



# 2022 LOCAL ROADWAY SAFETY PLAN

Final Report  
May 2022

PREPARED  
FOR

City of  
Laguna Niguel



**MARK THOMAS**

# CITY OF LAGUNA NIGUEL

## LOCAL ROADWAY SAFETY PLAN

### Acknowledgements

The 2022 Laguna Niguel Local Roadway Safety Plan was funded through a grant provided by the California Department of Transportation (Caltrans). The City of Laguna Niguel, in collaboration with multidisciplinary partner agencies and stakeholders, collaborated to develop a plan that increased roadway safety for people traveling within the city's roadway network. The study was managed by Jacki Scott, PE, TE and Kathy Nguyen, PE, TE of the City's Department of Public Works, in coordination with a Stakeholder Working Group (SWG). A consulting team led by Mark Thomas assisted the City of Laguna Niguel and the SWG in preparing the plan.

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## Introduction

### Executive Summary

The City of Laguna Niguel is committed to providing a vibrant quality of life for all residents, businesses, and visitors in a safe, beautiful, and involved community<sup>1</sup>. The Laguna Niguel Local Roadway Safety Plan (LRSP) supports that commitment to preserve quality of life by enhancing public safety on the City's roadway network. The purpose of this LRSP is to provide a proactive approach to addressing safety needs for motorists, bicyclists, and pedestrians on City of Laguna Niguel managed roadways. This LRSP is a living document which will be reviewed and updated accordingly during annual stakeholder meetings. Development of the LRSP was funded by the California Department of Transportation (Caltrans).

In an effort to identify and implement roadway safety improvements, the intent of this LRSP is to:

1. Evaluate and plan for focused improvements on local highway safety needs
2. Maintain eligibility for future Highway Safety Improvement Program (HSIP) grant funding opportunities
3. Evaluate crash history affecting all transportation modes
4. Identify crash types and locations
5. Develop recommendations for improvements
6. Develop a Working Group with stakeholders representing multiple disciplines

LRSPs have been proven to reduce fatalities on local roads in states that have implemented them; hence, implementation of this LRSP will improve transportation safety for the City's residents and visitors.

As part of this LRSP, a collision database was developed to identify locations with a history of collisions. The analysis found that 1,340 police-reported crashes occurred on the City of Laguna Niguel transportation network between January 1, 2015 and December 31, 2019. Of these, 61 resulted in fatalities or severe injuries (KSI crashes), which represent 5% of all crashes. The study network experiences an average of 268 crashes and 2 to 3 fatalities per year. The most common type of violation for KSI crashes was driving under the influence (DUI), which represents 25% of KSI crashes, followed by automobile right of way, representing 20% of KSI crashes. This LRSP identified collision hotspot locations to be prioritized for project submission to HSIP infrastructure funding, which include:

#### Intersections

- Cabot Road/Crown Valley Parkway
- Moulton Parkway-Golden Lantern/Crown Valley Parkway
- Alicia Parkway/Crown Valley Parkway
- Alicia Parkway/Aliso Creek Road
- Alicia Parkway/Bike Crossing (south of Aliso Creek Road)
- Alicia Parkway/Niguel Road
- Greenfield Drive/Crown Valley Parkway
- La Gracia-Rancho Azul/Rancho Niguel Road

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<sup>1</sup> Laguna Niguel: 2050 - Pursuit of Happiness Strategic Plan

### Roadways

- Paseo de Colinas
- Crown Valley Parkway
- Moulton Parkway
- Camino del Avion
- Golden Lantern
- Alicia Parkway
- Aliso Creek Road between Alicia Parkway and La Paz Road

Additionally, non-infrastructure strategies have been identified in conjunction with key stakeholders and timeframes for implementation.

### Study Parameters

This LRSP evaluates collision history and provides countermeasures for local, collector, and arterial roadways within the City of Laguna Niguel. The collision database is a compilation of collisions on City managed roadways between January 1, 2015 and December 31, 2019. The primary source of the collision database was the Statewide Integrated Traffic Records System (SWITRS), consisting of police-reported collisions throughout the State of California.

### LRSP Development Process

This LRSP project kicked off in April 2021 with a meeting between the City of Laguna Niguel Public Works Department staff, Orange County Sheriff's Department representatives, and consultants. The team discussed the City's goals for the project, confirmed an outreach and engagement schedule, developed a Stakeholder Working Group invitee list, and reviewed initial crash analysis data on the City's roadway network.

### Stakeholder Working Group

The project created a Stakeholder Working Group (SWG) consisting of multi-disciplinary decision-makers and partners who have played a key role in development of the LRSP. The SWG has furthered the development process by helping to plan, implement, and evaluate methods to achieve the LRSP's Vision, Mission, and Goals.

SWG organizations were selected for their influence over the 5 E's of transportation safety and ability to coordinate specialized services for the City of Laguna Niguel within their respective organizations.

#### Five E's of transportation safety:

- Education: Training sessions and campaigns to educate about safe transportation habits.
- Enforcement: Reduce traffic violations by working with local law enforcement.
- Engineering: Implement infrastructure improvements proven to reduce collisions.
- Emergency Services: Provide emergency responders streamlined access to reach collision sites.
- Emerging Technology: Incorporate new technology in capital improvements to increase safety.

SWG representatives customized the LRSP non-infrastructure recommendation, timelines, and responsibilities according to staff and resource availability. Stakeholders will convene annually, at the request of the City of Laguna Niguel, to confirm the safety goals and direction of the LRSP.

A total of four SWG meetings occurred on June 10, July 13, August 18, and September 15, 2021 to review crash data, define the LRSP's Vision, Mission, and Goals, and organize non-infrastructure (NI) programs to address the emphasis areas. The SWG collaborated to define lead and support agencies, resources, communication methods, and implementation timelines for each NI program. Involvement and continued participation by the SWG members are documented through letters of support included in Appendix A.

**Stakeholder Membership included representatives from the following organizations:**

City of Laguna Niguel  
Capistrano Unified School District  
Falck/Care Ambulance  
Orange County Fire Authority  
Orange County Healthcare Agency  
Orange County Transportation Authority  
Orange County Sheriff's Department

**Vision, Mission, and Goals**

The LRSP's Vision, Mission, and Goals were developed through a collaborative process between City representatives and SWG members. The resulting feedback between City staff and SWG members identified the following:

**Vision**

*The City of Laguna Niguel is dedicated to a roadway network that provides safe travel throughout the city.*

**Mission**

*Promote safety and invest resources to reduce traffic hazards.*

**Goals**

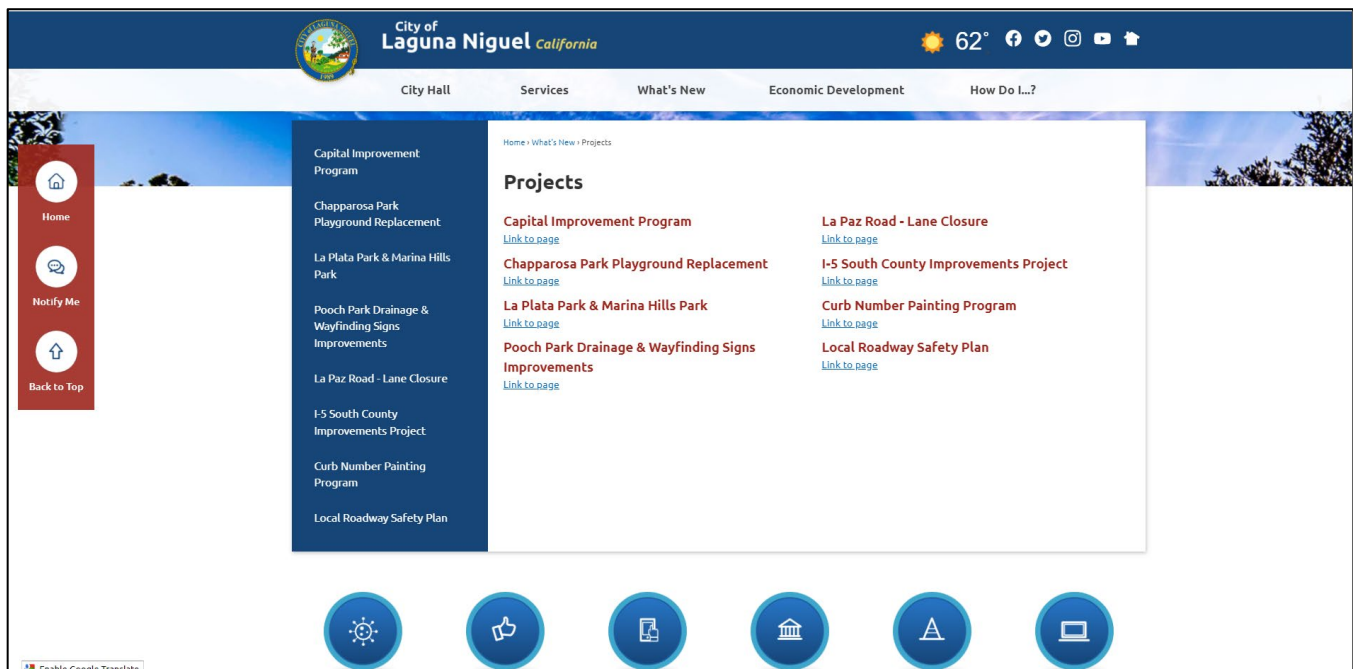
1. *Create a culture of safe travel behaviors*
2. *Educate the community about safe travel practices*
3. *Reduce severe and fatal crashes*
4. *Maintain a safe, thoughtful, and well-managed roadway network*
5. *Collaborate with multidisciplinary partners*
6. *Implement proven cost-effective treatments*

## Community Engagement

Development of the LRSP has included public input during the following key events:

1. **Traffic and Transportation Commission:** Following development of the draft LRSP with the SWG, the report was presented at the Laguna Niguel Traffic and Transportation Commission on December 8, 2021. Comments received focused upon clarifying recent efforts and documenting the statewide published crash rankings, recommendations for education to community groups, and confirming the report is a living document that can evolve based on locally determined priorities.
2. **Public Comment:** A Public Review Draft LRSP was posted to the City website for review by community members for approximately four weeks between March and April 2022. Comments received were supportive of coordination with local schools, safety for bicyclists, concerns related to electric powered bicycles, enhancing separation between motorists and cyclists, and pedestrian access to Laguna Niguel Regional Park.
3. **City Council:** Presentation of the Draft Final LRSP is planned in Spring 2022 for comments and adoption. The City Council and public will be provided an opportunity to comment on the item and engage in the discussion of the key actions.

*Figure 1 City Website Screenshot Showing Posting of Public Review Draft in March 2022*



## Existing Safety Efforts

The City of Laguna Niguel has demonstrated a history of promoting safety and improving the transportation network aligned with the City's Strategic Plan and the LRSP vision. Existing efforts have included traffic safety studies at multiple locations citywide, education programs for youth and seniors, and infrastructure improvements, such as installation of traffic signal pre-emption, audible pedestrian signals (APS), buffered bike lanes, raised medians, speed feedback signs, and traffic calming measures.

### Traffic Safety Studies

Traffic Safety Studies are an initiative to evaluate roadway concerns and identify solutions. City staff has performed data collection, field observations, and analyses to address traffic concerns at multiple locations citywide:

Charter School Circulation; April 2020: The City evaluated parking and traffic conditions in the neighborhoods surrounding Community Roots Academy (CRA) and Orange County Academy of Sciences and Arts (OCASA) charter school campuses. The surrounding neighborhood is impacted by pick-up and drop-off parking and traffic, teacher and staff overflow parking, and blocked driveways and streets. Existing conditions were examined through an outreach workshop, field observations, and average daily traffic (ADT) volumes to provide recommendations for improving traffic conditions. Recommendations in the Charter School Circulation Study include installation of all-way stop signs at the school exit driveway, school-staffed enforcement of pick-up and drop-off locations, and application of red curb paint where motorists block driveways.

Intersection Traffic Studies: The City conducted traffic operations and safety evaluations at Alicia Parkway and Crown Valley Parkway intersection (March 2020), Aliso Niguel and Moulton Parkway intersection (March 2020), and Westgreen Drive and Club House Drive (September 2020). The studies were conducted using traffic volume data, collision data, and field reviews. Existing conditions were analyzed to provide recommendations for improved traffic safety at these intersections.

Pacific Island Drive; July 2020: The City conducted an evaluation of Pacific Island Drive between Casalero Drive and Alicia Parkway Drive based on resident feedback concerning motorist speeds and visibility along the corridor. The Pacific Island Drive evaluation provided a summary and analysis of existing conditions, collision data, field observations, and recommendations for future improvements. Recommendations included high visibility pedestrian warning signs, enlarged speed limit signs, and bicycle lane buffers.

Clubhouse Stop Signs; June 2021: The City received requests to install stop signs at the intersections of Club House Drive/Via Lindosa and Club House Drive/Calle Barbosa. A stop sign analysis evaluated existing conditions at both intersections to determine the necessity of installing new stop signs. Based on guidance from the City's Traffic Manual and the California Manual on Uniform Traffic Control Devices (CA MUTCD), the study determined that limited visibility and vehicle speeds on Club House Drive justified installation of stop signs on both Via Lindosa and Calle Barbosa at the intersection with Club House Drive.

Rancho Niguel Road & Rancho Azul Corridor Operations and Safety Study; August 2020: An operations and safety study was conducted for the Rancho Niguel Road corridor due to concerns from community members regarding motorist speeds, traffic safety, and signal control at intersections. Traffic signal warrant analyses were completed for the unsignalized intersections of Rancho Niguel Road/Rancho De Linda, Rancho Niguel Road/La Garcia, and Rancho Niguel Road/Rancho Azul. The study concluded that the Rancho Niguel/La Garcia intersection satisfied the signal warrants, and recommended installation of new signs and roadway striping modifications.

Costco Heather Ridge Circulation and Signal Warrant Analysis; July 2021: A signal warrant analysis was completed for Heather Ridge/Costco driveway intersection. The analysis included review of average daily traffic (ADT), collision data, and field observations. Results of the study indicate multiple treatment types are applicable at the intersection to improve traffic flow, including a traffic signal, signage, and a designated left turn pocket. The City of Laguna Niguel and Costco are continuing to coordinate on the study's results and next steps for improved traffic operations.

*Figure 2 Rancho Niguel Road & Rancho Azul Corridor Operations and Safety Study Excerpt*





### **HSIP Grant Funding Pursuits**

In late 2020, the City of Laguna Niguel submitted an HSIP grant application to improve Rancho Niguel Road corridor, including a traffic signal at La Gracia-Rancho Azul and roadway lane striping modifications.



### **Paseo de Colinas Safety Barrier**

In 2020, the City of Laguna Niguel installed a concrete safety barrier to address history of crashes concentrated at the site location. The barrier reduces severity of crashes near the crossing of the creek and railroad tracks. This is an example of data-driven engineering treatments applied to address a common, specific type of vehicle crash.



### **Bicycle Lane Improvements**

The City has tested the installation of buffers between motor vehicle travel lanes and existing on-street bike lanes on Alicia Parkway in 2020 and Crown Valley Parkway in 2019. The use of buffered bike lanes has enhanced the separation between cyclists and motorists along these roadways and, in specific areas, has utilized 11-foot wide travel lanes. The initial demonstration projects have been implemented without documented motorist concerns, achieving an improved condition for both motorists and cyclists.



### **High Visibility Crosswalk**

The City implemented a pilot program in 2020 applying "continental" crosswalks, proven to increase effectiveness in visibility of people crossing the street. This treatment was implemented at Alicia Parkway and Aliso Creek Road, a high-use location by youth, bicyclists, and pedestrians. This treatment raised crosswalk visibility, provided for a safer street crossing, and has been well-received by the community.



### **Audible Pedestrian Signals**

Accessible Pedestrian Signals (APS) are pedestrian push buttons that communicate when it is safe to cross the street in a non-visual manner, benefitting safety for the visually impaired community when crossing roadways at traffic signals. The City has implemented APS equipment at approximately 20 signalized intersections, most recently in 2021, with plans to install at another 15 locations.



### Speed Feedback Signs

Speed feedback signs (SFS) have been installed by the City, most recently in 2021, to reduce speeding behavior through improved driver awareness of actual speed versus posted speed limits. Locations where SFS have been installed or planned for installation include:

#### Rancho Niguel Road

Facing Eastbound Traffic, West of Rancho de Linda.

Facing Westbound Traffic, at Rancho de Linda.

#### Pacific Island Drive

Facing Northbound traffic, North of Starview Lane.

Facing Southbound traffic, North of Starview Lane.

#### Golden Lantern

Facing Northbound traffic, at Dunes.

#### Aliso Creek Road

Facing Eastbound traffic, East of Niguel Heights Boulevard.

