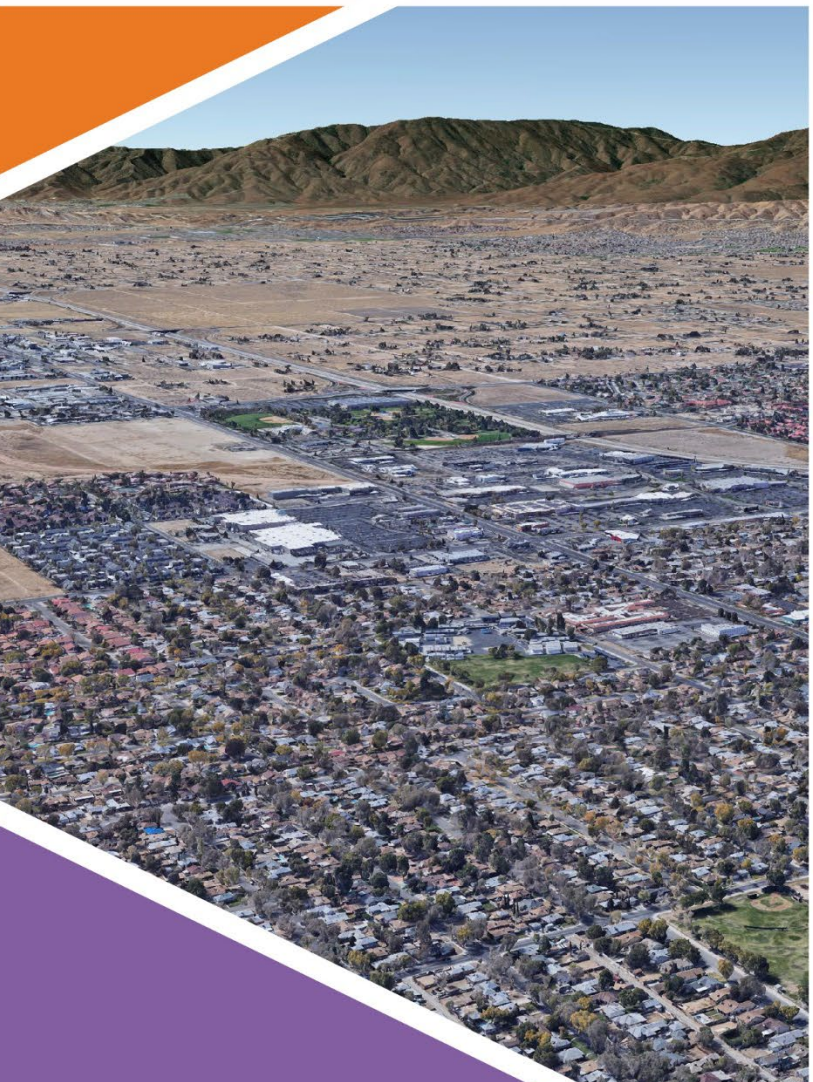
City of Lancaster

LOCAL ROAD SAFETY PLAN AND PROGRAM

August 2022 | FINAL



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Executive Summary

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

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

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

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

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

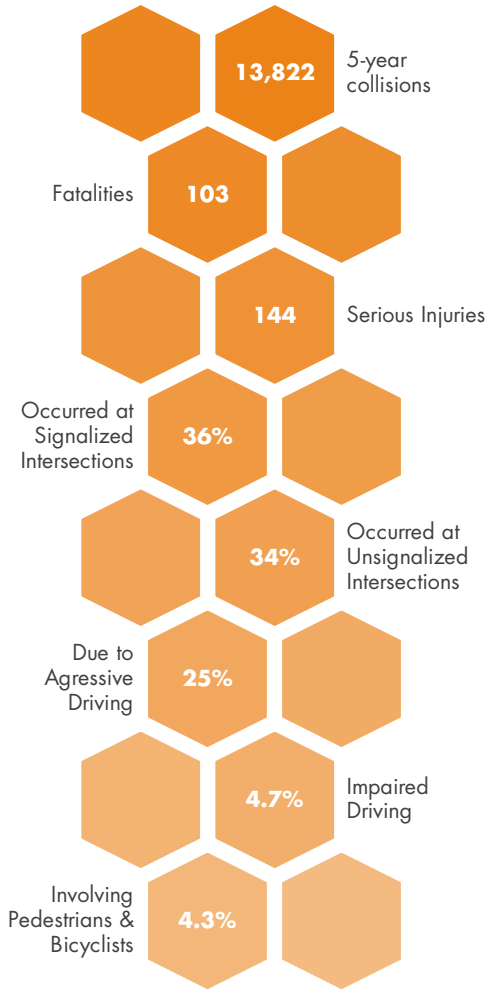
Goal #2: Illustrate the value of a comprehensive safety program and the systemic process.

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

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

This LRSP analyzes pre-COVID crash data (January 1, 2015 – December 31, 2019) and roadway improvements to assess historic trends, patterns, and areas of increasing concern.

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



Source: Lancaster Collision Database (2015-2019)

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

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

Emphasis Area #1: Aggressive Driving

Emphasis Area #2: Vulnerable Road Users (Pedestrians & Bicyclists)

Emphasis Area #3: Context Sensitive Roadway Design

The following 10 case study locations were chosen to be representative of the corridor and intersection configurations throughout the city.

