1	2	1	0	1	0	0	0	1	5	1	2
W Ave Palizada & Loma Ln	9	0.7	9	0	4	3	1	1	0	0	0	0	1	0	3	1	0	0	0	0	0	9
Boca de la Playa & N El Camino Real	9	0.2	178	0	8	0	0	0	0	0	1	0	0	0	3	0	1	0	1	0	1	7
S El Camino Real & Trafalgar Ln	8	0.1	38	2	2	0	1	1	1	1	0	0	1	0	3	0	0	0	0	2	2	4
N El Camino Real & Ave Serra	8	0.1	13	2	3	2	0	0	0	1	0	0	2	0	0	0	2	0	0	0	1	7
E Marquita & N El Camino Real	7	0.0	27	2	2	2	0	0	0	1	0	0	1	0	2	0	1	0	0	1	2	4
W Escalones & N El Camino Real	7	0.1	7	3	4	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	7
N el Camino Real & Avenida Aragon	7	0.0	12	0	0	0	1	6	0	3	2	1	1	0	0	0	0	2	0	1	0	0
N Ave de la Estrella & Calle Redondel	7	2.05	22	0	0	1	1	5	2	1	1	0	3	0	0	0	1	1	0	3	0	0
Cll Extremo & Ave la Pata	7	0.58	7	0	0	0	0	7	0	1	2	0	4	0	0	0	0	2	0	2	1	1
Cam de Los Mares & Bonanza	7	0.25	37	0	0	2	2	3	2	0	0	0	4	1	0	0	0	1	0	2	0	1
W Ave Palizada & N Cll Seville	6	0.23	11	0	0	0	1	5	1	3	1	0	1	0	0	0	0	1	0	3	2	0
Cll del Comercio & E Ave Magdalena	5	0.03	29	0	0	2	1	2	2	2	0	0	0	0	1	0	0	0	0	0	0	0
Vis Marina & W Pso de Cristobal	5	1.32	10	0	0	0	1	4	0	2	2	0	1	0	0	1	0	0	0	0	0	0
Ave del Mar & Acebo Ln	5	0.00	5	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0
Ave Victoria & Ave Monterey	5	0.01	5	0	0	0	0	5	0	3	0	0	0	0	2	0	0	0	0	0	2	0
S el Camino Real & Ave Cadiz	5	-0.01	10	0	0	0	1	4	3	0	1	1	0	0	0	0	0	1	0	0	1	0
S Cll Seville & Ave Granada	5	0.25	10	0	0	0	1	4	1	2	1	0	0	0	1	0	1	0	0	2	0	0
Ave Caballeros & E Ave Palizada	5	0.29	10	0	0	0	1	4	2	1	0	1	0	0	1	0	1	2	0	0	0	0
Cll Las Bolas & N el Camino Real	5	0.00	20	0	0	1	1	3	0	1	1	1	1	0	0	0	0	0	0	1	0	1
S el Camino Real & Ave San Diego	4	-0.01	168	0	1	0	0	3	1	1	2	0	0	0	0	0	0	0	0	0	0	0

Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
Coast Hwy & W Ave San Gabriel	4	-0.01	187	0	1	2	0	1	0	1	1	0	0	0	0	2	0	0	0	0	0	0
W Ave Cornelio & El Camino Real	4	-0.02	14	0	0	1	0	3	3	0	0	0	1	0	0	0	0	0	0	0	0	0
S Ola Vis & W Ave Gaviota	4	0.05	14	0	0	0	2	2	0	0	0	0	3	0	1	0	1	0	0	3	1	0
W Ave Valencia & Ave del Presidente	4	0.18	4	0	0	0	0	4	2	1	1	0	0	0	0	0	0	0	0	2	0	0
Ave Victoria & S Cll Seville	4	-0.07	23	0	0	2	0	2	0	2	0	0	0	0	2	0	2	0	0	2	1	0
S Cll Seville & Ave del Mar	4	0.00	4	0	0	0	0	4	0	2	1	0	1	0	0	0	0	1	0	1	0	0
Ave Victoria & S Ola Vis	4	-0.02	14	0	0	1	0	3	1	1	1	1	0	0	0	0	0	0	0	1	0	0
W Mariposa & Cll Puente	4	0.15	14	0	0	1	0	3	0	1	3	0	0	0	0	0	0	1	0	0	0	1
Ave de la Estrella & Cll Cabrillo	4	0.96	14	0	0	1	0	3	0	1	1	0	1	1	0	0	0	1	0	0	0	0
N Ola Vis & W Ave Palizada	4	0.02	4	0	0	0	0	4	1	2	1	0	0	0	0	0	0	0	0	3	0	0
Ave de la Grulla & Cll Mirador	4	0.01	4	0	0	0	0	4	1	0	0	0	2	0	1	0	0	2	0	0	0	0
Ave del Reposo & Cll Mirador	4	0.96	14	0	0	1	0	3	0	2	0	0	2	0	0	0	0	0	0	1	0	0
Ave de la Grulla & N el Camino Real	4	-0.05	177	0	1	1	0	2	1	1	1	0	0	0	1	0	1	0	0	0	0	0
Cll del Carro & Montilla	4	0.58	14	0	0	0	2	2	0	0	0	1	3	0	0	0	0	1	0	0	0	0
Cll Frontera & Cll Juarez	4	0.08	14	0	0	0	2	2	2	1	0	0	1	0	0	0	0	0	0	1	0	0
Ave Vaquero & Calle Valle	4	0.07	168	1	0	0	0	3	0	0	0	0	4	0	0	0	0	1	0	2	0	0
Cll Campana & Cam de Los Mares	4	-0.05	14	0	0	1	0	3	2	0	0	0	2	0	0	0	0	0	0	1	0	1
S el Camino Real & San Diego Fwy Ovp	3	-0.05	3	0	0	0	0	3	0	2	1	0	0	0	0	0	0	0	0	1	0	0
Coast Hwy & Ave San Pablo	3	-0.05	8	0	0	0	1	2	0	0	0	1	1	0	1	0	0	0	0	1	0	0
Coast Hwy & W Ave Junipero	3	-0.07	13	0	0	0	2	1	1	0	2	0	0	0	0	0	0	2	0	0	0	0
E Ave San Antonio & S El Camino Real	3	-0.05	32	0	0	3	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0
E Ave Ramona & W Ave Ramona	3	-0.05	167	1	0	0	0	2	1	1	0	0	0	0	1	0	0	0	0	2	0	1

Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
E Ave San Juan & Cll Alcazar	3	0.59	3	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	1	0	0
S El Cam Real & Coast Hwy	3	-0.07	13	0	0	0	2	1	1	0	2	0	0	0	0	0	0	1	0	0	0	0
W Esplande & S Ola Vis	3	-0.05	13	0	0	1	0	2	1	0	1	0	1	0	0	0	0	1	0	1	0	0
Coast Hwy & W Ave Cordoba	3	-0.06	8	0	0	0	1	2	0	1	1	0	0	0	1	0	0	2	0	0	0	0
Coast Hwy & W Pso de Cristobal	3	-0.06	13	0	0	1	0	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0
Ave del Mar & Capistrano Ln	3	-0.05	3	0	0	0	0	3	0	1	0	1	0	0	1	0	0	0	0	1	0	0
S Ola Vis & Ave Monterey	3	-0.02	176	0	1	1	0	1	0	0	0	0	1	1	0	1	0	0	0	2	0	0
N Cll Seville & Ave Cabrillo	3	0.05	3	0	0	0	0	3	0	2	0	0	0	0	1	0	0	0	0	0	0	0
W Ave Palizada & Ave Serra	3	0.07	3	0	0	0	0	3	0	1	2	0	0	0	0	0	0	0	0	1	0	0
N Ola Vis & Ave Cabrillo	3	-0.02	3	0	0	0	0	3	0	2	1	0	0	0	0	0	0	1	0	1	0	0
Ave Presidio & La Esperanza	3	0.07	3	0	0	0	0	3	0	2	0	0	1	0	0	0	0	1	0	1	0	0
Ave del Poniente & Cll Puente	3	0.05	3	0	0	0	0	3	0	2	1	0	0	0	0	0	0	0	0	1	0	1
Ave Presidio & La Esperanza	3	-0.01	18	0	0	1	1	1	0	0	3	0	0	0	0	0	0	1	0	0	0	1
W Canada & N Ell Cam Real	3	0.40	3	0	0	0	0	3	0	2	1	0	0	0	0	0	0	1	0	0	1	0
N el Camino Real & Calle Valle	3	-0.06	13	0	0	1	0	2	0	2	0	0	0	0	1	0	1	0	0	0	0	0
Ave Presidio & Avenida Salvador	3	-0.04	8	0	0	0	1	2	0	1	1	0	0	0	1	0	0	0	0	2	0	1
Ave Pico & Ave Navarro	3	-0.07	13	0	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	1
Ave Presidio & Gateway Village	3	-0.08	18	0	0	1	1	1	1	0	0	1	1	0	0	0	0	1	0	0	0	0
Via Breve & Cam Capistrano	3	0.05	3	0	0	0	0	3	0	1	2	0	0	0	0	0	0	1	0	1	0	0
Cll del Cerro & Ave la Pata	3	-0.02	181	0	1	1	1	0	1	0	0	0	1	0	1	0	1	0	0	1	0	0
Cll Trepadora & Cll Amanecer	3	0.40	167	0	1	0	0	2	1	1	0	0	1	0	0	0	0	0	0	1	0	0
Cll Campana & Cll Canasta	3	0.40	3	0	0	0	0	3	0	1	1	0	1	0	0	0	0	1	0	1	0	0
Cam la Pedriza & Cristianitos Rd	3	0.28	3	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0

Intersection	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
Via Blanco & Cam Vera Cruz	3	0.40	8	0	0	0	1	2	0	1	2	0	0	0	0	0	0	2	0	0	0	0
Carretera & Cam Vera Cruz	3	0.59	13	0	0	0	2	1	1	0	2	0	0	0	0	0	0	2	0	0	0	0

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

	Local CCR Differential is Greater than Zero
	Fatal & Severe Injuries are greater than zero
	50-75% probability that crash type is over-represented
	75+% probability that crash type is over-represented

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Facility	Limits	Crashes	Local CCR Differential[1]	EPDO[2]	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet	Fatal	Serious Injury	Other Visible Injury	Complaint of Pain	PDO
Other Principal Arterial																							
S el Camino Real	E Ave Magdalena - I-5 Fwy Ramp	6	0.6	190	0	3	1	0	0	0	1	1	0	1	0	1	1	0	0	1	1	2	2
Minor Arterial																							
Ave del Mar	N el Camino Real - N Ola Vista	9	2.8	9	0	3	1	1	2	0	2	0	0	1	0	0	0	2	0	0	0	0	9
Ave Pico	I-5 Ramp - San Clemente High School	9	0.7	29	3	5	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2	6
Ave Pico	Calle del Cerro - Calle Amanecer	4	-0.08	34	0	0	3	0	0	0	1	0	1	3	0	0	0	0	0	0	2	2	0
Ave Santa Barbara	Ave Rosa - S Ola Vista	3	0.5	3	1	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	3
Ave Vaquero	Calle Vista Torito - Calle Arco	3	0.6	13	0	0	2	0	1	0	0	0	0	1	0	2	0	1	0	0	1	0	2
Major Collector																							
Cll del Cerro	Ave Pico - Ave Vista Montana	6	1.2	190	0	1	1	0	4	0	0	0	0	2	0	1	0	1	1	0	1	2	2
Trafalgar Ln	Trafalgar Ln - S Ola Vista	2	0.2	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Local																							
W Marquita	N el Camino Real - Calle Puente	4	6.21	4	0	1	0	1	0	0	2	0	0	0	0	2	0	0	0	0	0	0	4
W Escalones	N el Camino Real - Calle Puente	4	6.51	4	0	0	3	0	1	0	0	0	0	3	0	0	1	0	0	0	0	0	4