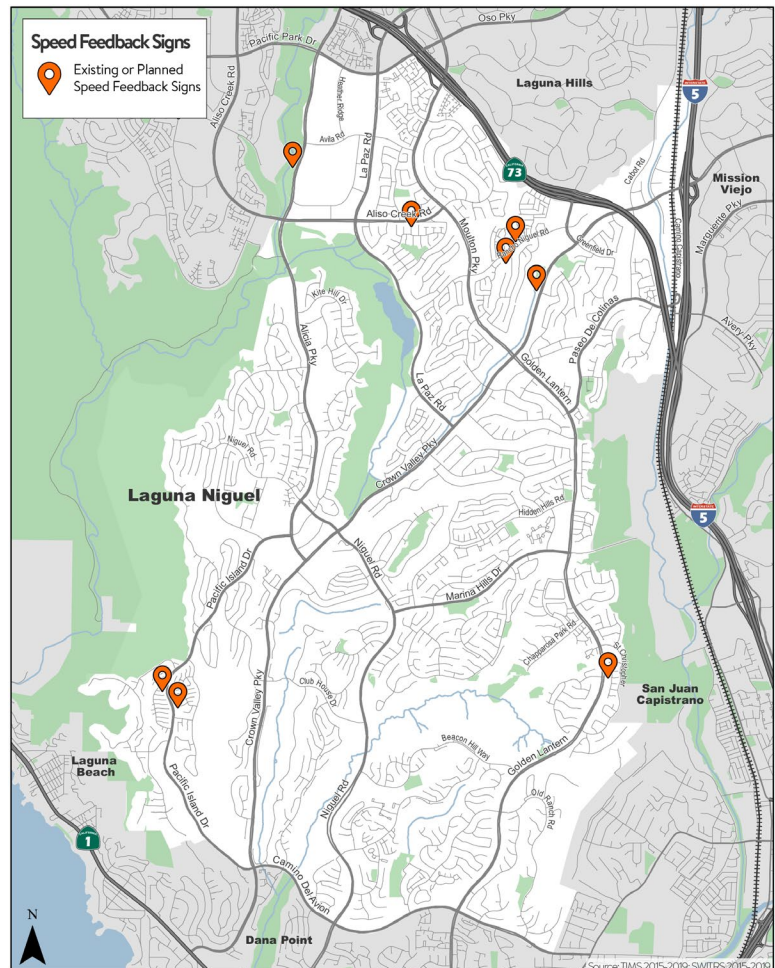
Facing Southbound traffic, North of Skate Park Way.

#### Crown Valley Parkway

Facing Southbound Traffic, at Glenrock.

Existing SFS have proven to provide speed reduction benefits. Permanent or temporary SFS will continue to be implemented in areas with high numbers of speed related crashes.

*Figure 3 Existing and Planned Speed Feedback Signs*





### **Traffic Signal Pre-Emption and Traffic Signal Synchronization**

Traffic signal pre-emption systems provide remote communication between the traffic signal and an approaching emergency response vehicle, allowing the response vehicle control over the signal phasing. The use of pre-emption equipment is estimated to reduce emergency vehicle response times by up to 25%. The City has proactively installed traffic signal pre-emption at all City-managed traffic signals.

The Regional Traffic Signal Synchronization Program (RTSSP) and Traffic Light Synchronization Program (TLSP) are initiatives by the Orange County Transportation Authority to coordinate signals along 750 miles of roadway within Orange County. The two programs reduce congestion, idling at the intersection, and increase vehicle capacity along a corridor by synchronizing signals to turn green before vehicles arrive at the intersection. The following list identifies projects completed by the City of Laguna Niguel to synchronize corridors and the year in which new signal timing was implemented or is planned for implementation:

- TLSP Projects
  - Pacific Park / Oso Parkway (TLSP Pilot project along with Euclid) 2008
  - 1st Alicia (Crown Valley to Olympiad) 2009
- RTSSP Projects
  - 1st Moulton/Golden Lantern (Camino Del Avion to SR55) 2010
  - Crown Valley (PCH to Antonio) 2013; (Operations and Maintenance) 2016
  - La Paz Road (Crown Valley to Felipe) 2014; (Operations and Maintenance) 2017
  - 2nd Moulton/Golden Lantern (Camino Del Avion to Lake Forest) 2017; (Operations and Maintenance) 2020
  - Alicia (Crown Valley to Rustic Oak) 2019; Operations and Maintenance) 2022
  - Aliso Creek Road (Moulton to El Toro) 2022

### **Development Review**

The City of Laguna Niguel has an established process to review land development applications. Review considers the effect on traffic operations and potential traffic impacts consistent with policies identified in the City's General Plan. Additionally, City staff work with applicants to determine how the project site plan provides multi-modal access for people arriving to the project site via various modes such as driving, walking, cycling, or from transit. Collectively, the review process evaluates potential impacts to the transportation network, site access, and internal traffic operations to ensure a well developed project is built consistent with the City's vision for a high quality community.

## Youth & Senior Education Efforts

City staff have annually coordinated with Capistrano Unified School District (CUSD) staff and local school principals to evaluate traffic operations at local schools and identify efforts to improve circulation and safety for youth and parents traveling to/from school. In 2021, the City created updated Safe Routes to Schools maps and traffic safety brochures for distribution to school audiences. Additionally, City staff have made presentations to youth discussing the role of City government to manage the transportation network and provide safety guidance.

The City of Laguna Niguel Sea Country Senior Center has held various in-person and online Driver's Education Courses, including a California Department of Motor Vehicles (DMV) written test preparation course, Drivers Safety Course hosted by the American Association of Retired Persons (AARP), presentation by the California Highway Patrol (CHP), and an online guide by the DMV. These courses are available to senior drivers throughout the City of Laguna Niguel.

Figure 4 City prepared School Zone Brochure



Figure 5 Laguna Niguel Senior Resource Guide - Transportation - Cover Page

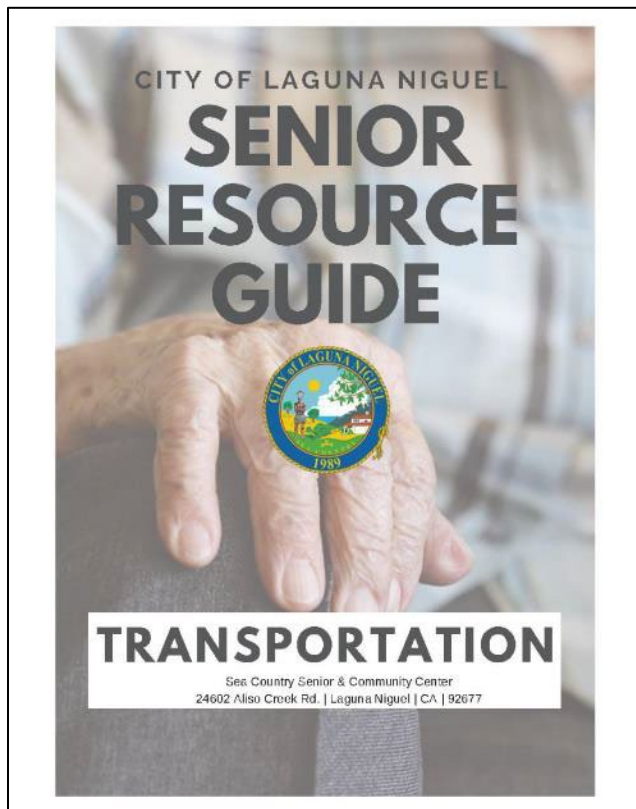
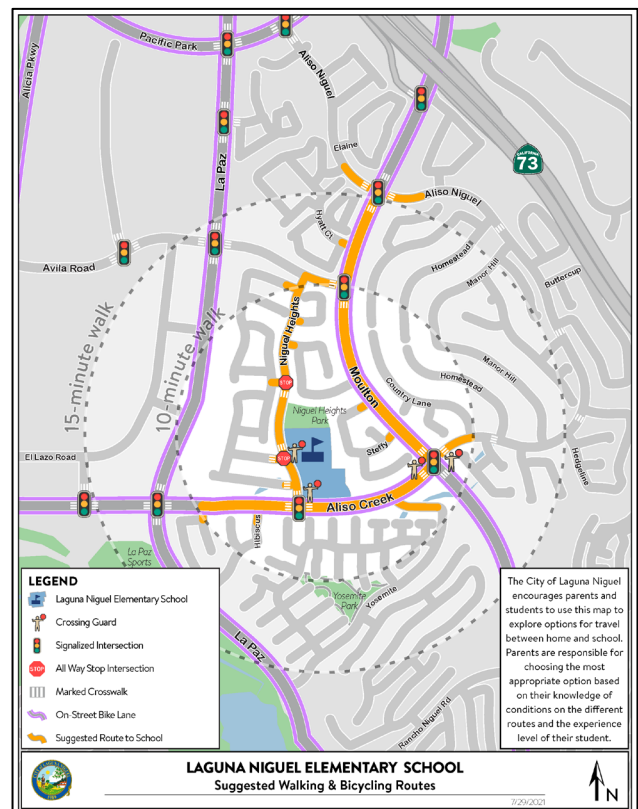


Figure 6 Suggested Walking and Bicycling Routes – Laguna Niguel Elementary School



## Citywide Collision Data

### Data Collection

This LRSP was developed using a data-driven approach toward identifying locations and behaviors contributing to collisions on the City's roadway network. Resources utilized include the Statewide Integrated Traffic Records System, Office of Traffic Safety Collision Data, and direct input from the Orange County Sheriff's Department.

### Statewide Integrated Traffic Records System

A collision database was comprised of local police-reported crashes as published by the Statewide Integrated Traffic Records System (SWITRS) between January 1, 2015, and December 31, 2019. SWITRS database collisions without geocoordinates were located within the City using the Transportation Injury Mapping System<sup>2</sup> (TIMS) matching Case ID. During screening, few crash incidents needed subsequent identification of geocoordinates based on identified primary road, secondary road, distance from intersection, and direction from intersection. If desired, future updates to the LRSP can supplement the statewide published crash data through review of injury data provided by the local ambulance provider.

A records evaluation provided a descriptive analysis of crash data at the citywide level and crash density maps for primary collision factors, crash types, roadway crashes, intersection crashes, and total crashes. The collision data forms the basis for identifying crash-based countermeasures for implementation at focus corridors and intersections, as well as emphasis area recommendations.

### Office of Traffic Safety Collision Data

Additional information on citywide collisions is provided by the California Office of Traffic Safety (OTS). OTS develops annual collision rankings for all California cities and counties.

OTS rankings from 2018, the latest year available, indicate that Laguna Niguel ranks 99<sup>th</sup> out of 102 similarly sized jurisdictions (with a larger number indicating positive comparative results). The positive outcome of the statewide OTS rankings indicate the crash history within the City of Laguna Niguel is low when compared to cities of similar size.

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<sup>2</sup> TIMS is an online application by SafeTREC that geocodes and assigns coordinates to SWITRS collision data, excluding property damage only collisions.

Figure 7 Office of Traffic Safety 2018 Crash Rankings for the City of Laguna Niguel

Agency	Year	County	Group	Population (Avg)	DVMT
Laguna Niguel	2018	ORANGE COUNTY	C	65363	1051228

TYPE OF CRASH	VICTIMS KILLED & INJURED	OTS RANKING
Total Fatal and Injury	233	96/102
Alcohol Involved	19	94/102
Had Been Drinking Driver < 21	1	62/102
Had Been Drinking Driver 21 – 34	3	100/102
Motorcycles	10	90/102
Pedestrians	5	102/102
Pedestrians < 15	0	92/102
Pedestrians 65+	1	84/102
Bicyclists	9	87/102
Bicyclists < 15	2	39/102
Composite	79	99/102

TYPE OF CRASH	FATAL & INJURY CRASHES	OTS RANKING
Speed Related	30	97/102
Nighttime (9:00pm – 2:59am)	17	96/102
Hit and Run	9	98/102

TYPE OF ARRESTS	ARRESTS	OTS RANKING*
DUI Arrests	109	32/102

## Police Traffic Patrol Identified Improvement Locations

Orange County Sheriff's Department (OCSD) traffic patrol staff provided input based on observations at the following locations for potential improvement:

Alicia Parkway/Aliso Creek Road  
 Alicia Parkway/Bike Crossing (south of Aliso Creek Road)  
 Alicia Parkway/Niguel Road  
 Aliso Creek Road between Alicia Parkway and La Paz Road  
 Golden Lantern/Crown Valley Parkway  
 Greenfield Drive/Crown Valley Parkway

## Crash Analysis Results

### Crash Data Charts

Crash data charts provide graphic illustrations of crash types and primary collision factors and informed decisions the LSRP's developing emphasis areas. The dataset indicates crashes in Laguna Niguel occur at an average of 268 total collisions and 2 to 3 fatal or severe injury collisions (KSI) per year.

Figure 8 Five-Year Collision Trendline

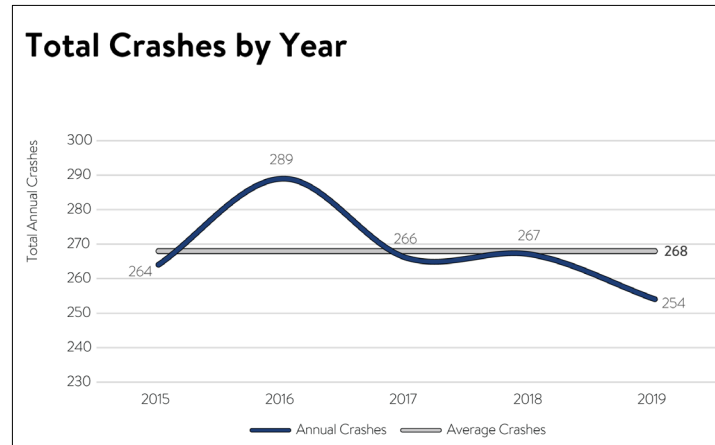


Figure 10 Total and KSI Collision Types

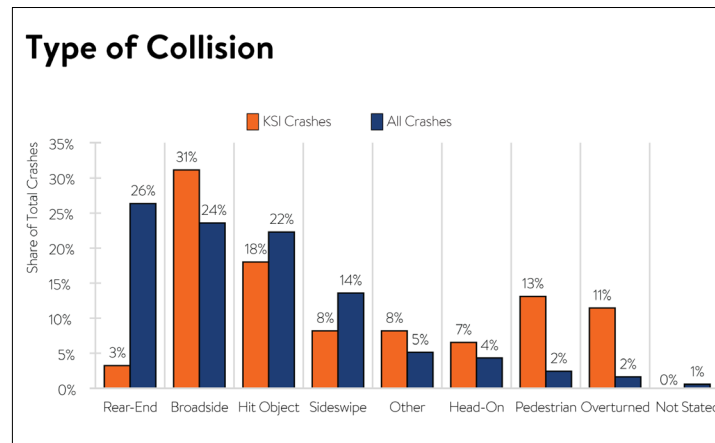


Figure 9 Five-Year Severity Trendlines

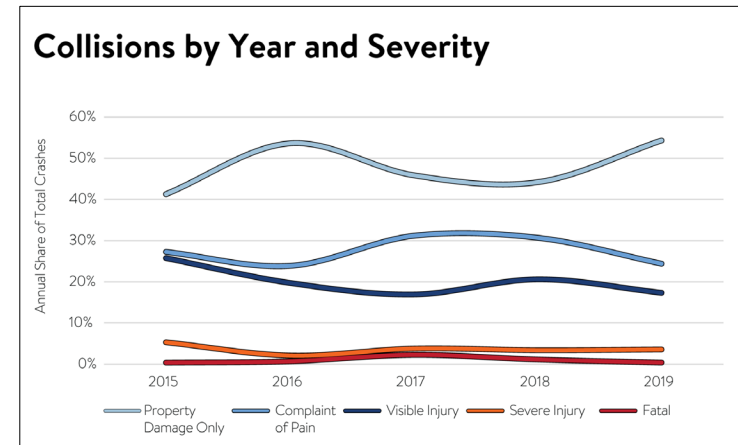
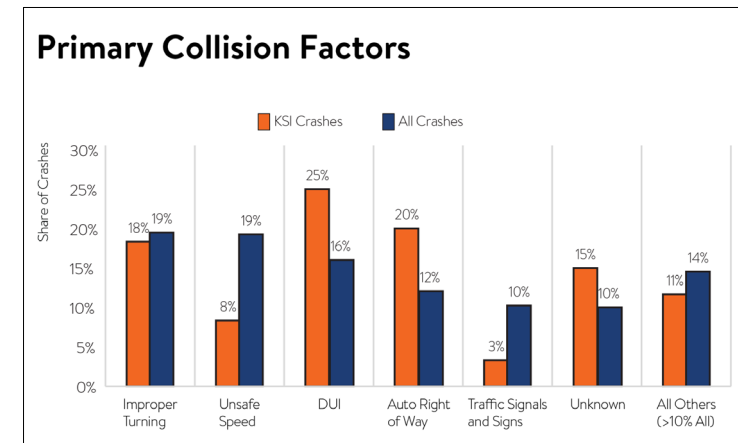


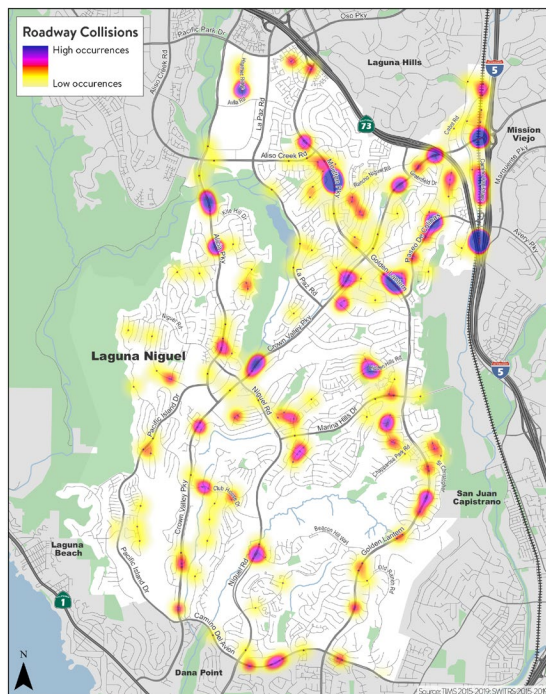
Figure 11 Total and KSI Primary Collision Factors



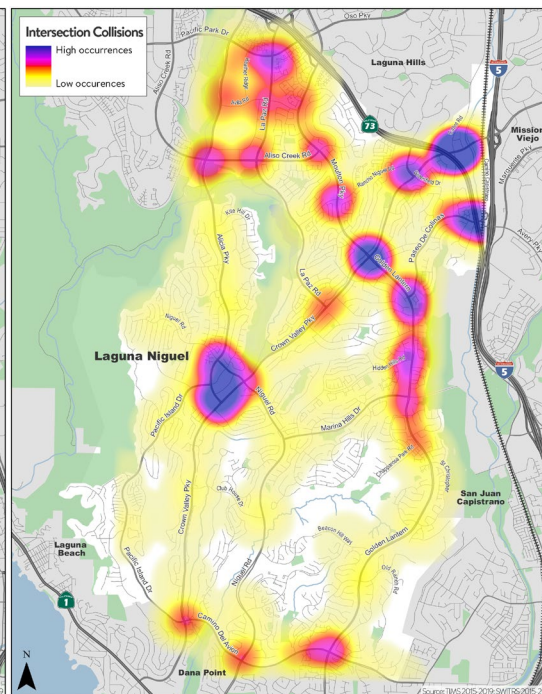
## Crash Data Maps

Collisions were mapped using Geographic Information Systems (GIS) software to illustrate the distribution of collisions within the dataset. Heatmaps were generated from the crash data to illustrate the density of collisions citywide and filtered for roadways or intersections.