1. Signalized Intersection: 10th Street and Avenue L
2. Signalized Intersection: Challenger Way and Avenue K
3. Signalized Intersection: Gadsden Avenue and Avenue K
4. Unsignalized Intersection: 40th Street W and Avenue J-8
5. Unsignalized Intersection: 50th Street W and Avenue K
6. Unsignalized Intersection: 15th Street E and Avenue J-8
7. Unsignalized Intersection: 70th Street E and Avenue K
8. Unsignalized Intersection: 25th Street E and Lancaster Boulevard
9. Segment: Avenue K from 10th Street W to 12th Street W
10. Segment: Avenue K-4 from Gadsden Avenue to 10th Street W

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

Citywide Countermeasure Toolbox

ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
NS03	Install signal	Unsignalized intersections with significant collision activity where warrants are met	30%	$500,000	per intersection
NS04	Convert intersection to roundabout (from all-way stop)	Unsignalized intersections with significant collision activity, where warranted	35%	$1,500,000	per intersection
NS06	Install/upgrade larger or additional stop signs/other intersections warning/regulatory sign	Areas identified in road sign safety audit	15%	$500	per sign
NS07	Upgrade intersection pavement markings (to make more visible)	Intersections where outdated or degraded striping and pavement markings exist	25%	$22,000	per intersection
NS15	Create direction median openings to restrict left-turns (right-in/right-out)	Entrances/exits from driveways with high numbers of turning movement collisions	50%	$100,000	per location
NS20PB	Install/upgrade pedestrian crossing at uncontrolled locations	Intersections with high pedestrian activity where speed limit is 35 mph or less and sufficient sight distance is available	25%	$22,000	per location
R14	Change lane configurations	Roadway segments with high number of sideswipe collisions	30%	$12,500	per mile
S02	Update signal heads to meet current standards	Signalized intersections where signals heads do not meet current standards	15%	$12,000	per intersection

ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
S03	Improve signal timing (coordination, phasing, red, yellow, operation)	Signalized intersections where there is insufficient clearance time with current timing plans or where signals placed closely enough to impact free flowing operations of the street	15%	$5,000	per intersection
S21PB	Modify signal phasing to implement a Leading Pedestrian Interval (LPI) with new controller	Signalized Intersections – especially those with high pedestrian activity	60%	$30,000	per intersection
-*	Evaluate intersection/roadway striping and markings for possible enhancements	Intersection and roadway segments with high collision activity	5%	$30,000	per location
-*	Implement targeted DUI enforcement combined with education programs at local high schools	Locations citywide, specifically those with high DUI collisions	5%	varies	varies
-*	Evaluate built infrastructure (lane widths/lane configuration) in relation to existing demand	Locations with more capacity than demand	5%	$30,000	per location
-*	Install ADA ramps	Intersections with high pedestrian activity	5%	$10,000	per location
-*	Install curb extensions	Intersections with high pedestrian activity	5%	$30,000	per extension

ID	Potential Countermeasures	Where to apply?	Crash Reduction Factor	Per Unit Cost	Unit
-*	Reduce the curb radius to reduce intersection size and move the stop sign/bar closer	Locations with sight distance issues	5%	$100,000	per intersection
-*	Reduce intersection size or number of lanes to provide better visibility for conflicting movements	Locations with more capacity than demand	5%	$100,000	per intersection
-*	Improve pavement condition	Roadway segments that have degraded pavement conditions	5%	$100,000	per intersection
-*	Improve striping along roadway segment	Roadway segments that have degraded roadway striping	5%	$30,000	per mile

**There were no approved countermeasures for these improvements in the Local Roadway Safety Manual, so a conservative Crash Reduction Factor (CRF) was assumed.*

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

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

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

1. Introduction

Located in Antelope Valley, the City of Lancaster is a business-friendly environment with a population of over 170,000. Lancaster is a growing community with clean air, attainable housing, and open spaces. Based on University of California Berkeley's Transportation Injury Mapping System (TIMS) and California Department of Transportation (Caltrans) Vehicle Operation Cost Parameters, Lancaster's economic losses due to traffic injuries amounted to approximately $1.1 billion from 2016 to 2020. This report identifies factors associated with vehicle crashes most particular to the city and proposes matching countermeasures to reduce or eliminate those crashes.

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

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

Lancaster has taken steps to enhance all modal safety throughout the city and with this LRSP, Lancaster is continuing to prioritize safety in its planning processes. The Office of Traffic Safety (OTS) most recently ranked Lancaster 2nd of 59 peer cities for traffic injuries after normalizing for population and VMT in 2019. With number one (1) in the OTS crash rankings considered the highest, or "worst," this positions the City at well below average for roadway safety performance. This LRSP analyzes pre-COVID Crossroads crash data from January 1, 2015 – December 31, 2019 and roadway improvements to assess historic trends, patterns, and areas of increasing concern.

The intent of the LRSP is to:

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

2. Vision and Goals

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

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

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

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

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

Objectives:

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

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

Objectives:

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

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

Objectives:

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

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

Objectives:

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

3. Process

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

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

FHWA encourages the following:

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

Caltrans guidance follows a similar outline with the following steps:

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

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

3.1 Guiding Manuals

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

3.1.1 Local Roadway Safety Manual

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

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

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

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

3.1.2 Highway Safety Manual

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

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

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

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

The HSM identifies five steps in this process:[3]

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

The HSM provides several statistical methods for screening roadway networks and identifying high risk locations based on overall crash histories. After identifying the total number of crashes, this study uses a method referred to as "Critical Crash Rate" to analyze the data.