1. Local Critical Crash Rate Differential

2. Equivalent Property Damage Only Crashes

(gray)	Local CCR Differential is Greater than Zero
(blue)	Fatal & Severe Injuries are greater than zero
(green)	50-75% probability that crash type is over-represented
(yellow)	75+% probability that crash type is over-represented

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RESOLUTION NO. 23-45

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SAN CLEMENTE APPROVING THE LOCAL ROADWAY SAFETY PLAN (LSRP)

WHEREAS, Federal regulations require that each State has a Strategic Highway Safety Plan (SHSP) and while the SHSP is used as a statewide approach for improving roadway safety, a Local Roadway Safety Plan (LRSP) is a means for providing local and rural road owners with an opportunity to address unique highway safety needs in their jurisdictions while contributing to the success of the SHSP; and

WHEREAS, starting in 2022, the Highway Safety Improvement Program (HSIP) Calls for Projects, will require that an agency have an approved LRSP to be eligible to apply for federal HSIP funds; and

WHEREAS, on February 18, 2020, City Council authorized staff to submit a grant application to Caltrans for the LRSP development; and

WHEREAS, the Scope of Work of the project included preparation of the City's LRSP through acquiring and analyzing traffic and collision data, identifying partners to review the data, selecting emphasis areas, developing safety strategies and countermeasures, and adopting the final plan; and

WHEREAS, the LRSP will play a critical role in addressing traffic collision risks and may identify specific or unique conditions that contribute to traffic collisions within the City and will provide a blueprint for future projects with costs associated with each project; and

WHEREAS, the City previously determined that the preparation of an LRSP is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to State CEQA Guidelines Section 15301 (Class1: Existing Facilities) and Section 15306 (Class 6: Information Gathering); and

WHEREAS, on April 6, 2021, City Council approved the Professional Services Agreement (PSA) with Kimley-Horn and Associates to prepare the LRSP; and

WHEREAS, stakeholder meetings and field tours were held with representatives from various City Departments, Capistrano Unified School District, Orange County Sheriff's Department, Orange County Fire Authority, San Clemente's Public Safety Committee, and local pedestrian and bicycle activist to present the purpose of the LRSP, the results of the citywide crash pattern and trend analysis for crash severity and roadway user type (pedestrian and bicycle crashes), and priority locations identified from the citywide crash analysis; and

WHEREAS, stakeholder feedback packets were distributed to meeting attendees and guidance was provided for the feedback sought regarding priority locations, areas with known safety issues / high-risk behaviors including near schools, and desired roadway infrastructure improvements and safety programs and stakeholder packet responses were collected and addressed in the LRSP; and

WHEREAS, the approval of the LRSP would enable City staff to submit grant applications, with the goal of receiving funds to implement the LRSP identified priority projects.

NOW, THEREFORE IT IS HEREBY RESOLVED, ORDERED AND FOUND by the City Council of the City of San Clemente, State of California, as follows:

SECTION 1: Incorporation of Recitals.

The City Council hereby finds that all of the facts in the Recitals above are true and correct and are incorporated and adopted as fully set forth in this resolution.

SECTION 2: The San Clemente City Council hereby approves and accepts the Local Roadway Safety Plan (LRSP) prepared by Kimley-Horn and Associates dated December 2022.

SECTION 3: The City Clerk shall certify to the passage and adoption of this resolution and enter it into the book of original resolutions.

PASSED AND ADOPTED this _____ day of June, 2023.

ATTEST:

_____   _____
City Clerk of the City of San Clemente,   Mayor of the City of San Clemente,
California   California

STATE OF CALIFORNIA   )
COUNTY OF ORANGE   ) §
CITY OF SAN CLEMENTE   )

I, LAURA CAMPAGNOLO, City Clerk of the City of San Clemente, California, do hereby certify that Resolution No. 23-45 was adopted at a regular meeting of the City Council of the City of San Clemente held on _____ day of June 2023, by the following vote:

AYES:

NOES:

ABSENT:

_____
CITY CLERK of the City of
San Clemente, California

Approved as to form:

_____
Elizabeth A. Mitchell, City Attorney