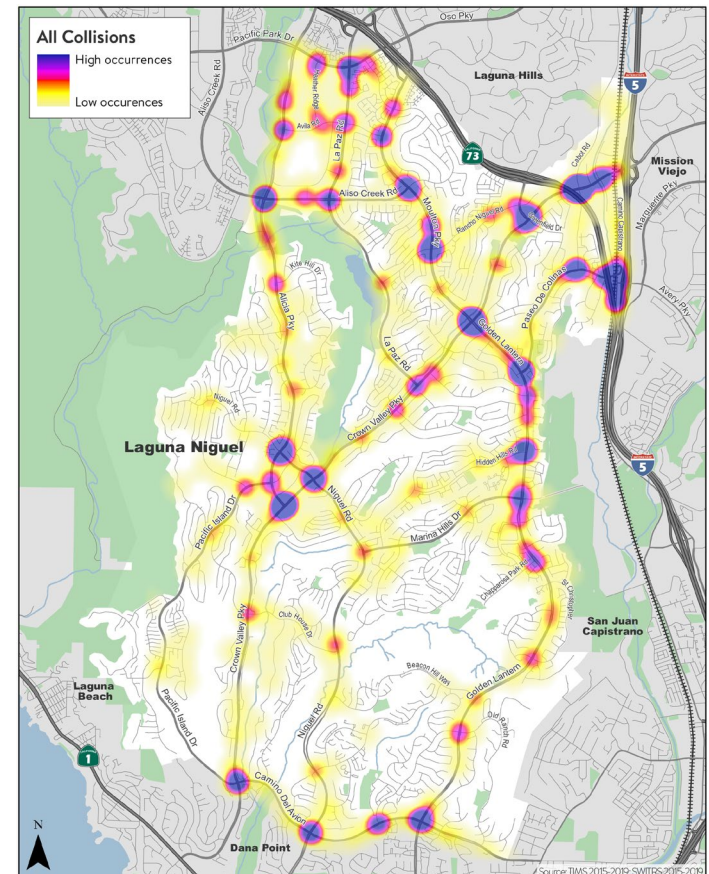
*Figure 12 Heatmap of All Roadway Collisions*



*Figure 13 Heatmap of All Intersection Collisions*



*Figure 14 Heatmap of All Citywide Collisions*



## Crash Tree Diagrams

Crash tree diagrams illustrate possible outcomes of events by following possible paths along the “tree” branches. The diagrams illustrate probability of varying crash types as defined by mode, location, crash type, and primary collision factor. Crash tree diagrams provide a detailed perspective regarding travel behaviors throughout the network.

The crash trees include total crashes as well as fatal and serious injury crashes; however, the major cause of the crash and manner of crash are reported only for total crashes. In the City, the fatal and serious injury crashes had similar major causes and manners of crash as the total crashes.

Figure 15 Crash Tree Diagram of Collisions Involving a Pedestrian, Bicyclist, or Motorcyclist

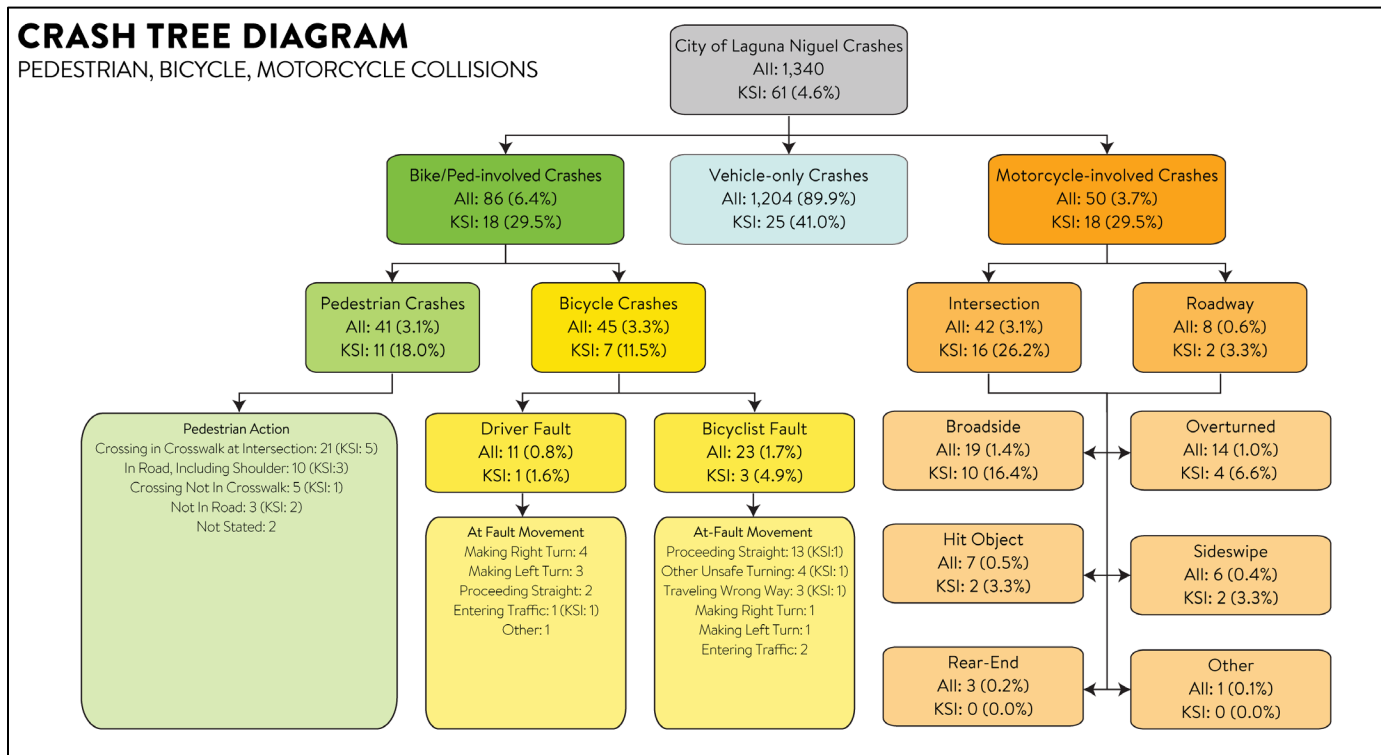
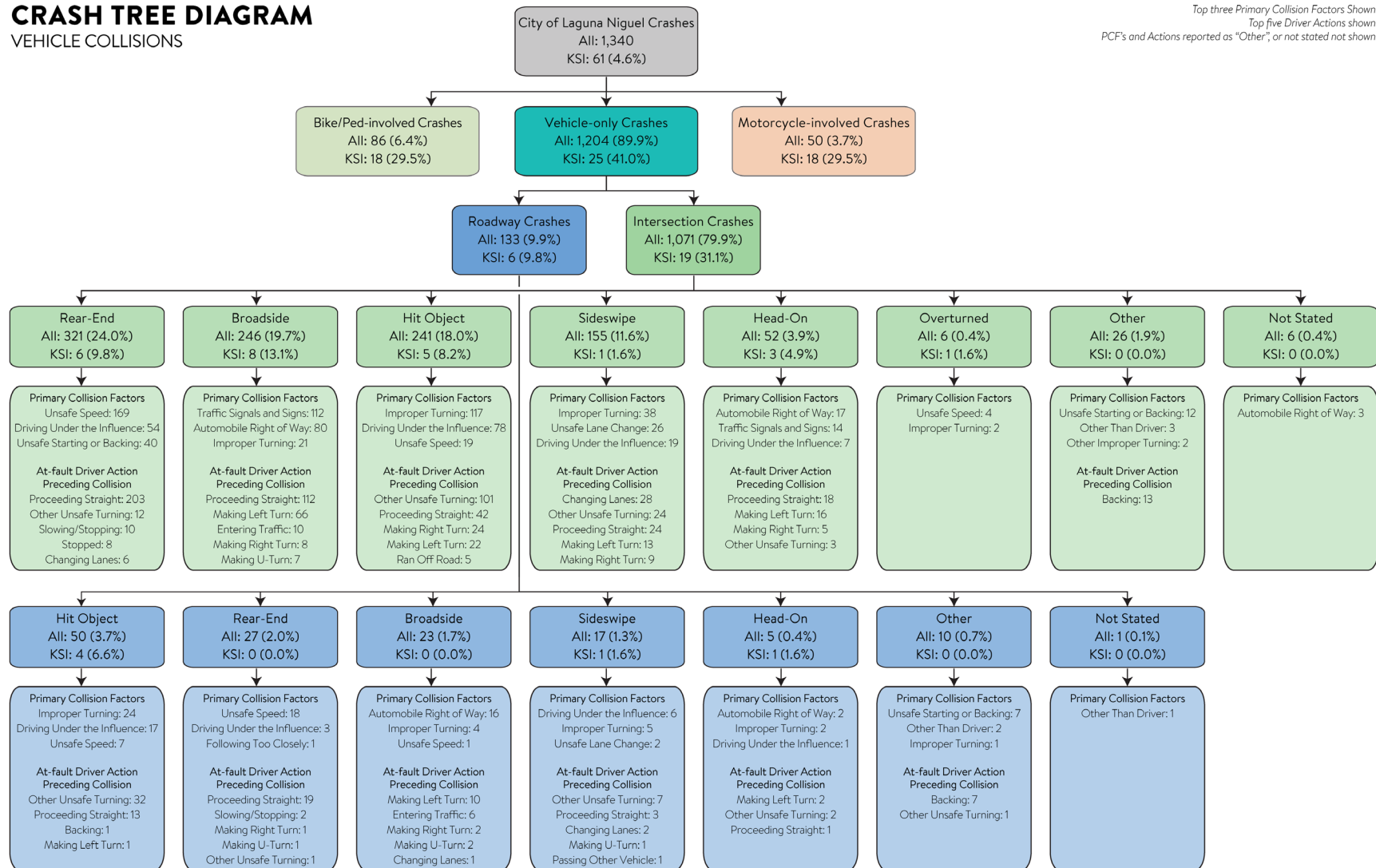


Figure 16 Crash Tree Diagram of All Collisions Involving Motor Vehicles Only

## CRASH TREE DIAGRAM

### VEHICLE COLLISIONS



Top three Primary Collision Factors Shown.  
Top five Driver Actions shown.  
PCF's and Actions reported as "Other", or not stated not shown.

## High Injury Network Analysis

To identify high-crash locations within the City, a High-Injury Network (HIN) methodology was applied to the 5-year crash dataset. Crashes involving a fatality were weighted at 3.0, and crashes involving a severe injury were weighted at 1.5. Crashes were identified as intersection or roadway crashes when location within or in extent of 500-feet of an intersection, respectively. To calculate the density of crashes, GIS was applied to measure the linear distance of roadway centerline miles within the City. Roadway crashes were then divided by the number of centerline miles within the City to identify crashes per mile.

The following three (3) intersections had the most reported crashes:

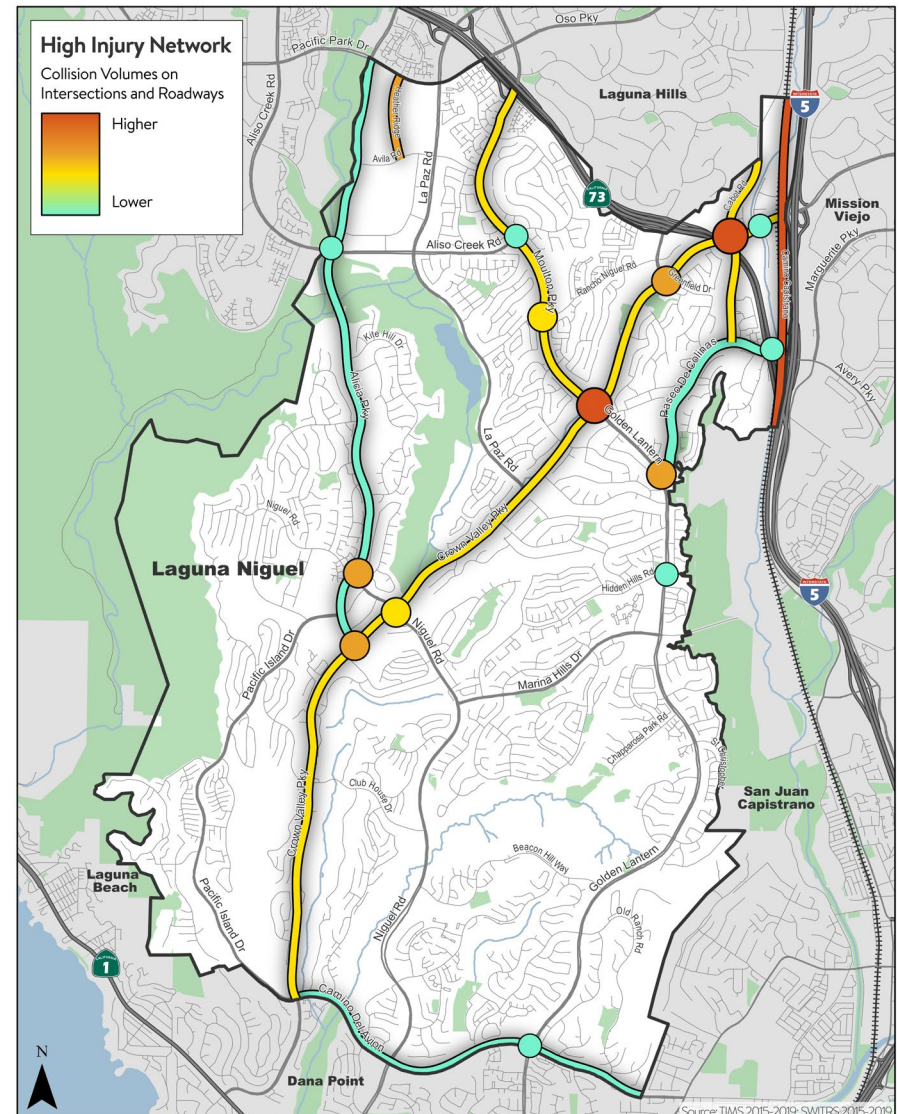
1. Cabot Road/Crown Valley Parkway
2. Moulton Parkway-Golden Lantern/Crown Valley Parkway
3. Alicia Parkway/Crown Valley Parkway

The following six (6) roadways had the highest volume of reported severity-adjusted crashes:

1. Paseo de Colinas\*
2. Crown Valley Parkway
3. Moulton Parkway
4. Camino del Avion
5. Golden Lantern\*
6. Alicia Parkway

\*A review of collisions on Paseo De Colinas, between El Sur and Camino Capistrano, found 59% of motorists were descending the hill prior to causing a collision. The slope of the Paseo De Colinas hill is approximately 6% between El Sur and Camino Capistrano. Similar percentages are expected descending Golden Lantern past Hidden Hills Road.