3.2 Analysis Techniques

3.2.1 Collision Analysis

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

3.2.2 Network Screening Analysis

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

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

The different collisions were organized by the following categories:

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

3.3 Statistical Performance Measures

3.3.1 Critical Crash Rate (CCR)

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

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

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

Where,
$R_{c,i}$ = Critical crash rate for intersection i
R_a = Weighted average crash rate for reference population
P = P-value for corresponding confidence level
MEV_i = Million entering vehicles for intersection i

Source: Highway Safety Manual

DATA NEEDS

CCR can be calculated using:

- Daily entering volume for intersections, or VMT for roadway segments
- Intersection control types to separate them into like populations
- Roadway functional classification to separate them into like populations
- Collision records in Geographic Information System (GIS) or tabular form including coordinates or linear measures

Strengths

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

3.3.2 CCR Methodology

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

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

- Intersection:
  - Traffic Signal
  - Proposed Traffic Signal
  - Roundabout
  - School Beacon
  - School Beacon, All-Way Stop
  - School Beacon, RRFB
  - RRFB/Smart Crosswalk
  - Beacon, All-Way Stop
  - All-Way Stop
  - Unsignalized Two Way Stop
- Roadway Classification:
  - Highway
  - Arterial
  - Collector
  - Residential

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

3.3.3 Equivalent Property Damage Only (EPDO)

The equivalent property damage only (EPDO) method is described in the Highway Safety Manual. This method assigns weighting factors to crashes based on injury level (severe, injury, property damage only) to develop a property damage only score. In this analysis, the injury crash costs were calculated for each location (based on the latest Caltrans injury costs) and then normalized by dividing by the value of a property damage only collision. Fatal and severe injury collisions are estimated at $2.19 million, Other Visible Injury collisions at $142,300, Complaint of Pain collision at $80,900, and Property Damage Only collisions at $13,300. This figure is then divided by the injury cost for a property damage only crash. The resulting number is the equivalent number of property damage only crashes at each site. This figure allows all locations to be compared based on injury crash costs. (Highway Safety Manual, Chapter 4).

3.3.4 Probability

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

Data Needs

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

Strengths

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

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

These proportions are then utilized to determine the probability that the proportion of a specific crash type is greater than the long-term expected proportion of that crash type. The probability of specific crash types exceeding threshold proportion is calculated based on the following equation:

$$P(p_i > \overline{p_i^*} \mid N_{observed,i}, N_{observed,i(TOTAL)}) = 1 - betadist(\overline{p_i^*}, a + N_{observed,i}, \beta + N_{observed,i(TOTAL)} - N_{observed,i})$$

Where,
$\overline{p_i^*}$ = Threshold proportion
p_i = Observed proportion
$N_{observed,i}$ = Observed target crashes for a site i
$N_{observed,i(TOTAL)}$ = Total number of crashes for a site i

Source: Highway Safety Manual

3.4 Future Analysis

The city plans to conduct regular collision monitoring as described in **Section 10.2 Next Steps**. The City will then refresh the analysis and update the LRSP as needed to maintain eligibility for HSIP funding, as also described in **Section 10.2 Next Steps**.

4. Safety Partners

Local stakeholders were included in the development of this report to ensure the local perspective was maintained at the forefront of planning efforts. A stakeholder group of City staff and external partners consisted of representatives from the Los Angeles Sheriff's Department (LASD), Los Angeles County Fire Department, and California Highway Patrol.

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

4.1 Field Visit Meeting #1

The first field visit was conducted virtually on Friday, March 11, 2022. At the meeting, stakeholders were introduced to the project and provided an overview of the data used, the required outputs, and the potential outcomes of the study.

In addition to the overview, stakeholders were asked to provide local insight and knowledge at ten "case study" locations that were identified after the initial network screening and crash analysis process. Potential countermeasures were recommended, and emphasis/challenge areas were discussed, specifically speeding as a major factor in collisions throughout the city.

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

4.2 Field Visit Meeting #2

The second field visit was also conducted virtually on Wednesday, March 16, 2022. During this meeting, the Los Angeles Sheriff's Department (LASD) was introduced to the project and asked to provide additional feedback on the countermeasures and case study locations.

LASD offered specific insight on each case study location and spoke in favor of road diets coupled with enforcement to address collisions related to speeding throughout the city. This information was processed and incorporated into the LRSP.

5. Existing Efforts

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

Table 1 outlines the relevant existing City plans and their improvements and funding sources. **Table 2** outlines the relevant existing City projects and their timelines. **Table 3** summarizes the projects in the City's 2021-2022 Capital Improvement Program (CIP). **Figure 1** shows a map of the City's CIP projects.

Table 1 – Review of Existing City Plans

Document Name	Document Status	Agency	Document Description	Transportation Policies/Improvements	Funding Sources
General Plan	Adopted for 2010-2030	City of Lancaster	Long-Term Planning	• Covers land use, circulation, growth management, housing, public safety, conservation, noise, safety, community design, open space + recreation, and historic + cultural resources, services, economic development	• City of Lancaster
Amargosa Creek Specific Plan	Adopted 2007	City of Lancaster	Specific Area Plan	• Create High-Quality Development on site that includes mixed uses, medical facilities, and community amenities • Create a master plan for the area that operates in conjunction with existing and future citywide plans • Signal and Street Improvements	• City of Lancaster • Development Fees in Commercial and Medical Districts
Downtown Lancaster Specific Plan	Updated 2020	City of Lancaster	Specific Area Plan	• Revitalize downtown culturally, socially, economically • Create pedestrian-friendly, mixed-use environment. • Implement design guidelines and regulations	• Federal Aid Programs • State Funds • County of Los Angeles • City of Lancaster
City of Lancaster Design Guidelines	Updated 2010	City of Lancaster	Urban Design Guidelines	• Complete streets with trees, landscaping • Aesthetic improvements to intersections	• City of Lancaster • Developer Fees