Figure 17 High Injury Network Intersections and Roadways



## Emphasis Area Strategies

During input from the SWG members and review of documented crash data between 2015 and 2019, the following seven (7) project emphasis areas were identified to improve travel safety:

1. Speed Management
2. Reduce Impaired Driving
3. Reduce Distracted Driving
4. Eliminate High-Crash Locations
5. Improve Safety at Intersections and Around Schools
6. Increase Active Transportation Road User Safety
7. Increase Safe Driving in Older Adults and Teens

The following details recommended actions to address the LRSP emphasis areas based on input and information provided by the SWG. While the SWG provided input to prioritize the following emphasis areas, additional transportation safety improvements can be implemented through regular review and evaluation by City staff.

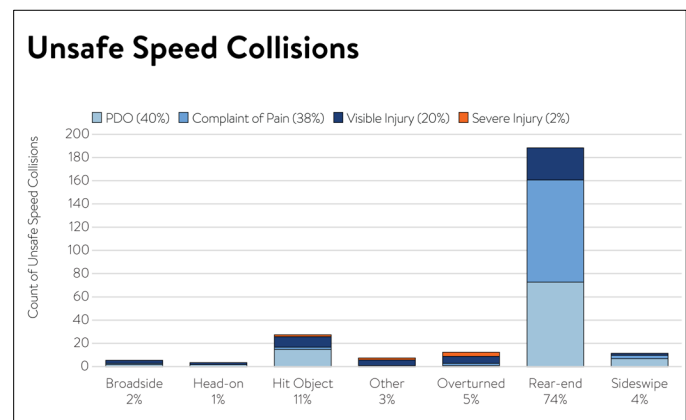
### Emphasis Area 1: Speed Management

- Collisions caused by unsafe speed are the second most-common primary collision factor and represent 19% of the dataset.
- Unsafe speeds most often result in rear-end collisions and have caused zero fatalities between 2015 and 2019.
- Approximately 2% of unsafe speed collisions result in a KSI.

#### Goal for Emphasis Area 1:

- Reduce Unsafe Speed collisions from 2% KSI to 0% KSI

*Figure 18 Severity and Crash Type in Unsafe Speed Collisions*



**Strategy for Emphasis Area 1:** Reduce motorist speeding through education, enforcement, and infrastructure improvements at specific locations.

**Action 1.1:** Community Education Campaigns. Leverage existing OTS resources and implement a citywide campaign to address speeding behavior. This campaign will target all motorists throughout the community, with an emphasis on school communities and will be distributed through digital media and printed brochures.

**Table 1**      **Action 1.1 Programming**

<b>Lead</b>	City of Laguna Niguel	Develop and distribute annual content and distribution methods
<b>Support</b>	Capistrano Unified School District	Distribute printed material to new drivers (Juniors & Seniors) at high schools annually concurrent with issuance of parking permits.  Promote City-prepared "School Traffic Safety" brochure and content through CUSD Communications.
	Orange County Health Care Agency	Review messaging and content in advance of publishing.  Promote content with local 4th District Parent Teacher Association (PTA) representatives & after school programs
<b>Funding</b>	Office of Traffic Safety	
<b>Timeline</b>	1 <sup>st</sup> Year	

**Action 1.2:**      Police Enforcement. Focus police enforcement on roadways that frequently experience high motorist vehicle speeds or have high numbers of speed-related crashes.

**Table 2**      **Action 1.2 Programming**

<b>Lead</b>	Orange County Sheriff's Department	Conduct speed enforcement on roadways with high speeding behavior and high speed-related crashes.  Pursue grant funding to conduct the program.
<b>Support</b>	City of Laguna Niguel	Provide annual crash data to inform the locations and time frames to effectively implement speed enforcement campaigns.
<b>Funding</b>	Office of Traffic Safety	
<b>Timeline</b>	1-5 Years	

**Action 1.3:**      Infrastructure Treatments. Implement infrastructure treatments proven to reduce unsafe vehicle speeds and lower crash risk factors at locations where unsafe speed collisions most commonly occur. Unsafe Speed collisions occurred most frequently on Crown Valley Parkway (26%), Golden Lantern (14%), and Alicia Parkway (13%).

**Table 3**      **Action 1.3 Programming**

<b>Lead</b>	City of Laguna Niguel	Pursue grant, local, or regional funding for infrastructure treatments.  Implement infrastructure treatments at key locations.
<b>Support</b>	All Partners	Provide Letter of Support for grant pursuits
<b>Funding</b>	Highway Safety Improvement Program State and Regional Grants	
<b>Timeline</b>	1 <sup>st</sup> -5 Years	

## Emphasis Area 2: Reduce Impaired Driving

- Collisions caused by driving under the influence are the third most-common primary collision and represent 16% of the dataset.
- Laguna Niguel ranked 62<sup>nd</sup> out of 102 for collisions involving an intoxicated driver under the age of 21 per OTS rankings.
- Approximately 7% of driving under the influence collisions result in a KSI.

### Goal for Emphasis Area 2:

- Reduce DUI KSI crashes from 7% to 4% or lower.
- Provide vouchers for 100 sober free rides home in the first 6 months of program implementation.

**Strategy for Emphasis Area 2:** Increase access to sober rides, implement targeted campaigns, and enact sobriety checkpoints citywide.

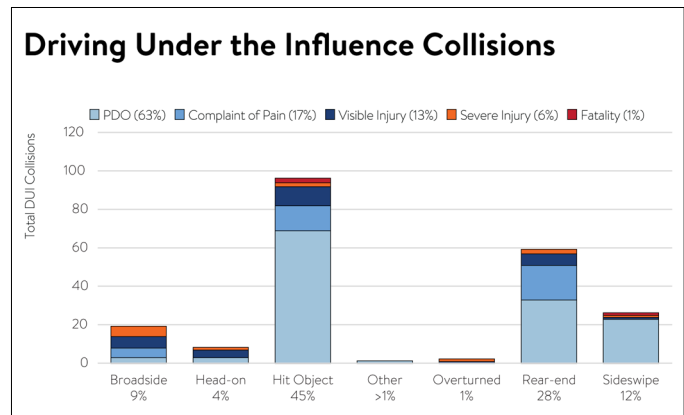
**Action: 2.1:** Ride Hail Promotions. Coordinate with a ride-hail company (e.g., Uber, Lyft, etc.) to provide citywide vouchers for a sober ride home, eligible for riders ages 16 and up. Vouchers may be eligible year-round or during critical periods of the year, such as holidays and regional events. Program advertising will be strategically placed near locations where driving under the influence is likely to originate. Distribution methods include digital and printed media such as physical advertisements, social media, subscriber newsletters, and news coverage.

**Table 4** *Action 2.1 Programming*

<b>Lead</b>	City of Laguna Niguel	Coordinate with ride-hail service providers.
<b>Support</b>	Orange County Transportation Authority	Provide guidance and lessons learned to City based on prior joint OCTA/City of San Clemente ride-hail voucher program.
	Orange County Sheriff's Department	Provide guidance regarding DUI trip origins. Participate in distribution of vouchers
<b>Funding</b>	Office of Traffic Safety	
<b>Timeline</b>	1-5 Years	

**Action 2.2:** Focused Education Campaigns. Leverage Office of Traffic Safety (OTS) resources and implement a citywide campaign to address impaired driving. Communication methods include digital media, social media, and video advertisements.

*Figure 19 Severity and Crash Type of DUI Collisions*



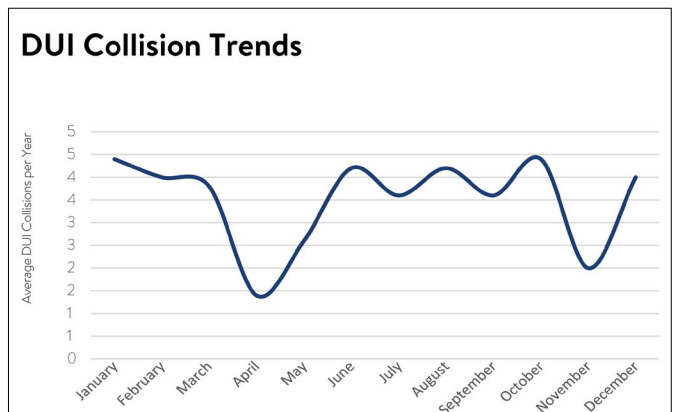
**Table 5** *Action 2.2 Programming*

<b>Lead</b>	City of Laguna Niguel	Develop and distribute content and distribution methods.
<b>Support</b>	Orange County Transportation Authority	Provide resources from past, existing, or future campaigns to supplement city efforts.  Consider promotion of campaign messaging on interior/exterior of OCTA buses where feasible.  Consider a full-wrap bus to promote a campaign subject to review of financial impacts.
	Orange County Sheriff's Department	Participate in campaign funding pursuit, content development, distribution methods, and promotion.
<b>Funding</b>	Office of Traffic Safety	
<b>Timeline</b>	1 <sup>st</sup> Year	

**Action 2.3:** Sobriety Checkpoints. Conduct DUI checkpoints on holidays or timed with local events when drivers are more likely to drive under the influence.

DUI collisions in the dataset most commonly occurred in February and October and on Crown Valley Parkway (16%) and Golden Lantern (15%). Crash data trends can be used to inform locations and time frames to implement DUI checkpoints within the City.

*Figure 20 DUI Collisions by Month of the Year*



**Table 6** *Action 2.3 Programming*

<b>Lead</b>	Orange County Sheriff's Department	Conduct DUI Checkpoints.
<b>Support</b>	City of Laguna Niguel	Pursue funding to conduct DUI checkpoints.
<b>Funding</b>	Office of Traffic Safety	
<b>Timeline</b>	1-5 Years	

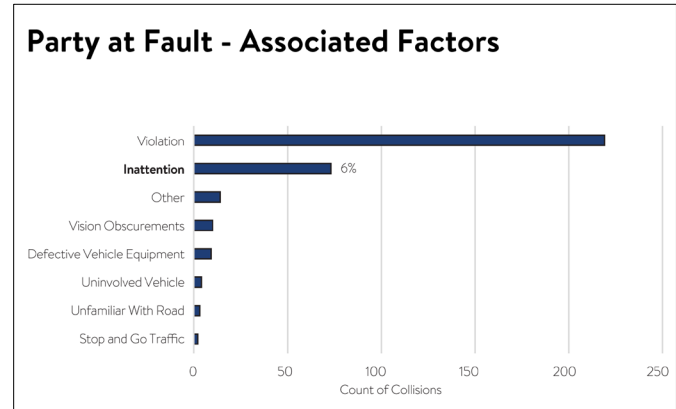
### Emphasis Area 3: Reduce Distracted Driving

- Of associated factors catalogued in the collisions' party at fault, inattention is the third most common recorded factor, after "violation" and "none apparent".

#### Goal for Emphasis Area 3:

- Increase citations for distracted motorists by 50% in the first implementation year of High Visibility Enforcement program.
- Distribute campaign materials to all parking-permit holding students, 4<sup>th</sup> District PTA representatives, and 4<sup>th</sup> District PTA after school program participants within the City.
- Train 100 parent participants in the Parent Intervention Program in the first year of implementation.

Figure 21 Driver at Fault Cause of Collision



**Strategy for Emphasis Area 3:** Develop a culture against distracted driving through campaigns, training, and enforcement.

**Action 3.1:** High Visibility Enforcement. Implement increased police presence supported by paid and earned media in support of laws banning the use of handheld cell phones while driving. Communication methods include website, digital, and social media.

Table 7 Action 3.1 Programming

<b>Lead</b>	Orange County Sheriff's Department	Increase citation efforts against distracted driving.
<b>Support</b>	City of Laguna Niguel	Pursue grant funding to support the Orange County Sheriff's Department's efforts.
<b>Funding</b>	Office of Traffic Safety	
<b>Timeline</b>	1-5 Years	

**Action 3.2:** Parent Intervention Program. Create a program directed at parents to educate their teens about the importance of driving without distractions. Target audience for the program includes parents of teen drivers. Communication methods include website, digital, and social media.

**Table 8**      **Action 3.2 Programming**

<b>Lead</b>	City of Laguna Niguel	Create a new “how-to” brochure for parents to discuss safe driving behavior and methods to avoid distractions with new youth drivers.
<b>Support</b>	Capistrano Unified School District	Distribute City content and consider requiring students commit to distraction-free driving behavior as a condition of securing parking permits.
	Orange County Healthcare Agency	Support content development and methods to evaluate results with parents.
	Orange County Sheriff’s Department	Participate in campaign funding pursuit, content development, distribution methods, and promotion.
<b>Funding</b>	Office of Traffic Safety	
<b>Timeline</b>	1 <sup>st</sup> Year	

**Action 3.3:**      Regional Education Campaigns. Leverage Office of Traffic Safety (OTS) resources and implement a campaign directed towards drivers aged 16 and over to address the dangers and consequences of distracted driving. Distribution methods include posters, banners, videos on digital and social media, and advertisements.

**Table 9**      **Action 3.3 Programming**

<b>Lead</b>	City of Laguna Niguel	Develop and distribute content and distribution methods.
<b>Support</b>	Capistrano Unified School District	Distribute City content to students and parents.
	Orange County Healthcare Agency	Consider leading interactive classes for student drivers subject to OCHCA staff resource availability. Training could be virtual and in-class training.
	Orange County Sheriff’s Department	Participate in campaign funding pursuit, content development, distribution methods, and promotion.
<b>Funding</b>	Office of Traffic Safety	
<b>Timeline</b>	1 <sup>st</sup> Year	

## Emphasis Area 4: Eliminate High-Crash Locations

- High-crash intersections include:
  - Cabot Road and Crown Valley Parkway (average 12.4 collisions per year)
  - Crown Valley Parkway and Moulton Parkway/Golden Lantern (average 8.9 collisions per year)
  - Alicia Parkway and Crown Valley Parkway (average 7.3 collisions per year)
- High-crash roadways include:
  - Paseo de Colinas (average 10.8 collisions per mile per year)
  - Crown Valley Parkway (average 9.7 collisions per mile per year)
  - Moulton Parkway (average 8.9 collisions per mile per year)
  - Camino del Avion (average 8.3 collisions per mile per year)
  - Street of the Golden Lantern (average 8.2 collisions per mile per year)
  - Alicia Parkway (average 7.7 collisions per mile per year)

### Goal for Emphasis Area 4:

- Implement infrastructure treatments at three intersections within 2-3 years.
- Implement infrastructure treatments along six roadways within 2-3 years.

**Strategy for Emphasis Area 4:** Conduct Road Safety Audits and develop infrastructure improvements for inclusion in the City's Capital Improvement Program.

**Action 4.1:** Road Safety Audits. Public Works staff will continue to contract Road Safety Audits, as described earlier in this LRSP. A Road Safety Audit (RSA) is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users<sup>3</sup>.

*Table 10      Action 4.1 Programming*

<b>Lead</b>	City of Laguna Niguel	Contract licensed professionals to perform Road Safety Audits.
<b>Funding</b>	FHWA Office of Safety FHWA Division Offices State DOT Highway Safety Improvement Program (HSIP) State and Community Highway Safety Grant Program (Section 402) Transportation Alternatives Program	
<b>Timeline</b>	1-5 Years	

<sup>3</sup>Crowe, B., & Allred, C. (2018, August 10). Road safety Audits (RSA) - Safety: Federal Highway Administration. Safety. Retrieved September 9, 2021, from <https://safety.fhwa.dot.gov/rsa/>.

**Action 4.2:** Capital Improvement Program. Utilize LRSP identified intersections and roadways for capital improvement and pursue grant, local, or regional funding for implementation of infrastructure treatments that will 1) reduce crash risk factors 2) address the type of collisions and primary collision factor at the high-crash location 3) have a high benefit to cost ratio, and 4) have high systematic applicability. The City will consider treatments for incorporation in the City of Laguna Niguel Capital Improvement Program and follow an incremental approach to solutions dependent on conditions and needs.

*Table 11          Action 4.2 Programming*

<b>Lead</b>	City of Laguna Niguel	Consider LRSP-identified infrastructure projects for funding pursuits and inclusion in the City's Capital Improvement Program.
<b>Funding</b>	Highway Safety Improvement Program Orange County Transportation Authority (OCTA) Measure M2 Regional Capacity Program (Project O)	
<b>Timeline</b>	1-5 Years	

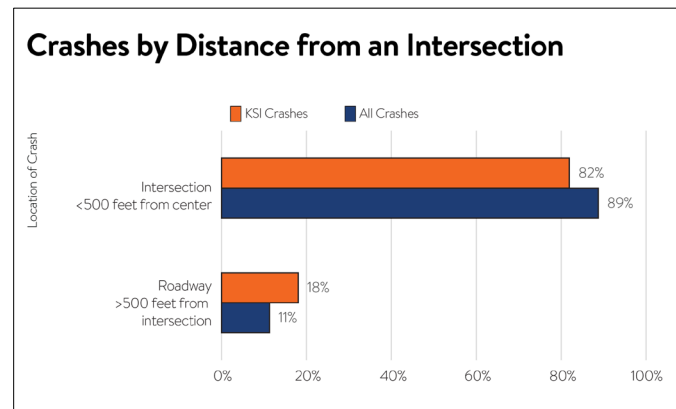
*Figure 22 Engineering Recommendations Require Multi-Year Efforts for Planning, Funding, and Implementation*



## Emphasis Area 5: Improve Safety at Intersections and Around Schools

- The majority of collisions in the dataset occurred at or approaching an intersection throughout the City.
- Collisions at or approaching intersections occur at an average of 237 per year.
- Pedestrian injury is the third-leading cause of injury-related death among elementary and middle schoolers in the United States<sup>4</sup>
- Child pedestrians involved in crashes stayed longer in hospitals and had more severe injuries than adult pedestrians<sup>5</sup>.

Figure 23 All and KSI Collisions by Location



### Goal for Emphasis Area 5:

- Reduce collisions at or approaching intersections by 25%.
- Develop a set of effective infrastructure recommendations for each school within the City.

**Strategy for Emphasis Area 5:** The City will prioritize intersection improvements to reduce the severity and likelihood of collisions at or approaching intersections.

**Action 5.1:** Intersection Improvements with Emerging Technologies. The City's Department of Public Works will incorporate emerging technologies for intersection improvements. According to the National Highway Traffic Safety Administration, 94% of serious crashes are due to dangerous choices or errors made by drivers<sup>6</sup>. Roadways equipped with emerging technology designed to support autonomous vehicles (AV) may reduce collisions due to human error. While emerging technology will continue to evolve, existing recommendations include lane markings, roadside sensors, and smart signage.

Table 12 Action 5.1 Programming

<b>Lead</b>	City of Laguna Niguel	Incorporate emerging technology into City's projects as applicable. Prioritize emerging technology implementation at intersections near schools.
<b>Funding</b>	Automated Driving System Demonstration Grants by U.S. Department of Transportation	
<b>Timeline</b>	1-5 Years	

<sup>4</sup> Borse NN, Gilchrist J, Dellinger AM, Rudd RA, Ballesteros MF, Sleet DA. CDC childhood injury report: Patterns of unintentional injuries among 0-19 years olds in the United States, 2000–2006. Atlanta: National Center for Injury Prevention and Control, CDC; 2008.

<sup>5</sup> Robert W. Derlet, Joseph Silva, James Holcroft, Pedestrian accidents: Adult and pediatric injuries, The Journal of Emergency Medicine, Volume 7, Issue 1, 1989.

<sup>6</sup> <https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety>

**Action 5.2:** Countermeasure Monitoring. Public Works staff will apply police-reported collision data from SWITRS or TIMS to review the pre-construction and post-construction benefits of infrastructure treatments. Countermeasure monitoring results will benefit future funding pursuits for built improvements by illustrating measurable differences in traffic safety following the implementation of treatments.

*Table 13 Action 5.2 Programming*

<b>Lead</b>	City of Laguna Niguel	Develop a process for analyzing pre-construction and post-construction traffic safety at locations planned for infrastructure improvements.
<b>Funding</b>	California Active Transportation Program Safe Routes to School Technical Assistance Resource Center	
<b>Timeline</b>	5+ Years	

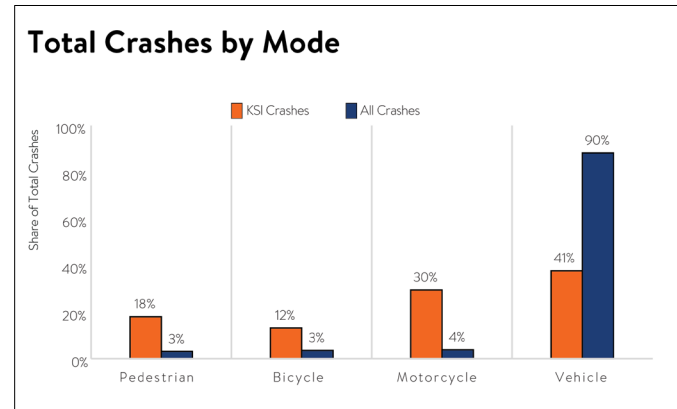
*Figure 24 Continental Crosswalk at Aliso Creek Road Crossing Alicia Parkway*



## Emphasis Area 6: Increase Active Transportation Road User Safety

- Collisions involving pedestrians or bicyclists have a higher likelihood of resulting in a fatality or serious injury (KSI), according to the dataset.
- Bicyclists involved in a collision are 9 times more likely to result in a KSI than a motorist.
- Pedestrians involved in a collision are 17 times more likely to result in a KSI than a motorist.

*Figure 25 All and KSI Collisions by Mode of Travel*



### Goal for Emphasis Area 6:

- Reduce collisions involving a pedestrian to >1 per year.
- Reduce collisions involving a bicyclist to >1 per year.

**Strategy for Emphasis Area 6:** Pursue grant funding to construct pedestrian and bicycle improvements or implement non-infrastructure safety programming and implement engineering solutions specifically to increase pedestrian and bicyclist safety.

*Figure 26 Woman with stroller and youth on scooter crossing in a crosswalk near commercial and park uses*



**Action 6.1**     Engineering Solutions. The City will apply data analysis and planning studies to determine locations citywide where engineering solutions are needed for bicycle and pedestrian safety. It is recommended that City staff continue to monitor crash data affecting youth riding on bicycles (electric and non-electric) near local schools to determine engineering, education, or enforcement strategies to address potential increases.

**Table 14**            *Action 6.1 Programming*

<b>Lead</b>	City of Laguna Niguel	Develop and implement treatments to enhance safety for pedestrians and bicyclists at key locations.
<b>Support</b>	Orange County Transportation Authority	Coordinate with the City to plan for safety treatments consistent with the Guidance for Administration of the Orange County Master Plan of Arterial Highways.
<b>Funding</b>	Caltrans Active Transportation Program Caltrans Sustainable Communities Grant	
<b>Timeline</b>	5+ Years	

**Action 6.2:**     Pursue Grant Funding. The City will submit applications to State and Federal programs to fund identification, design, and construction of pedestrian and bicycle safety improvements and consider pursuit of funding for local police offering of bicycle infraction “traffic diversion” program consistent with Assembly Bill 902 (2016).

**Table 15**            *Action 6.2 Programming*

<b>Lead</b>	City of Laguna Niguel	Pursue grant funding to study, develop recommendations, and construct improvements for pedestrians and bicyclists.
<b>Support</b>	All SWG Agencies	Promote project initiatives and provide letters of support
<b>Funding</b>	Caltrans Active Transportation Program Caltrans Sustainable Communities Grant	
<b>Timeline</b>	1-5 Years	

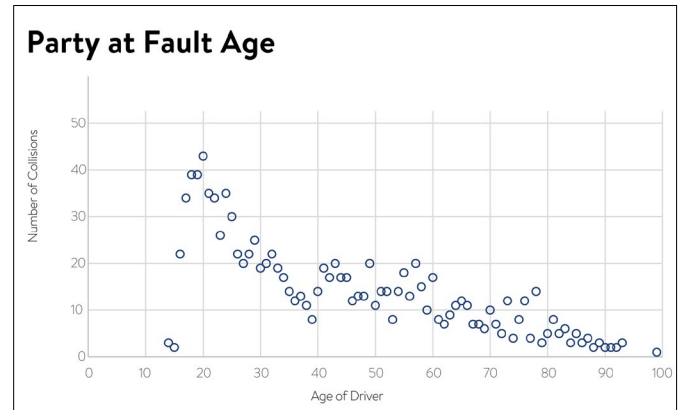
## Emphasis Area 7: Increase Safe Driving in Older Adults and Teens

- Teenage drivers (age 14 to 19) account for 13% of drivers who are “at fault” in a collision within the dataset.
- Older drivers (age 70 and over) account for 12% of drivers who are “at fault” in a collision within the dataset.

### Goal for Emphasis Area 7:

- Reduce collisions caused by teenage drivers by 50%
- Reduce collisions caused by older drivers by 50%

Figure 27 Age Distribution of Drivers Causing Collisions



**Strategy for Emphasis Area 7:** The City will implement separate, targeted campaigns for older adults and teens and coordinate with OCTA to provide safe and more comfortable alternatives to driving.

**Action 7.1:** Targeted Campaigns for Older Adults. Utilize AARP and AAA resources to educate the senior community (ages 65 and over) about safe driving practice as they age. Distribution methods include print and digital media at Sea Country Senior Center.

Table 16 Action 7.1 Programming

<b>Lead</b>	City of Laguna Niguel	Partner with the Sea Country Senior Center to present and distribute available published materials.
<b>Support</b>	Orange County Transportation Authority	Continue providing alternatives to driving for older adults through OC Bus Senior Discounts and OC Flex Microtransit services.  Promote content through OCTA communication channels to target audience.
<b>Funding</b>	Office of Traffic Safety Orange County Transportation Authority Southern California Association of Governments	
<b>Timeline</b>	1 <sup>st</sup> Year	

**Action 7.2:** Targeted Campaigns for Teens. Continue safety campaigns such as Every 15 Minutes campaign that educates teens about safe driving behaviors and provide alternatives to driving.

*Table 17 Action 7.2 Programming*

<b>Lead</b>	Orange County Fire Authority	Continue organizing annual “Every 15 Minutes” campaign; 2-day program on distracted/impaired driving. Typically coordinated with CUSD, OCSD, Coroners Dept, Care Ambulance.
<b>Support</b>	Capistrano Unified School District Orange County Sheriff’s Department	Continue partnership with partners to ensure annual delivery of the “Every 15 Minutes” safety education program at relevant schools.
	City of Laguna Niguel	Promote the effort and campaign through organized City communication methods.
	Orange County Transportation Authority	Continue providing alternatives to driving for teens through OC Flex Microtransit services and free transit rides for youth aged 6 to 18 on fixed route busses.
<b>Funding</b>	Office of Traffic Safety California Highway Patrol California Department of Alcoholic Beverage Control	
<b>Timeline</b>	1 <sup>st</sup> Year	

*Figure 28 “Every 15-Minutes” campaign demonstration of collision caused by intoxicated driving*



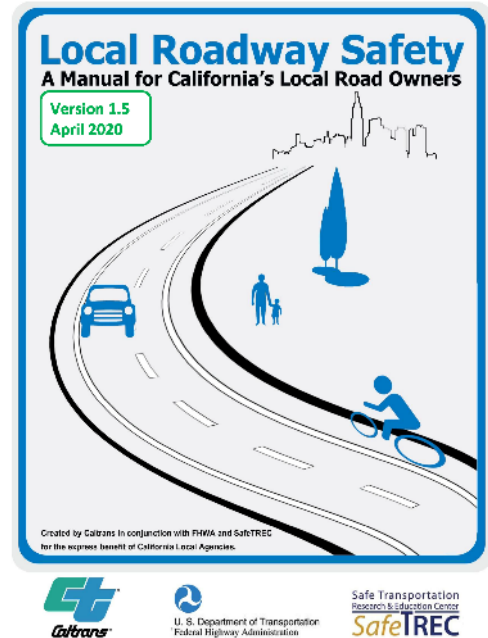
## Recommended Infrastructure Improvements

As described throughout the emphasis areas, engineering treatments are recommended throughout the City to address specific traffic collision trends, specifically for Actions 1.3, 4.2, 5.1, 6.1, 6.2, and 7.3. Engineering treatments and countermeasures are identified to address documented crash history and specific locations identified by City staff and OCSD representatives. Countermeasures funded by HSIP for implementation have empirical before/after studies that document the crash reduction factor (CRF) which represents the expected percent decrease in crashes upon implementation of the countermeasure.

Countermeasures with a CRF are identified in the following published document created by Caltrans in conjunction with the Federal Highway Administration (FHWA) and Safe Transportation Research and Education Center (SafeTREC) at the University of California, Berkeley:

1. *Local Roadway Safety, A Manual for California's Local Road Owners (Version 1.5, April 2020)*

Figure 29 Local Roadway Safety Manual Cover Page



Where an infrastructure recommendation is included in the Local Roadway Safety Manual then a unique identifier is provided such as S02 for improved signal hardware.

## Speed Management Treatments

1. **Speed Limit Pavement Markings:** Where speeding traffic problems have been documented, speed limit pavement markings may be installed to remind drivers to check their speed. Speed limit pavement markings are numerals applied in the traffic lane to remind drivers of the regulatory speed limit. In addition, a "SLOW" word legend may be applied with the speed legend. The treatment 1) provides a clear indication of the speed limit to drivers who are watching the road; 2) does not become obscured by streetside vegetation growth, parked trucks, or other obstructions; 3) is relatively easy and low cost to install; and 4) does not slow emergency vehicles.<sup>7</sup>
2. **Install Speed Feedback Signs (SFS):** SFS at select locations within the City to reduce speeding behavior through improved driver awareness of actual speed versus posted speed limits. SFS equipment is already installed at various locations throughout the City. Existing SFS have provided speed reduction benefits. Permanent or temporary SFS will continue to be implemented in areas with high numbers of speed related crashes.

<sup>7</sup> <https://www.cabq.gov/neighborhood-traffic-management-program/documents/speed-limit-pavement-markings.pdf>

3. **Optical Speed Bars:** Optical speed bars are used at spot locations or along a corridor to reduce speeding. These are transverse pavement markings across the travel lane or along its edges placed with decreasing spacing in the direction of travel, which makes it appear to drivers that they are traveling faster than their true speed. They are placed in advance of a speed transition zone or other critical location. This treatment should be used sparingly, else it will lose its novelty effect, and should be maintained to ensure its usefulness.<sup>8</sup>
4. **Reduced Lane Width:** Reducing lane width to as narrow as 10 feet can reduce speeds. This can be accomplished by restriping narrower lanes without reducing pavement width. The remaining space can then be used for active transportation uses, buffer areas between travel lanes and bicycle lanes, or space for on-street parking.<sup>7</sup>
5. **NS14:** A center island or raised median can be used to create a shift in the travel path. Shifting traffic is an effective way to reduce speeds. A center island or raised median may also be used to narrow the “optical width” of the roadway, which will make the roadway appear narrower, thereby reducing speeds. Medians have been shown to be effective in lowering operating speeds, especially when they create a deflection in the vehicle path at the beginning of the median. However, attention must be given to the design of the deflection to achieve a speed reduction without compromising safety. For this reason, center islands and raised medians are typically applied in existing low speed contexts.<sup>7</sup>

### **High-Crash Locations/Intersection Treatments**

1. **S01:** Add intersection lighting. Providing lighting at the intersection itself, or both at the intersection and on its approaches, improves the safety of an intersection during nighttime conditions by (1) making drivers more aware of the surroundings at an intersection, which improves drivers’ perception-reaction times, (2) enhancing drivers’ available sight distances, and (3) improving visibility of non-motorists. Intersection lighting is of particular benefit to non-motorized users. Lighting not only helps them navigate the intersection but also helps drivers see them better.
2. **S02:** Improve signal hardware. lenses, back-plates with retroreflective borders, mounting, size, and number. This item is included specifically related to installation of the retroreflective borders to provide improved visibility of traffic signals, which is a new standard being employed by the state at all Caltrans-managed traffic signals. Consistent with industry standards, all City of Laguna Niguel signalized intersections currently utilize 12-inch diameter signals.
3. **S04:** Provide Advanced Dilemma-Zone Detection for high-speed approaches. Clearance times provide safe, orderly transitions in right-of-way assignment between conflicting streams of traffic. Advanced detection has several benefits which include: reducing the frequency of red-light violations; reducing the frequency of crashes associated with the traffic signal phase change; reducing delay and stop frequency on the major road; and reducing overall intersection delay.
4. **S09:** Install raised pavement markers and striping (through intersection). Adding clear pavement markings can guide motorists through complex intersections. When drivers approach and traverse through complex intersections, drivers may be required to perform unusual or unexpected maneuvers. Providing more effective guidance through an intersection will minimize the likelihood of a vehicle leaving its appropriate lane and encroaching upon an adjacent lane.