Document Name	Document Status	Agency	Document Description	Transportation Policies/Improvements	Funding Sources
Lancaster Safer Streets Action Plan	Adopted January 2020	City of Lancaster	Safe Streets Action Plan	• Prepare City for HSIP funds • Identify key crash locations, develop counter measures at each	• SCAG • State of California • City of Lancaster • Federal Improvement Grants
City of Lancaster Master Plan of Complete Streets	September 2018	City of Lancaster	Complete Streets Plan	• Improve safety, community health, lower family transportation costs • Identify specific street segments to improve, determine timelines • Identify specific interventions, such as bus stops, signage, wayfinding, trees, lighting	• City of Lancaster
City of Lancaster Master Plan of Trails and Bikeways	March 2012	City of Lancaster	Trail/Bikeway Master Plan	• Increase number of destinations accessible by foot or bike • Create a network of off-street trails and paths	• City of Lancaster • County of Los Angeles • State of California • Federal Improvement Funds
Lancaster Safe Routes to School Master Plan	November 2016	City of Lancaster	Safe Routes to School Plan	• Improve safety for students to walk or bike to school • Increase number of students walking or biking to school	• City of Lancaster • County of Los Angeles • State of California • Federal Improvement Funds
Lancaster Medical Main Street	Planning process currently underway	City of Lancaster	Economic Development /Opportunity Zone Plan	• Plans for a modern health district surrounding Antelope Valley Hospital • Bikeability and walkability improvements to the district • Improvements to roadway infrastructure and connectivity in the district	• City of Lancaster • Private-sector funding

Table 2 – Review of Existing City Projects

Project	Timeline	Transportation Policies/Improvements	Funding Sources
Crossing Improvements	October 2016	• In conjunction with SRTS Master Plan • Implement new crosswalks and improve safety at existing crosswalks	• City of Lancaster • County of Los Angeles • State of California • Federal Improvement Funds
Linear Improvements	October 2016	• In conjunction with SRTS Master Plan • Implement sidewalks, traffic calming, multi-use paths, lane reductions, bike lanes	• City of Lancaster • County of Los Angeles • State of California • Federal Improvement Funds
Annual Thermoplastic Striping Refresh Program	Recurring	• Restripe roads citywide on a regular basis	• City of Lancaster
Pavement Management Program / Revive 25: A Better Road Ahead	Recurring	• Repave key City corridors on a regular basis • Focus on maintaining existing road infrastructure rather than repave, allows city to treat 10 times more roads	• City of Lancaster
5-Year Signal Maintenance Program	Recurring	• Replace LED signal heads, battery backup system batteries, and paint signal heads • One-fifth of city signals covered every year	• City of Lancaster
Sign Retro-reflectivity Testing Program	Biannual	• Test retro-reflectivity of signs citywide	• City of Lancaster

Table 3 – Summary of 2021-2022 CIP Projects

PID	Project	Complements	Conflict
12ST039	10th St W & Ave J Improvements (HSIP) - Construction of bike and pedestrian improvements, new traffic striping and mid-block crossing and median refuge islands	Complements roadway median transit stop access, pedestrian/bicycle improvements and striping improvements	-
12ST046*	Repairs 29 lane miles of city surface streets	Pavement Management Program	-
12ST047*	Repairs 33 lane miles of city surface streets	Pavement Management Program	-
12ST048*	Repairs 38 lane miles of city surface streets	Pavement Management Program	-
12ST050	Replace 1,068 feet of existing damaged guardrail with new guardrail	-	-
12TC005	Upgrades 48 miles of roadway edge with thermoplastic material	-	-
12TC005	Upgrade and refresh 48 miles of roadway edge lines with thermoplastic material	-	-

PID	Project	Complements	Conflict
15BR004	Improve northbound offramp to accommodate additional stocking; improvements to signal of Avenue K and 15th Street West	-	-
15BR005	Avenue M and SR-14 Interchange- Widen overpass multiple lanes in each direction to accommodate future traffic volumes; improvements include signals	-	Increases crossing distance for bikes and pedestrians, potential for more safety hazards
15BR006	Avenue G and SR-14 Interchange- Widen overpass multiple lanes in each direction to accommodate future traffic volumes; improvements include signals	-	Increases crossing distance for bikes and pedestrians, potential for more safety hazards
15BR007	New signals, landscaping, wayfinding, frontage road improvements/ elimination, right-of-way acquisition	Complements complete streets plan	-
15BR008	Improve the interchange to control traffic on and off freeway to create safer overpass for pedestrian and bike usage. Improvements will extend along Avenue L from 15th to 10th Streets West	-	-
15ST058	Within Lancaster Health District, construct two miles of new complete streets to alleviate congestion	-	-
15ST080*	Refresh long lane striping on half of city's arterial streets. Approximately 1,700 lane miles	-	-
15SW016*	Curb, gutter, sidewalk improvements at 38 locations throughout the city in improve overall pedestrian network	-	-
16ST034	Creates direction median openings to restrict left turns and U-turns	-	-
16ST035	Convert two way stops into efficient, cheap roundabouts	-	-
16TS032	Upgrade vehicle detection to include advanced dilemma zone detection, bike recognition and detection	-	-
16ZZ001*	Funds traffic improvements identified in the Lancaster Safer Streets Action Plan; provides funding for safety issues as soon as they come up	Complements Safer Streets Action Plan	-