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<sup>8</sup> FHWA Speed Management Guidebook

5. S10: Install flashing beacons as advance warning (signalized intersection). Increased driver awareness of an approaching signalized intersection and an increase in the driver's time to react. Driver awareness of both downstream intersections and traffic control devices is critical to intersection safety. Crashes often occur when the driver is unable to perceive an intersection, signal head, or the back of a stopped queue in time to react. Advance flashing beacons can be used to supplement and call driver attention to intersection control signs
6. S11: Improve pavement friction (High Friction Surface Treatments). Improving the skid resistance at locations with high frequencies of wet-road crashes and/or failure to stop crashes can result in reductions of 50 percent for wet-road crashes and 20 percent for total crashes. Applying HFST can double friction numbers, e.g. low 40s to high 80s. This CM represents a special focus area for both FHWA and Caltrans, which means there are extra resources available for agencies interested in more details on HFST projects.
7. NS06: Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs. Intersection visibility and, thus, the ability of approaching drivers to perceive them can be enhanced by installing larger regulatory and warning signs at or prior to intersections. A key to success in applying this strategy is selecting a combination of regulatory and warning sign techniques appropriate for the conditions on a particular unsignalized intersection approach.
8. NS07: Upgrade intersection pavement markings (non-signalized intersection). Intersection visibility and, thus, the ability of approaching drivers to perceive them can be enhanced by installing appropriate pavement delineation in advance of and at intersections, which will provide approaching motorists additional information at these locations. Providing visible stop bars on minor road approaches to unsignalized intersections can help direct the attention of drivers to the intersection's presence. Drivers should be more aware that the intersection is coming up, and therefore make safer decisions as they approach the intersection.
9. NS10: Install transverse rumble strips on approaches. When motorists are traveling along the roadway, they are sometimes unaware they are approaching an intersection. Transverse rumble strips warn motorists that something unexpected is ahead that they need to pay attention to.
10. NS11: Improve sight distance to intersection (clear sight triangles). Adequate sight distance for drivers at stop or yield-controlled approaches to intersections has long been recognized as among the most important factors contributing to overall safety at unsignalized intersections. By removing sight distance restrictions (e.g., vegetation, parked vehicles, signs, buildings) from the sight triangles at stop or yield-controlled intersection approaches, drivers will be able to see approaching vehicles on the main line without obstruction and thus make better decisions about safely entering the intersection.
11. NS15: Create directional median openings to allow (and restrict) left turns and U-turns (non-signalized intersection). Agencies are increasingly using access management techniques on urban and suburban arterials to manage the number of conflicts experienced at an intersection. A key element of access management is to restrict certain movements, create directional median openings, or close median openings that are deemed too close to an intersection.
12. NS16: Reduced left turn conflict intersections (non-signalized intersection). Reduced left turn conflict intersections are geometric designs that alter how left turn movements occur in order to simplify decisions and minimize the potential for related crashes. Two highly effective designs that rely on U-turns to complete certain left turn movements are known as the restricted crossing U-turn and the median U-turn.

13. R26: Install dynamic/variable speed warning signs. This strategy primarily addresses crashes caused by motorists traveling too fast around sharp curves. It is intended to get the drivers attention and give them a visual warning that they may be traveling over the recommended speed for the approaching curve. Care should be taken to limit the placement of these signs to help maintain their effectiveness.
14. R28: Install edge-lines and centerlines. Installing edge-lines and centerlines where none exists or making significant upgrades to existing lines (paint to thermoplastic, adding audible disks/bumps in the thermoplastic stripes, or adding RPMs) are intended/designed to help drivers who might leave the roadway because of their inability to see the roadway's edge along the pavement's horizontal edge or crossover the roadway's centerline into oncoming traffic. New pavement marking products tend to be more durable, are all weather, more visible, and have a higher retro reflectivity than traditional pavement markings.
15. Double Yellow Center Lines: Stripe double yellow center line adjacent to median curbs. The addition of striping narrows the far-left lane to reduce vehicle speed and provides a visual cue to motorists to avoid the median.
16. Red Light Indicator Lights (RLILs) are auxiliary lights mounted on signal hardware and directly connected to a traffic-control signal. The RLIL activates at the onset of the red phase and allows an enforcement officer to observe red-light running from downstream of the intersection. The low-cost solution, in coordination with enforcement support, has been shown effective toward crash reductions. RLILs are beneficial for locations experiencing red-light running.

### **Treatments Near Schools and for Active Transportation Users**

1. S17PB: Install pedestrian countdown signal heads. A pedestrian countdown signal contains a timer display and counts down the number of seconds left to finish crossing the street. Countdown signals can reassure pedestrians who are in the crosswalk when the flashing "DON'T WALK" interval appears that they still have time to finish crossing. Countdown signals begin counting down either when the "WALK" or when the flashing "DON'T WALK" interval appears and stop at the beginning of the steady "DON'T WALK" interval. These signals also have been shown to encourage more pedestrians to use the pushbutton rather than jaywalk.
2. S20PB: Install advance stop bar before crosswalk (bicycle box). Adding advance stop bar before the striped crosswalk can enhance both pedestrian and bicycle safety. Stopping cars well before the crosswalk provides a buffer between the vehicles and the crossing pedestrians. It also allows for a dedicated space for cyclists, making them more visible to drivers.
3. S21PB: Modify signal phasing to implement a Leading Pedestrian Interval (LPI). This countermeasure is included for consideration at high pedestrian locations and near schools, parks, civic buildings, and other specific land uses. Locations within the City of Laguna Niguel meeting these initial setting criteria, such as the intersection of Alicia Parkway and Niguel Road, are appropriate candidates to study for potential LPI implementation. A leading pedestrian interval (LPI) gives pedestrians the opportunity to enter an intersection 3-7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left. LPIs provide (1) increased visibility of crossing pedestrians; (2) reduced conflicts between pedestrians and vehicles; (3) Increased likelihood of motorists yielding to pedestrians; and (4) enhanced safety for pedestrians who may be slower to start into the intersection.

4. NS19PB: Install raised medians (refuge islands). Raised pedestrian refuge islands, or medians at crossing locations along roadways, are another strategy to reduce exposure between pedestrians and motor vehicles. Refuge islands and medians that are raised (i.e., not just painted) provide pedestrians more secure places of refuge during the street crossing. They can stop partway across the street and wait for an adequate gap in traffic before completing their crossing.
5. NS21PB: Install/upgrade pedestrian crossing at uncontrolled locations (with enhanced safety features). Adding pedestrian crossings that include enhanced safety features have the opportunity to enhance pedestrian safety at locations noted as being especially problematic. The enhanced safety elements help delineate a portion of the roadway that is designated for pedestrian crossing. Incorporating advanced "yield" markings provide an extra safety buffer and can be effective in reducing the 'multiple-threat' danger to pedestrians. Nearly one-third of all pedestrian-related crashes occur at or within 50 feet of an intersection.
6. NS22PB: Install Rectangular Rapid Flashing Beacon (RRFB). RRFBs can enhance safety by increasing driver awareness of potential pedestrian conflicts and reducing crashes between vehicles and pedestrians at unsignalized intersections and mid-block pedestrian crossings. The addition of RRFB may also increase the safety effectiveness of other treatments, such as crossing warning signs and markings.
7. Continental Crosswalk Pavement Striping: Install continental crosswalk pavement striping to provide improved crosswalk visibility for pedestrian use. Many jurisdictions have begun utilizing continental style crosswalks at high pedestrian locations and near schools, parks, civic buildings, and other specific land uses. Installation of the continental (or ladder style) crosswalk pavement striping was first deployed by the City at the Alicia Parkway/Aliso Creek Road intersection with feedback indicating an improved condition for both motorists and pedestrians.
8. Bicycle Lane Buffer: Install a new bicycle lane buffer next to existing on-street bicycle lanes. Installation of bicycle lane buffers pavement striping has been deployed by the City on Alicia Parkway and Crown Valley Parkway with feedback indicating an improved condition for both motorists and cyclists. Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. The treatment 1) provides greater shy distance between motor vehicles and bicyclists; 2) provides space for bicyclists to pass another bicyclist without encroaching into the adjacent motor vehicle travel lane; and 3) appeals to a wider cross-section of bicycle users.
9. Green Conflict Zone Striping: Install green conflict zone striping for bicycle lane visibility. Colored pavement within a bicycle lane increases the facility's visibility, identifies potential areas of conflict, and reinforces priority to bicyclists in conflict areas and in areas with pressure for illegal parking. Colored pavement can be utilized either as a corridor treatment along the length of a bike lane or cycle track, or as a spot treatment, such as a bike box, conflict area, or intersection crossing marking. Color can be applied along the entire length of bike lane or cycle track to increase the overall facility's visibility. Consistent application of color across a bikeway corridor is important to promote clear understanding for all users.

### **Treatments to Support Emergency Vehicle Services**

1. S05: Install emergency vehicle pre-emption systems. Upon installation of a new traffic signal, the City will consider providing emergency vehicle pre-emption capability. Emergency vehicle pre-emption at a new signal can be a highly effective strategy to reduce the likelihood of a new crash as emergency vehicles try to navigate through intersections and as other vehicles try to maneuver out of the path of the emergency vehicles. In addition, a signal pre-emption system can improve emergency vehicle response times, therefore, decreasing the time in receiving emergency medical attention, which is critical in addressing public health needs following a crash.

Table 18 Recommended Infrastructure Improvements

ID*	Location	Type of Collision	Primary Collision Factor	Type of Treatment	Countermeasure	Crash Reduction Factor (%)	Expected Life (years)	HSIP Funding Eligibility (%)	Systemic Opportunity**
S01	Signalized Intersection	All	Improper Turning	Lighting	Add intersection lighting	40	20	100	H
S02	Signalized Intersection	All	Improper Turning	Signal Modification	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number	15	10	100	VH
S04	Signalized Intersection	Rear-end	Unsafe Speed	Signal Modification	Provide Advanced Dilemma-Zone Detection for high speed approaches	40	10	100	H
S05	Signalized Intersection	NA	NA	Signal Modification	Install emergency vehicle pre-emption system	70	10	100	H
S09	Signalized Intersection	Sideswipe	Improper Turning	Operation/Warning	Install raised pavement markers and striping (Through Intersection)	10	10	100	VH
S10	Signalized Intersection	Rear-end	Unsafe Speed	Operation/Warning	Install flashing beacons as advance warning	30	10	100	M
S11	Signalized Intersection	Rear-end	Unsafe Speed	Operation/Warning	Improve pavement friction (High Friction Surface Treatments)	55	10	100	M
S17PB	Signalized Intersection	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Install pedestrian countdown signal heads	25	20	100	VH
S20PB	Signalized Intersection	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Install advance stop bar before crosswalk (Bicycle Box)	15	10	100	VH
S21PB	Signalized Intersection	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Modify signal phasing to implement a Leading Pedestrian Interval (LPI)	60	10	100	VH
NS03	Non-signalized Intersection	All	Improper Turning	Control	Install Signals	30	20	100	L
NS06	Non-signalized Intersection	All	Improper Turning	Operation/Warning	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	15	10	100	VH
NS07	Non-signalized Intersection	All	Improper Turning	Operation/Warning	Upgrade intersection pavement markings (NS.I)	25	10	100	VH
NS10	Non-signalized Intersection	Rear-end	Unsafe Speed	Operation/Warning	Install transverse rumble strips on approaches	20	10	90	H
NS11	Non-signalized Intersection	Rear-end	Unsafe Speed	Operation/Warning	Improve sight distance to intersection (Clear Sight Triangles)	20	10	90	H
NS14	Non-signalized Intersection	Rear-end	Unsafe Speed	Geometric Modification	Install raised median approaches	25	20	90	M
NS15	Non-signalized Intersection	Broadside	Improper Turning	Geometric Modification	Create directional median openings to allow (and restrict) left turns and U-turns	50	20	90	M
NS16	Non-signalized Intersection	Broadside	Improper Turning	Geometric Modification	Reduced Left Turn Conflict Intersections	50	20	90	M
NS19PB	Non-signalized Intersection	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Install raised medians (refuge islands)	45	20	90	M
NS21PB	Non-signalized Intersection	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Install/upgrade pedestrian crossing at uncontrolled locations (with enhanced safety features)	35	20	100	M
NS22PB	Non-signalized Intersection	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Install Rectangular Rapid Flashing Beacon (RRFB)	35	20	100	M
R26	Roadway/Midblock	Rear-end	Unsafe Speed	Operation/Warning	Install dynamic/variable speed warning signs	30	20	100	H
R28	Roadway/Midblock	Hit Object	Unsafe Speed	Operation/Warning	Install edge-lines and centerlines	25	10	100	VH
	Roadway/Midblock	Rear-end	Unsafe Speed	Operation/Warning	Install speed limit pavement marking	-	-	-	-
	Roadway/Midblock	Rear-end	Unsafe Speed	Operation/Warning	Install Speed Feedback Signs (SFS)	-	-	-	-
	Roadway/Midblock	Rear-end	Unsafe Speed	Operation/Warning	Install optical speed bars	-	-	-	-
	Roadway/Midblock	Rear-end	Unsafe Speed	Geometric Modification	Reduce vehicle lane widths	-	-	-	-
	Roadway/Midblock	Hit object	Unsafe Speed	Geometric Modification	Stripe double yellow center line adjacent to median curbs	-	-	-	-
	Intersection	All	Unsafe Speed	Signal Modification	Install Red Light Indicator Lights (RLILs) on signal hardware	-	-	-	-
	Intersection	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Install continental crosswalk pavement striping	-	-	-	-
	Roadway/Midblock	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Install 11-feet wide travel lanes adjacent new bike lane buffer	-	-	-	-
	Roadway/Midblock	Pedestrian/Bicycle	Pedestrian/Bicycle	Pedestrian/Bicycle	Install green conflict zone striping for bicycle lane visibility	-	-	-	-
*Local Roadway Safety Manual HSIP Countermeasure Code									
** VH=Very High; H=High; M=Medium; L=Low									

## Focus Intersections and Roadways

The High-Injury Network Analysis identified three intersections and six roadways which experience the highest volume of collisions per year and collisions per roadway mile, respectively. These intersections and collisions should be prioritized for project submission to HSIP infrastructure funding, which include:

### Intersections

Cabot Road/Crown Valley Parkway	Moulton Parkway-Golden Lantern/Crown Valley Parkway	Alicia Parkway/Crown Valley Parkway
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### Roadways

Paseo de Colinas	Moulton Parkway	Golden Lantern
Crown Valley Parkway	Camino Del Avion	Alicia Parkway

Additionally, further HSIP consideration for the following locations should be considered based on feedback from City staff and OCSD:

- Alicia Parkway/Aliso Creek Road intersection
- Alicia Parkway/Bike Crossing (south of Aliso Creek Road) intersection
- Alicia Parkway/Niguel Road intersection
- Greenfield Drive/Crown Valley Parkway intersection
- La Gracia-Rancho Azul/Rancho Niguel Road intersection
- Aliso Creek Road between Alicia Parkway and La Paz Road

Treatments for each focus location should be prioritized by comparing the benefits and costs of implementation. This comparison can help the implementation phase by starting with the strategies that provide the highest benefit for the least cost. However, costs and benefits are not the only considerations. Other considerations for prioritization may include the availability of staff resources, relative importance of each emphasis area, incorporation into other capital improvement projects, and concurrent land development activities. Based on overlapping corridors and intersections identified in the High-Injury Network Analysis, the focus locations are recommended for further study in a three-tier system, as described in the following sections.

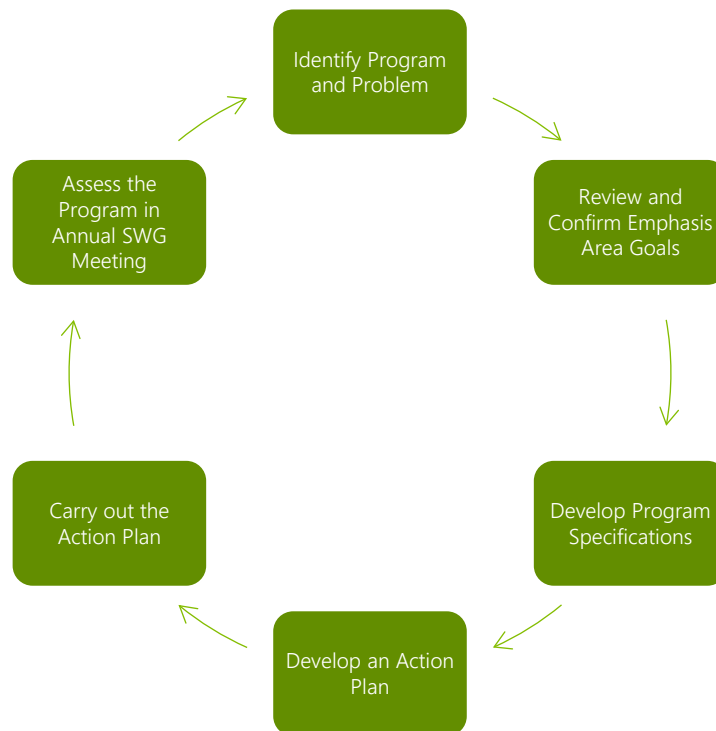
**Table 19** *Focus Intersections and Roadways Prioritization Tiers*

	Tier 1	Tier 2	Tier 3
Roadways	Crown Valley Parkway (CVP) Moulton Parkway Golden Lantern	Alicia Parkway Aliso Creek Rd (Alicia Pkwy to La Paz Rd)	Paseo de Colinas Camino del Avion
Intersections	CVP/Cabot CVP/Alicia Moulton/Golden Lantern	Alicia Pkwy/Niguel Rd Alicia Pkwy/Bike X-ing Alicia/Aliso Creek Rd	La Gracia-Rancho Azul/Rancho Niguel Rd

## Non-Infrastructure (NI) Program Implementation

The following implementation process is adapted for the City of Laguna Niguel based on the Guidance for Implementation Model Process of the AASHTO Strategic Highway Safety Plan and establishes a process checklist for implementing the Emphasis Area Action Items described in this LSRP's earlier sections. The degree of detail and the amount of work required to complete some of these steps will vary between Action Item programs depending upon the situation.

*Figure 30 Non-Infrastructure (NI) Program Implementation Model*



### Step 1: Identify Program and Problem

Initial data analyses have been completed to inform strategic approaches to each of the seven SWG-identified emphasis areas. The identified SWG agencies involved in each Action Item should initiate program development by reviewing the key data points and determining if further detailed analysis is needed, with the objective to highlight over-representation of the problem within the community.

### Step 2: Review and Confirm Emphasis Area Goals

Recommended crash reduction metrics have been identified under Emphasis Areas in earlier sections of this LRSP. The identified SWG agencies involved in the Action Item should review and confirm the metrics. When working within an emphasis area, it may be desirable to specify certain crash types, as well as the severity level, being targeted. There are a few key considerations for establishing a quantitative goal. The stakeholders should achieve consensus on this issue. The goal should be challenging, but achievable. Its feasibility depends in part on available funding, the timeframe in which the goal is to be achieved, the degree of complexity of the program, and the degree of controversy the program may experience.

**Step 3: Develop Program Specifications**

A foundation and framework are needed for carrying out the Action Item programs toward solving identified safety problems. The implementation process will need to be guided and evaluated according to a set of specifications and related performance measures. These will formalize what the intended result is and how success will be measured. The overlying crash reduction goal, described in Step 2, will provide the context for the more specific goals established in this step. The specifications and performance measures will be used much later to evaluate what is implemented. Therefore, they should be jointly outlined at this point and agreed to by all program stakeholders.

**Step 4: Develop an Action Plan**

At this stage, stakeholder will detail the program responsibilities into an action plan, with all the details needed by both decision makers, who will have to commit to the investment of resources, and those charged with carrying it out. The effort involves defining target audience, number of participants, outreach and engagement timeline, resource requirements, organizational and institutional arrangements needed, schedules, etc. During this phase of implementation, City staff will work with the SWG to decide on educational campaign content to implement in the recommended non-infrastructure programs. It also should be designed at this point, to achieve consensus among the stakeholders on what constitutes "success." Knowing this helps maintain the validity of what is being done, encourages future support from management, and provides good intelligence on how to proceed after the program is completed.

**Step 5: Carry Out the Action Plan**

Conditions have been established to allow the program to be started. The implementation activities may be divided into activities associated with field preparation for whatever actions are planned and the actual field implementation of the plan. The activities can involve installation of program elements, training, and the actual operation of the program. This step also includes monitoring for the purpose of maintaining control and carrying out mid- and post-program evaluation of the effort.

**Step 6: Assess the Program in Annual SWG Meeting**

The program evaluation will have been first designed in Steps 3 and 4, which occur prior to any field implementation. The program will usually have a specified operational period. An evaluation of both the process and performance will have begun prior to the start of implementation. It may also continue during the course of the implementation, and it will be completed after the operational period of the program.

The overall effectiveness of the effort should be measured to determine if the investment was worthwhile and to guide top management on how to proceed into the post-program period. This often means that there is a need to quickly measure program effectiveness in order to provide a preliminary idea of the success or need for immediate modification.

The results of the work are usually reported back to those who authorized it and the stakeholders, as well as any others in management who will be involved in determining the future of the program. Decisions must be made on how to continue or expand the effort, if at all. If a program is to be continued or expanded (as in the case of a pilot study), the results of its assessment may suggest modifications.

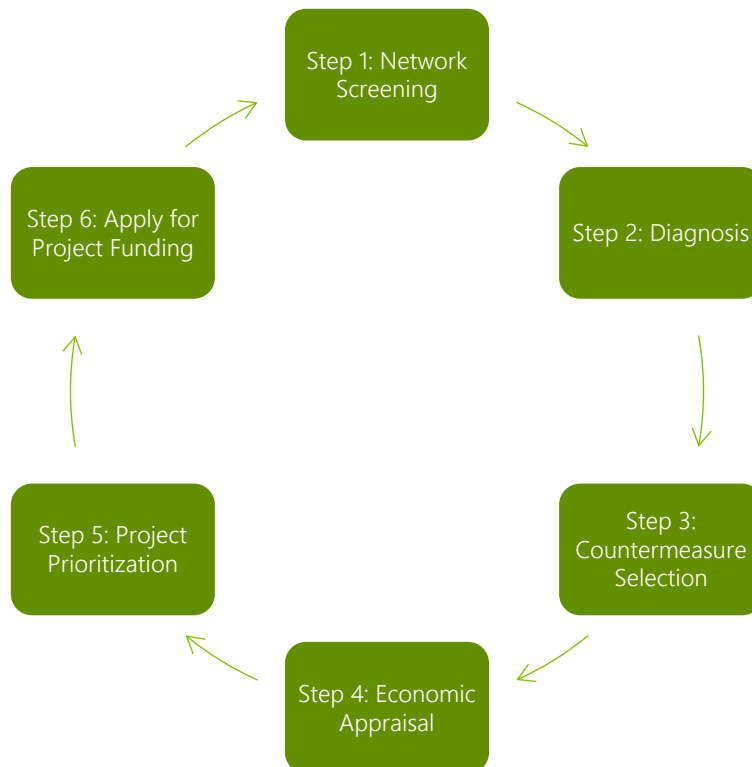
Finally, the results of the evaluation using performance measures should be fed back into a knowledge base to improve future estimates of effectiveness.

## Infrastructure Project Implementation

The following guidance is adapted for the City of Laguna Niguel based on the FHWA Highway Safety Benefit-Cost Analysis Guide and informed by practices applied in Systemic Safety Analysis Report development. The degree of detail and the amount of work to complete some of these steps will vary between infrastructure priority locations depending upon the situation.

To arrive at a logical basis for prioritizing and selecting among alternative infrastructure treatments, there are several steps that need to be performed. The process involves making estimates for each of the treatments and comparing them, both individually and in total. To do this in a quantitative manner requires some basis for estimating the effectiveness of each strategy. Cost-benefit and cost-effectiveness analyses should be applied to help identify inefficient or inappropriate strategies, as well as to establish priorities.

*Figure 31 Infrastructure Project Implementation Model*



### Step 1: Network Screening

Initial network screening has been completed to identify locations within the City that could benefit from treatments to improve safety performance based on crash frequencies and severities and police-reported crashes occurring between January 1, 2015 and December 31, 2019. The crash dataset should be re-analyzed at a minimum of every 5 years for continued screening of intersections and roadways where safety improvements are needed. In addition, further detailed analysis may be needed with the objective to highlight geographic concentrations of a problematic roadway setting.

### Step 2: Diagnosis

The City should implement a Traffic Safety Study or Road Safety Audit at specific intersections and/or roadways identified in the network screening process. Detailed analyses should result in an understanding of collision patterns and crash contributing factors occurring specific to the site(s), including 1) what elements of the road may present a safety concern and 2) what opportunities exist to eliminate or mitigate identified safety concerns.

### Step 3: Countermeasure Selection

The City should consider an approach to address citywide collision data that may be considered spot, systemic, or comprehensive in nature.

- Spot countermeasures are applied at specific locations or roadway segments.
- Systemic countermeasures are usually low-cost and deployed in a widespread manner.
- Comprehensive countermeasures can include a spot or systemic countermeasure with the addition of outreach and enforcement.

A series of potential treatments have been identified for the City in the Recommended Infrastructure Treatments section of this LRSP, based on the documented crash history between 2015 and 2019.

Additional countermeasures may be considered according to the detailed results from Step 2: Diagnosis.

### Step 4: Economic Appraisal

Estimate the economic cost and benefit associated with a particular countermeasure or set of countermeasures. Various measures, indices, and factors are available to compare and select project alternatives and are further detailed in the [FHWA Highway Safety Benefit-Cost Analysis Guide](#).

*Figure 32 Comparison of economic appraisal measures*

Economic Measure	Considers Costs	Considers Benefits	Considers Monetary Costs and Benefits
Present value cost (PVC)	Yes	No	No
Present value benefit (PVB)	No	Yes	No
Cost-effectiveness index (CEI)	Yes	Yes	No
<b>Benefit-cost ratio (BCR)</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
<b>Net present value (NPV)</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
<b>Payback period</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

Grant applications submitted for California HSIP funding require quantitative analysis using the Benefit Cost Ratio (BCR) format.

*The BCR is the ratio of present value benefits (including negative benefits) to present value costs (initial and continuing costs over the project lifecycle). In this context, the BCR is the same as the rate of return and return on investment. A BCR greater than 1.0 indicates that benefits exceed costs, and the project is economically justified. In general, a higher BCR is desirable. The BCR is most appropriate for prioritizing alternatives when funding restrictions apply (e.g., prioritizing countermeasures or locations within a project with a fixed budget).*

*Benefit Cost Ratio = Present Value Benefit / Present Value Cost*

#### **Step 5: Project Prioritization**

Treatments for each focus location should be prioritized by comparing the benefits and costs of implementation. This comparison can help the implementation phase by starting with the strategies that provide the highest benefit for the least cost. However, costs and benefits are not the only considerations. Other considerations for prioritization may include the availability of staff resources, relative importance of each emphasis area, incorporation into other capital improvement projects, concurrent land development activities, and whether the treatments are feasible to implement in spot, systemic, or comprehensive projects (see Step 3: Countermeasure Selection).

*The City should develop a prioritized list of projects to improve the safety performance (i.e., reduce crash frequency and severity) of the road network, considering available resources. Project prioritization involves policy-level decisions such as overall agency goals and may include multiple (and sometimes competing) factors such as safety, operational efficiency, environmental impacts, and equity.*

#### **Step 6: Apply for Project Funding**

The City of Laguna Niguel should apply for project funding annually, according to program guidelines and timelines. Since the introduction of COVID-19, call for project deadlines have been extended or revised from standard timelines to allow agencies flexibility in coordinating data collection and public outreach in accordance with public safety health guidelines. The City of Laguna Niguel should stay up to date with announcements via newsletters and/or attending workshops provided by funding agencies and apply for project funding accordingly.

## Next Steps

The City of Laguna Niguel Public Works Department will coordinate among departments, local agencies, and organizations as needed to apply or co-apply for funding resources or grant opportunities. The City will advance strategies and continue partnership with stakeholders to implement the education, enforcement, engineering, and emerging technology strategies as needed to assist in implementing the vision and goals of this LRSP. The following tables provide a summary of actions for the following:

- Table 20 LRSP First Year Actions
- Table 21 LRSP Near & Long-Term Actions Summary

This LRSP will be a living document and will be updated as needed by the City of Laguna Niguel Public Works Department with input from the SWG representatives. SWG representatives will attend an annual meeting to confirm the direction, process, and progress of the LRSP. City staff can evaluate annually the membership of the SWG to determine if additional representation would be effective such as participation by senior citizen groups, electric and non-electric bicycle groups, motorcycle groups, high school students, etc. The annual meeting will be tentatively planned in the fall each year, and a representative from each SWG organization will be invited to attend. The annual meeting will provide an opportunity to review status and weigh in upon upcoming year priorities.

The LRSP goals will be evaluated as needed (at minimum, every 5 years) to measure success and progress toward the identified goals, as well as to evaluate collision statistics and identify any new applicable goals that should be worked toward or collision trends that arise.

*Figure 33 City of Laguna Niguel City Council Placard Located at City Hall*

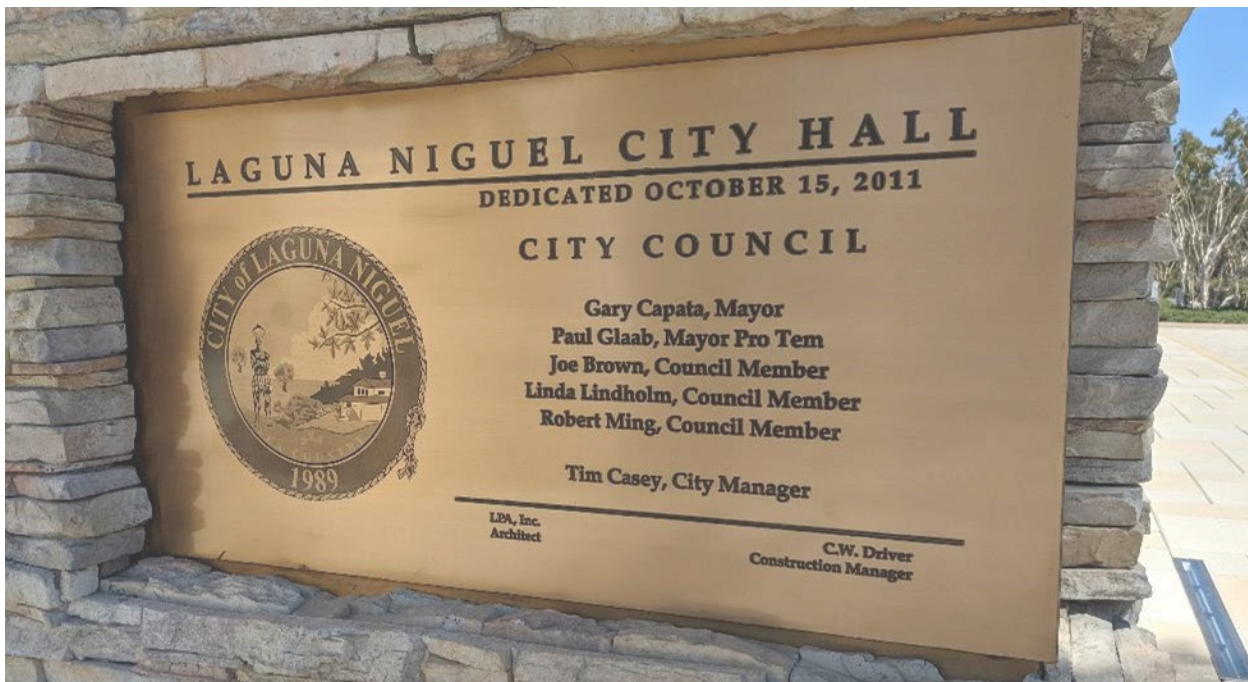


Table 20 LRSP First Year Actions - Lead and Support Agency Timeline Matrix

Laguna Niguel Draft 2022 Local Roadway Safety Plan				City of Laguna Niguel	Capistrano Unified School District	Falck/Care Ambulance	Orange County Fire Authority	Orange County Health Care Agency	Orange County Transportation Authority	Orange County Sheriff's Department
First Year Actions										
Initiative	Emphasis Area	Action	Detail	CITY	CUSD	FCA	OCFA	OCHCA	OCTA	OCSD
#1	SWG Meeting (Annual)		City of Laguna Niguel to host annual meeting and invite all Stakeholder agencies to attend							
#2	Speed Management	1.1 Community Education Campaigns	Develop and distribute annual content and distribution methods							
			Distribute printed material to new drivers (Juniors & Seniors) at high schools annually concurrent with issuance of parking permits							
			Promote City-prepared "School Traffic Safety" brochure and content through CUSD Communications							
			Review messaging and content in advance of publishing							
			Promote content with local 4th District Parent Teacher Association (PTA) representatives & after school programs							
#3	Speed Management	1.3 Infrastructure Treatments	Pursue grant, local, or regional funding for infrastructure treatments.							
			Provide Letter of Support for grant pursuits							
#4	Reduce Impaired Driving	2.2 Focused Education Campaigns	Develop and distribute content and distribution methods							
			Provide resources from past, existing, or future campaigns to supplement City efforts							
			Consider promotion of campaign messaging on interior/exterior of OCTA buses where feasible							
			Consider a full-wrap bus to promote a campaign subject to review of financial impacts							
			Participate in campaign funding pursuit, content development, distribution methods, and promotion							
#5	Reduce Distracted Driving	3.2 Parent Intervention Program	Create a new "how-to" brochure for parents to discuss safe driving behavior and methods to avoid distractions with new youth drivers							
			Distribute City content and consider requiring students commit to distraction-free driving behavior as a condition of securing parking permits							
			Support content development and methods to evaluate results with parents							
			Participate in campaign funding pursuit, content development, distribution methods, and promotion							
#6	Reduce Distracted Driving	3.3 Regional Education Campaigns	Develop and distribute content and distribution methods							
			Distribute City content to students and parents							
			Consider leading interactive classes for student drivers subject to OCHCA staff resource availability							
			Participate in campaign funding pursuit, content development, distribution methods, and promotion							
#7	Eliminate High-Crash Locations	4.1 Road Safety Audits	Contract licensed professionals to perform Road Safety Audits.							
#8	Increase Safe Driving in Older Adults and Teens	7.1 Targeted Campaigns for Older Adults	Partner with the Sea Country Senior Center to present and distribute available published materials							
			Continue providing alternatives to driving for older adults through OC Bus Senior Discounts and OC Flex Microtransit services							
			Promote content through OCTA communication channels to target audience							
#9	Increase Safe Driving in Older Adults and Teens	7.2 Targeted Campaigns for Teens	Continue organizing annual "Every 15 Minutes" campaign; 2-day program on distracted/impaired driving. Typically coordinated with CUSD, OCSD, Coroners Dept, Care Ambulance							
			Continue partnership with partners to ensure annual delivery of the "Every 15 Minutes" safety education program at relevant schools							
			Promote the effort and campaign through organized City communication methods							
			Continue providing alternatives to driving for teens through OC Flex Microtransit services and free transit rides for youth aged 6 to 18 on fixed route busses							
LEGEND:				LEAD				SUPPORT		