**These projects are citywide improvements are not included in the map of CIP projects.*

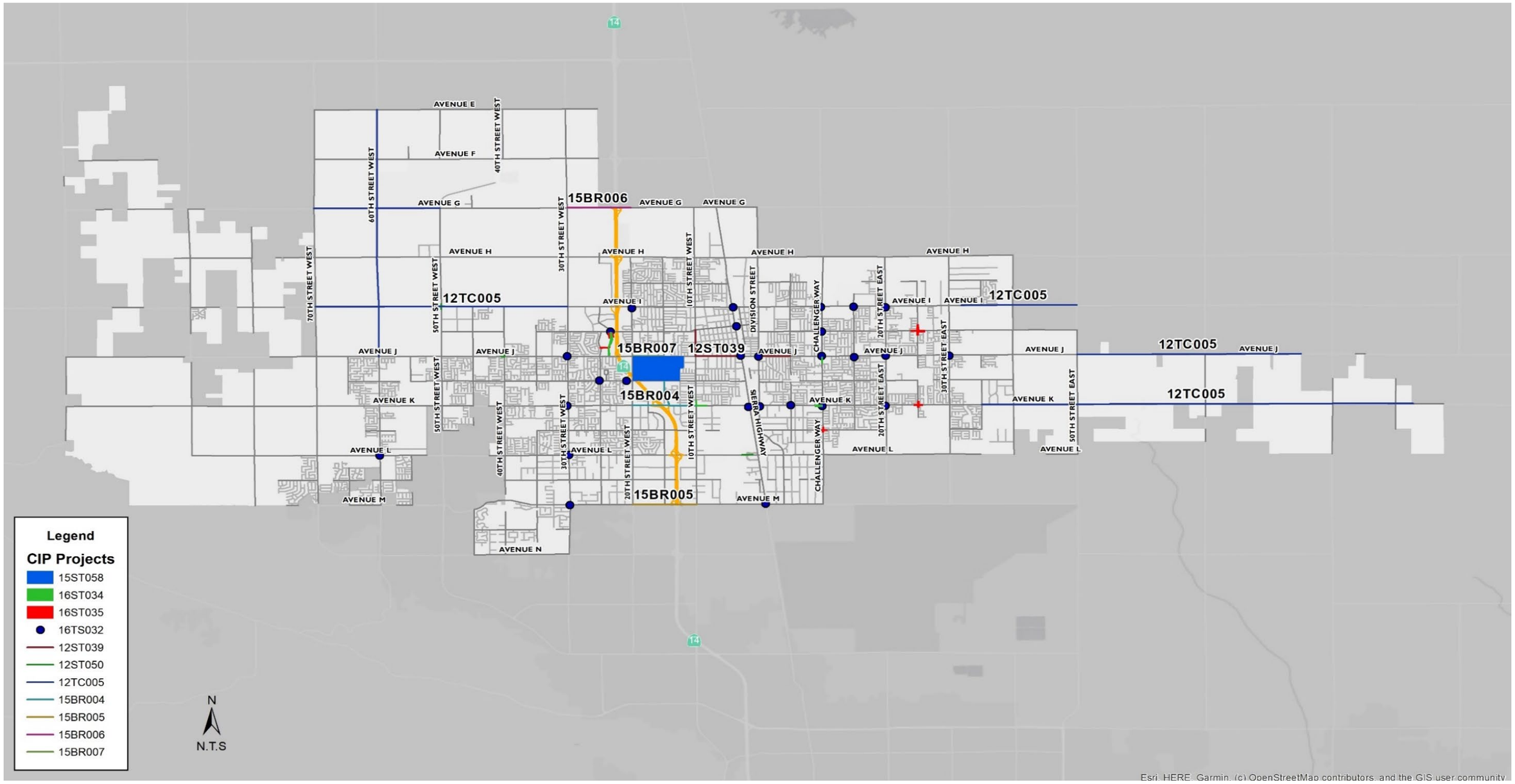


Figure 1 - 2021-2022 Capital Improvement Program (CIP) Projects

6. Data Summary

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

6.1 Roadway Network

Caltrans California Road System (CRS) GIS database was used to build the base roadway network used for this analysis. Intersections and roadway segments were divided into control and classification categories so that each set could have its own crash rates and be compared with similar facilities or control type. Functional Classifications were imported from the city's General Plan and confirmed by city staff. Information on intersection traffic control was provided by the city and included in the analysis network. The collision analysis requires each intersection to be classified by type: Signalized or Unsignalized. Figure 2 illustrates City of Lancaster's roadway functional classification, and Figure 3 illustrates the City's intersection control type, respectively, as used for this study.

6.2 Count Data

Vehicular count data is used as part of the analysis process to evaluate the impact of traffic and understand the natural hierarchy of the roadway network. Count data utilized for this project was pulled from the roadway volumes utilized in the Systemic Safety Analysis Report (SSAR, January 2020), along with several Average Daily Traffic (ADT) volumes taken in 2019. For locations without volume or count data, reasonable assumptions were made for individual corridors and classification types using averages of similar segment types. The traffic volume information allowed the team to assess locations for risk as well as reviewing locations with the highest number of collisions.

6.3 Collision Data

Collision data was collected from Crossroads software for the period from January 1, 2015 through December 31, 2019. Years 2020 and 2021 data were also collected for context but is not included in the trend analysis due to unusual traffic patterns resulting from the COVID-19 pandemic. Five years of data are utilized instead of the standard three years to provide more history to evaluate trends or patterns. Analysis of the raw collision data is the first step in understanding the specific and systemic challenges faced throughout the city. Analyzing the five years of data provided insight on the collision trends and patterns detailed in **Section 7 Crash Safety Trends. Figure 4** displays the locations of fatal and severe injury collisions.

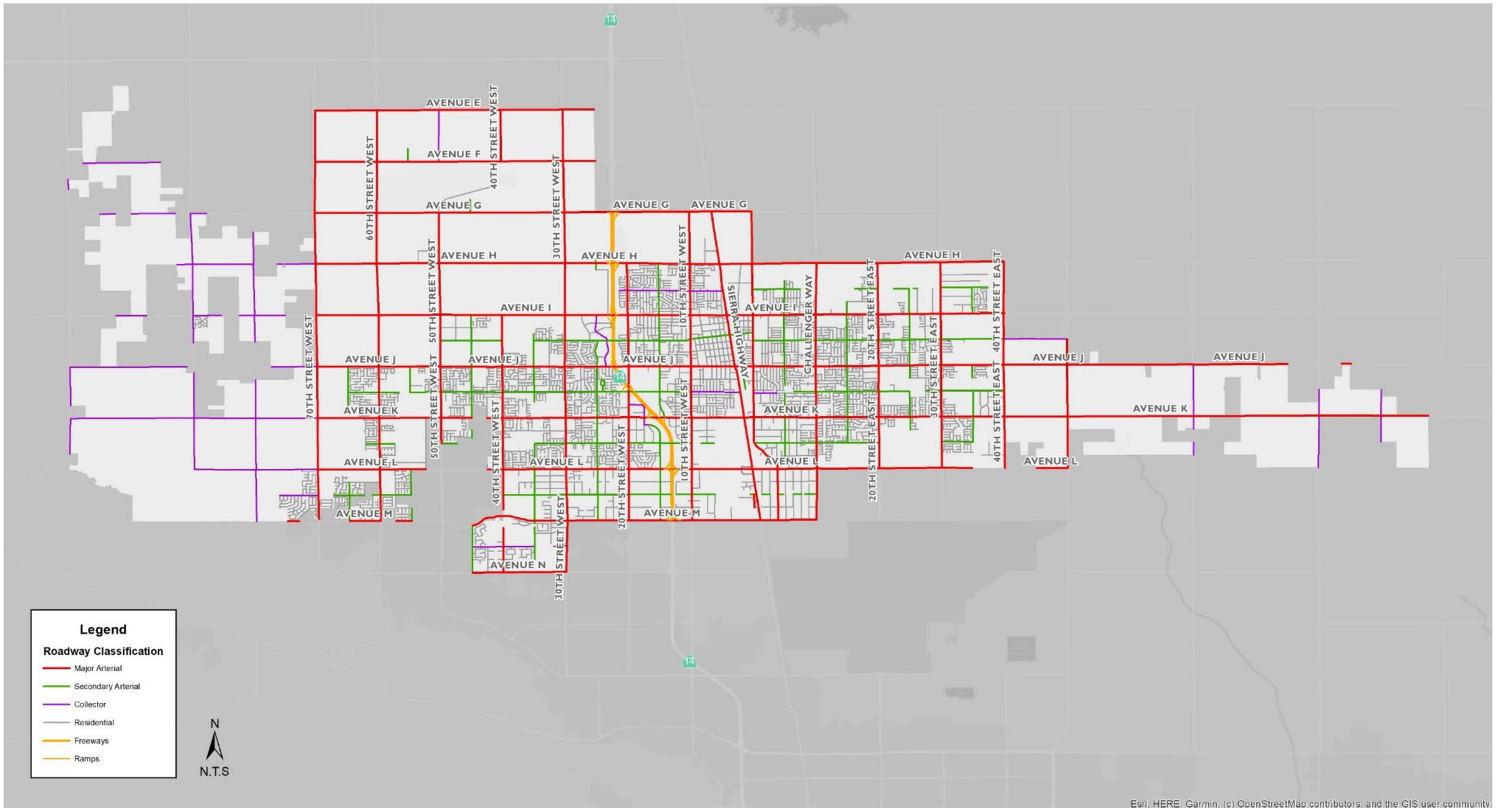


Figure 2 – Roadway Functional Classification

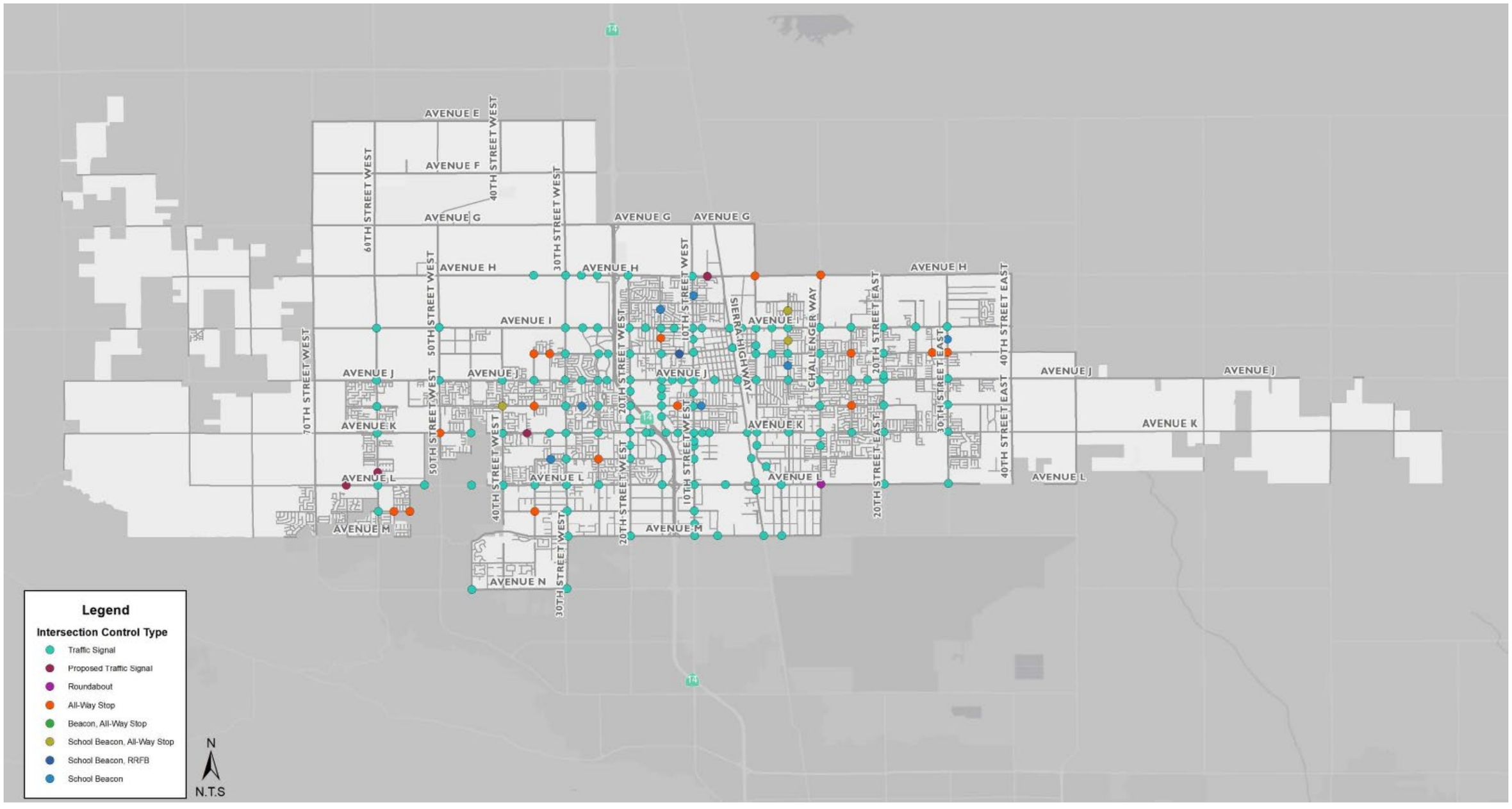