Table 21 LRSP Near & Long-Term Actions Summary - Lead and Support Agency Timeline Matrix

Laguna Niguel Draft 2022 Local Roadway Safety Plan Action Item Summary by Timeframe		City of Laguna Niguel	Capistrano Unified School District	Falcu/Care Ambulance	Orange County Fire Authority	Orange County Health Care Agency	Orange County Transportation Authority	Orange County Sheriff's Department
1ST YEAR	Program Type	CITY	CUSD	FCA	OCFA	OCHCA	OCTA	OCSD
SWG Meeting (Annual)	Requirement							
Action 1.1: Speed Management - Community Education Campaigns	Education							
Action 1.3: Speed Management - Infrastructure Treatments	Engineering							
Action 2.2: Reduce Impaired Driving - Focused Education Campaigns	Education							
Action 3.2: Reduce Distracted Driving - Parent Intervention Program	Education							
Action 3.3: Reduce Distracted Driving - Regional Education Campaigns	Education							
Action 4.1: Eliminate High-Crash Locations - Road Safety Audits	Engineering							
Action 7.1: Increase Safe Driving in Older Adults and Teens - Targeted Campaigns for Older Adults	Education							
Action 7.2: Increase Safe Driving in Older Adults and Teens - Targeted Campaigns for Teens	Education							
1-5 YEARS								
Action 1.2: Speed Management - Police Enforcement	Enforcement							
Action 2.1: Reduce Impaired Driving - Ride Hail Promotions	Emerging Technology							
Action 2.3: Reduce Impaired Driving - Sobriety Checkpoints	Enforcement							
Action 3.1: Reduce Distracted Driving - High Visibility Enforcement	Enforcement							
Action 5.1: Improve Safety at Intersections and Around Schools - Intersection Improvements wth Emerging Technologies	Emerging Technology							
Action 5.2: Improve Safety at Intersections and Around Schools - Countermeasure Monitoring	Engineering							
Action 6.2: Increase Active Transportation Road User Safety - Pursue Grant Funding	Engineering							
5+ YEARS								
Evaluate Crash Data and Review Goals (at minimum every 5-years)	Requirement							
Action 4.2: Eliminate High-Crash Locations - Capital Improvement Program	Engineering							
Action 6.1: Increase Active Transportation Road User Safety - Engineering Solutions	Engineering							
LEGEND:		LEAD			SUPPORT			

**APPENDIX A:     LETTERS OF SUPPORT**



## ORANGE COUNTY SHERIFF'S DEPARTMENT

SHERIFF-CORONER DON BARNES

September 3, 2020

Jacki Scott, PE, TE  
Public Works Director  
**CITY OF LAGUNA NIGUEL**  
30111 Crown Valley Parkway  
Laguna Niguel, CA 92677

### **RE: Letter of Support for Local Roadway Safety Plan**

Dear Ms. Scott,

On behalf of the Orange County Sheriff's Department/ Laguna Niguel Police Services, we would like to offer this letter of support documenting our support for improving transportation safety in the City of Laguna Niguel. The Orange County Sheriff's Department has been an active participant during the preparation of the Local Roadway Safety Plan (LRSP) led by the City. We concur with the project vision dedicated to a roadway network that provides safe travel throughout the city.

As a stakeholder involved in the LRSP, our organization representatives have been involved in review of five years of vehicle, pedestrian, and bicycle crash history, identification of potential solutions to address trends, and prioritization of strategies aligned with the project emphasis areas. We applaud the City of Laguna Niguel's focus to create a culture of safe travel behaviors and reduce severe and fatal transportation crashes citywide.

To achieve positive outcomes, the Orange County Sheriff's Department commits to continued partnership on the LRSP, including potential involvement through:

- Input on best methods to promote safety during dedicated campaigns (social media, in-school programs, etc.),
- Incorporate partner-provided safety messaging into communications (as appropriate),
- Promotion of safety events and activities to our constituents,
- Written letter of support for future grant pursuits led by City or other partners for LRSP activities, and
- Attendance at annual LRSP Stakeholder Working Group update meeting.

We look forward to continued involvement with the City of Laguna Niguel to bring about positive change in the community. If you should have any questions, please do not hesitate to contact me at (949) 362-4310 or by email at [vdasuncion@ocsheriff.gov](mailto:vdasuncion@ocsheriff.gov).

Sincerely,

A handwritten signature in black ink that reads "Virgil Asuncion".

Captain Virgil Asuncion  
Chief of Laguna Niguel Police Services



# CAPISTRANO UNIFIED SCHOOL DISTRICT

33122 VALLE ROAD, SAN JUAN CAPISTRANO CA 92675  
TELEPHONE: (949) 234-9200/FAX: 496-7681 [www.capousd.org](http://www.capousd.org)

September 8, 2020  
Jacki Scott, PE, TE  
Public Works Director  
**CITY OF LAGUNA NIGUEL**  
30111 Crown Valley Parkway  
Laguna Niguel, CA 92677

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KIRSTEN M. VITAL BRULTE

## RE: Letter of Support for Local Roadway Safety Plan

Dear Ms. Scott,

On behalf of Capistrano Unified School District, we would like to offer this letter of support documenting our support for improving transportation safety in the City of Laguna Niguel. Capistrano Unified has been an active participant during the preparation of the Local Roadway Safety Plan (LRSP) led by the City. We concur with the project vision dedicated to a roadway network that provides safe travel throughout the city.

As a stakeholder involved in the LRSP, our organization representatives have been involved in review of five years of vehicle, pedestrian, and bicycle crash history, identification of potential solutions to address trends, and prioritization of strategies aligned with the project emphasis areas. We applaud the City of Laguna Niguel's focus to create a culture of safe travel behaviors and reduce severe and fatal transportation crashes citywide.

To achieve positive outcomes, Capistrano Unified commits to continued partnership on the LRSP, including potential involvement through:

- Input on best methods to promote safety during dedicated campaigns (social media, in-school programs, etc.),
- Incorporate partner-provided safety messaging into communications (as appropriate),
- Promotion of safety events and activities to our constituents,
- Written letter of support for future grant pursuits led by City or other partners for LRSP activities, and
- Attendance at annual LRSP Stakeholder Working Group update meeting.

SERVING THE COMMUNITIES OF:

ALISO VIEJO • COTO DE CAZA • DANA POINT • LADERA RANCH • LAGUNA NIGUEL • LAS FLORES • MISSION VIEJO  
RANCHO MISSION VIEJO • RANCHO SANTA MARGARITA • SAN CLEMENTE • SAN JUAN CAPISTRANO

We look forward to continued involvement with the City of Laguna Niguel to bring about positive change in the community. If you should have any questions, please do not hesitate to contact me at (949)234-9541, or by email at [cechicas@capousd.org](mailto:cechicas@capousd.org).

Sincerely,

A handwritten signature in blue ink, appearing to read 'C. Chicas', with a long horizontal flourish extending to the right.

Carlos Chicas  
Executive Director Maintenance, Operations, Transportation  
Capistrano Unified School District



**CLAYTON CHAU, MD PhD**  
DIRECTOR/COUNTY HEALTH OFFICER

**JENNA SARIN, MSN, RN, PHN**  
INTERIM ASSISTANT AGENCY  
DIRECTOR

**MARGARET BREDEHOFT, DrPH**  
DEPUTY AGENCY DIRECTOR  
PUBLIC HEALTH SERVICES

**TAMARRA JONES, DrPH**  
DIVISION MANAGER  
HEALTH PROMOTION AND  
COMMUNITY PLANNING

1725 W. 17<sup>TH</sup> STREET  
SANTA ANA, CA 92706  
PHONE: (714) 567-6225  
FAX: (714) 834-8728  
E-MAIL: TJones@ochca.com

**PUBLIC HEALTH SERVICES**  
**HEALTH PROMOTION AND**  
**COMMUNITY PLANNING**

September 16, 2021

Jacki Scott, PE, TE  
Public Works Director  
City of Laguna Niguel  
30111 Crown Valley Parkway  
Laguna Niguel, CA 92677

**RE: Letter of Support for Local Roadway Safety Plan**

Dear Ms. Scott,

On behalf of Orange County Health Care Agency (OCHCA), we would like to offer this letter of support documenting our support for improving transportation safety in the City of Laguna Niguel. OCHCA has been an active participant during the preparation of the Local Roadway Safety Plan (LRSP) led by the City. We concur with the project vision dedicated to a roadway network that provides safe travel throughout the city.

As a stakeholder involved in the LRSP, a representative of our organization has been involved in review of five years of vehicle, pedestrian, and bicycle crash history, identification of potential solutions to address trends, and prioritization of strategies aligned with the project emphasis areas. We applaud the City of Laguna Niguel's focus to create a culture of safe travel behaviors and reduce severe and fatal transportation crashes citywide.

To achieve positive outcomes, OCHCA commits to continued partnership on the LRSP, including potential involvement through:

- Input on best methods to promote safety during dedicated campaigns (social media, in-school programs, etc.),
- Incorporate partner-provided safety messaging into communications (as appropriate),
- Promotion of safety events and activities to our constituents,
- Written letter of support for future grant pursuits led by City or other partners for LRSP activities, and
- Attendance at annual LRSP Stakeholder Working Group update meeting.

**Letter of Support for Local Roadway Safety Plan**

September 16, 2021

Page 2 of 2

We look forward to continued involvement with the City of Laguna Niguel to bring about positive change in the community. If you should have any questions, please do not hesitate to contact me at (714) 567-6225 (phone), or by email at [tjones@ochca.com](mailto:tjones@ochca.com) (email).

Sincerely,

A handwritten signature in black ink, appearing to read "T Jones", written in a cursive style.

Tamarra Jones, DrPH

Division Manager

Health Promotion and Community Planning



BOARD OF DIRECTORS

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September 16, 2021

Jacki Scott, PE, TE  
Public Works Director  
City of Laguna Niguel  
30111 Crown Valley Parkway  
Laguna Niguel, CA 92677

Subject: **Letter of Support for Local Roadway Safety Plan**

Dear Ms. Scott:

We would like to offer this letter expressing our support for improving transportation safety in the City of Laguna Niguel (City). The Orange County Transportation Authority (OCTA) staff has actively participated in the preparation of the Local Roadway Safety Plan (LRSP) led by the City. OCTA supports with the project vision dedicated to a roadway network that provides safe travel throughout the City and across Orange County.

To achieve positive and lasting safety outcomes, OCTA recognizes the importance of continued partnership on the LRSP. OCTA looks forward to continued involvement with the City to bring about positive and lasting transportation safety improvements in the community within the context of countywide mobility and accessibility solutions. If you should have any questions, please do not hesitate to contact Warren Whiteaker, Principal Transportation Analyst, at (714) 560-5748 or [wwhiteaker@octa.net](mailto:wwhiteaker@octa.net).

Sincerely,

Kia Mortazavi  
Executive Director, Planning

KM:ww

c: Warren Whiteaker, OCTA



# ORANGE COUNTY FIRE AUTHORITY

P. O. Box 57115, Irvine, CA 92619-7115 • 1 Fire Authority Road, Irvine, CA 92602-0125

Brian Fennessy Fire Chief

(714) 573-6000

[www.ocfa.org](http://www.ocfa.org)

October 7, 2021

Jacki Scott, PE, TE  
Public Works Director  
**CITY OF LAGUNA NIGUEL**  
30111 Crown Valley Parkway  
Laguna Niguel, CA 92677

## RE: Letter of Support for Local Roadway Safety Plan

Dear Ms. Scott,

On behalf of the Orange County Fire Authority (OCFA), we would like to offer this letter of support documenting our support for improving transportation safety in the City of Laguna Niguel. OCFA has been an active participant during the preparation of the Local Roadway Safety Plan (LRSP) led by the City. We concur with the project vision dedicated to a roadway network that provides safe travel throughout the city. As a stakeholder involved in the LRSP, our organization representatives have been involved in review of five years of vehicle, pedestrian, and bicycle crash history, identification of potential solutions to address trends, and prioritization of strategies aligned with the project emphasis areas. We applaud the City of Laguna Niguel's focus to create a culture of safe travel behaviors and reduce severe and fatal transportation crashes citywide.

To achieve positive outcomes, OCFA commits to continued partnership on the LRSP, including potential involvement through:

- Input on best methods to promote safety during dedicated campaigns (social media, in-school programs, etc.),
- Incorporate partner-provided safety messaging into communications (as appropriate),
- Promotion of safety events and activities to our constituents,
- Written letter of support for future grant pursuits led by City or other partners for LRSP activities, and
- Attendance at annual LRSP Stakeholder Working Group update meeting.

We look forward to continued involvement with the City of Laguna Niguel to bring about positive change in the community. If you should have any questions, please do not hesitate to contact me at (949) 237-3200 or by email at [MikeContreras@ocfa.org](mailto:MikeContreras@ocfa.org).

Sincerely,

Mike Contreras  
Division Chief, OCFA Division 5

**City of Laguna Niguel**  
Jacki Scott, PE, TE  
Public Works Director  
30111 Crown Valley Parkway  
Laguna Niguel, CA 92677

via email



**Falck Mobile Health Corp.**  
**dba Care Ambulance**

1517 W Braden Court  
Orange, CA 92868

Phone (714)288-3800  
<https://us.falck.com/>

October 14, 2021

## **Local Roadway Safety Plan**

Dear Ms. Scott,

On behalf of Falck Mobile Health Corp. dba Care Ambulance, we would like to offer this letter to acknowledge we have been an active participant during the preparation of the Local Roadway Safety Plan (LRSP) led by the City. We concur with the project vision dedicated to a roadway network that provides safe travel throughout the city.

As a stakeholder involved in the LRSP, our organization representatives have been involved in review of five years of vehicle, pedestrian, and bicycle crash history, identification of potential solutions to address trends, and prioritization of strategies aligned with the project emphasis areas. We applaud the City of Laguna Niguel's focus to create a culture of safe travel behaviors and reduce severe and fatal transportation crashes citywide.

To achieve positive outcomes, Care Ambulance commits to continued partnership on the LRSP, including potential involvement through:

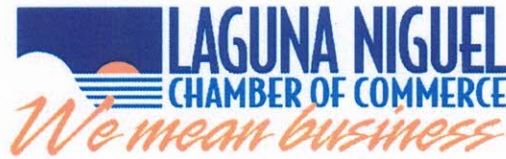
- Input on best methods to promote safety during dedicated campaigns (social media, in-school programs, etc.),
- Incorporate partner-provided safety messaging into communications (as appropriate),
- Promotion of safety events and activities to our constituents,
- Attendance at annual LRSP Stakeholder Working Group update meeting.

We look forward to continued involvement with the City of Laguna Niguel to bring about positive change in the community. If you should have any questions, please do not hesitate to contact me at (714) 288-3883, or by email at [rob.viera@falck.com](mailto:rob.viera@falck.com).

Kind regards

**Robert Viera**  
Division Manager

[rob.viera@falck.com](mailto:rob.viera@falck.com)  
714 288 3883



March 9, 2022

Public Works Department  
City of Laguna Niguel  
30111 Crown Valley Parkway  
Laguna Niguel, CA 92677  
Attn: Jacki Scott, Public Works Director/City Engineer

Dear Jacki,

Thank you for the opportunity to review the 2022 Local Roadway Safety Plan, on behalf of the Laguna Niguel business community. The Chamber of Commerce places a high priority on traffic and transportation safety throughout our city, which certainly is a key element of the outstanding lifestyle and supportive business environment our residents and business owners enjoy.

It is important to know that the City places a high priority on this critical issue and has dedicated resources to complete this study. The draft Local Roadway Safety Plan is an excellent snapshot of the many initiatives the City takes to ensure safety around the local roadway network.

The Chamber of Commerce finds the draft report to be comprehensive in looking at pedestrian, bicycle, and vehicular safety, which are all very important to the health and vitality of the local economy and the success of businesses located here. The Chamber of Commerce is supportive of the findings within the draft report and looks forward to many more improvements throughout the City's roadway network to ensure continued safety for all roadway users. The Chamber of Commerce also looks forward to investments in transportation technology as we anticipate a thriving future for the residents and businesses located within the City of Laguna Niguel.

It is with great appreciation that the Chamber of Commerce supports approval of the 2022 Local Roadway Safety Plan by the City Council and looks forward to participating in future stakeholder meetings as this document is revisited and updated in future years.

My best regards,

A handwritten signature in blue ink that reads "Scott Alevy". The signature is stylized with a large, sweeping flourish at the end.

Scott Alevy  
President & CEO



***LRSP Vision:***

***The City of Laguna Niguel is dedicated to a roadway network that provides safe travel throughout the city.***

[markthomas.com](http://markthomas.com)