Figure 3 – Intersection Control Type

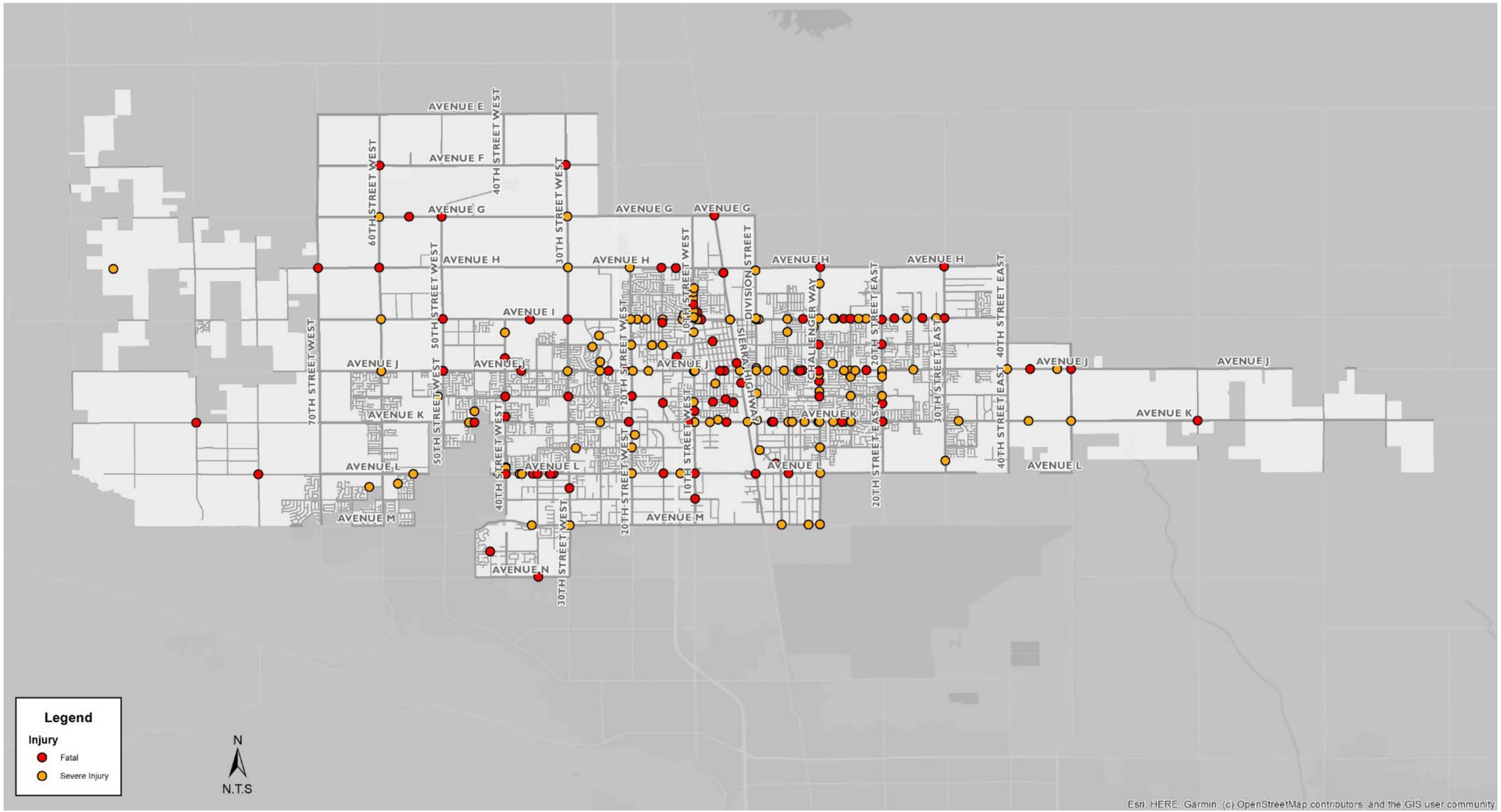


Figure 4 – Fatal and Severe Injury Collisions (2015-2019)

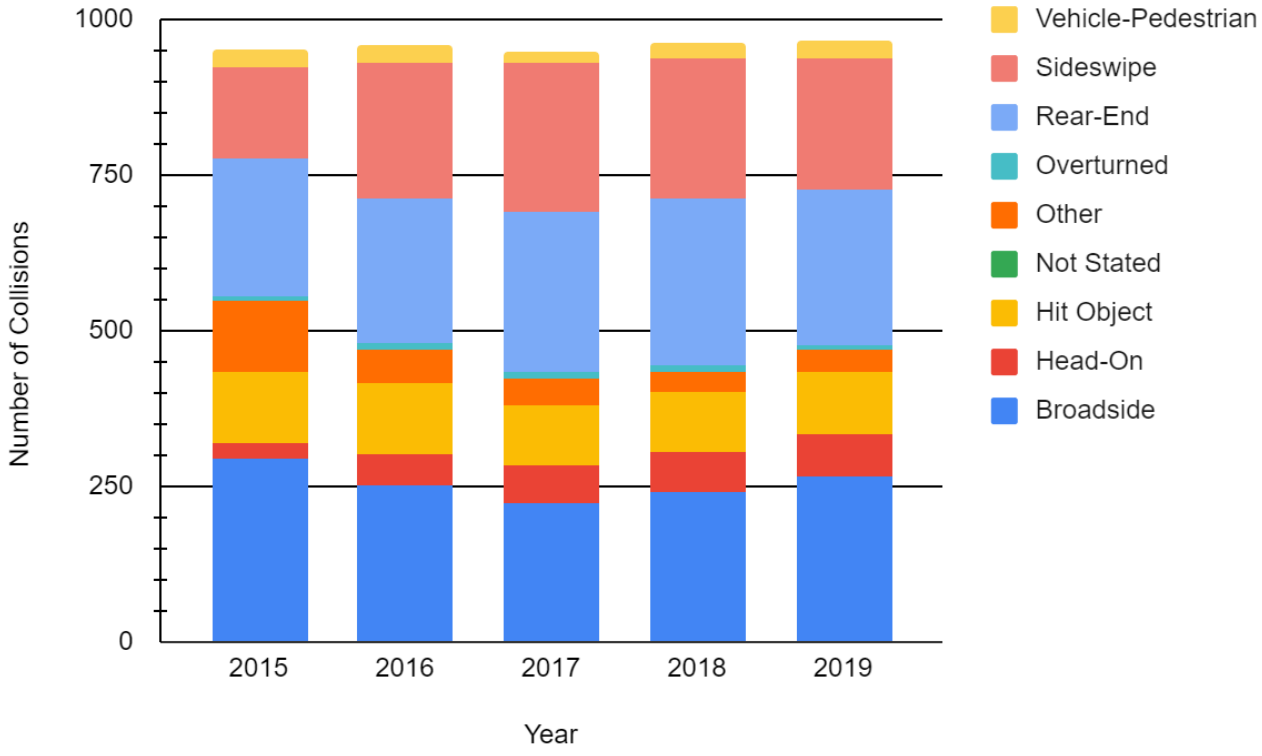
7. Crash Safety Trends

The analysis was conducted using a network screening process for the city-maintained roadway system based on collision records spanning from January 1, 2015, through December 31, 2019. This section contains the results of the analysis, which included the evaluation of Lancaster's fatal and serious injury (generally denoted as K+SI) collisions, statewide K+SI collisions, pedestrian collisions, bicycle collisions, collision severity levels, and collision causes.

7.1 All Collisions

This report utilized collision data for a five-year period to provide a better understanding of trends and to reflect the patterns in crashes that have occurred on city streets. Data used for this report was extracted from Crossroads Software on January 20, 2022 and was current as of that date. Collision data from January 1, 2015 through December 31, 2019 as reported to Crossroads from the local enforcement indicated that during this time there were 13,822 collisions recorded within Lancaster.

Figure 5 shows the most common occurring collision types: Broadsides (27%) and Rear-ends (26%).



Source: Lancaster Crossroads Database (2015-2019)

Figure 5 – Collision Type by Year (2015-2019)

7.2 Fatalities

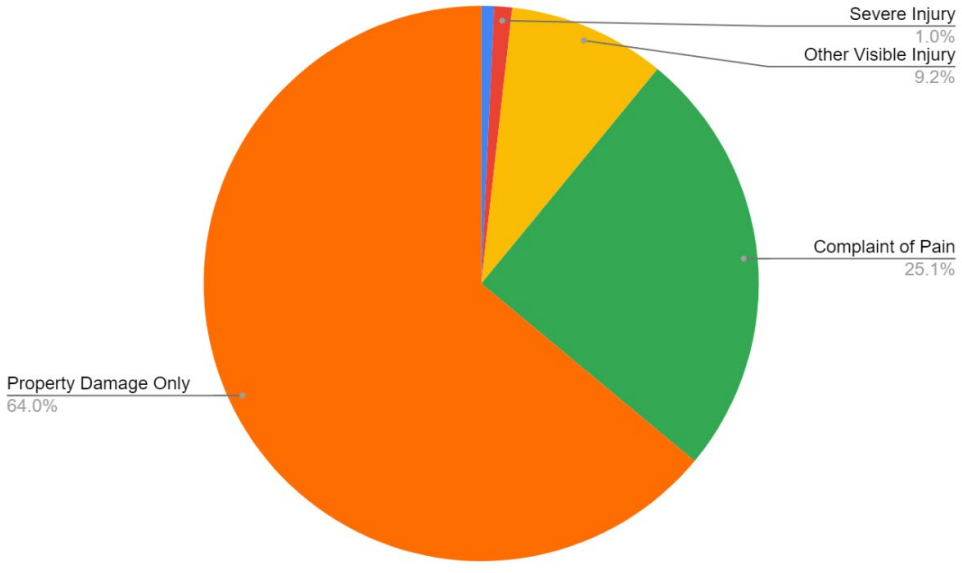
As shown in **Figure 4**, 103 fatal collisions occurred during the study period**.** There were 28 pedestrian fatalities, and four (4) bicycle fatalities. 60 fatal collisions occurred with other motor vehicles, while there were 15 collisions involved with fixed objects. **Table 4** outlines the fatal collisions categorized by modes involved.

Table 4 – Fatal Collisions Categorized by Modes Involved (2015-2019)

Involved With	No. of Fatal Collisions	No. of Fatal Collision Occurring at Night
Bicycle	4	2
Fixed Object	15	8
Non-Collision	0	0
Other Motor Vehicle	60	19
Parked Motor Vehicle	1	1
Pedestrian	28	22

7.3 Injury Levels

Sixty-four percent (64%) of the collisions reported during the time-period resulted in property damage only. Fatalities and severe injuries totaled 1.7% of all collisions. **Figure 6** shows the percentage breakdown of collisions by injury levels.

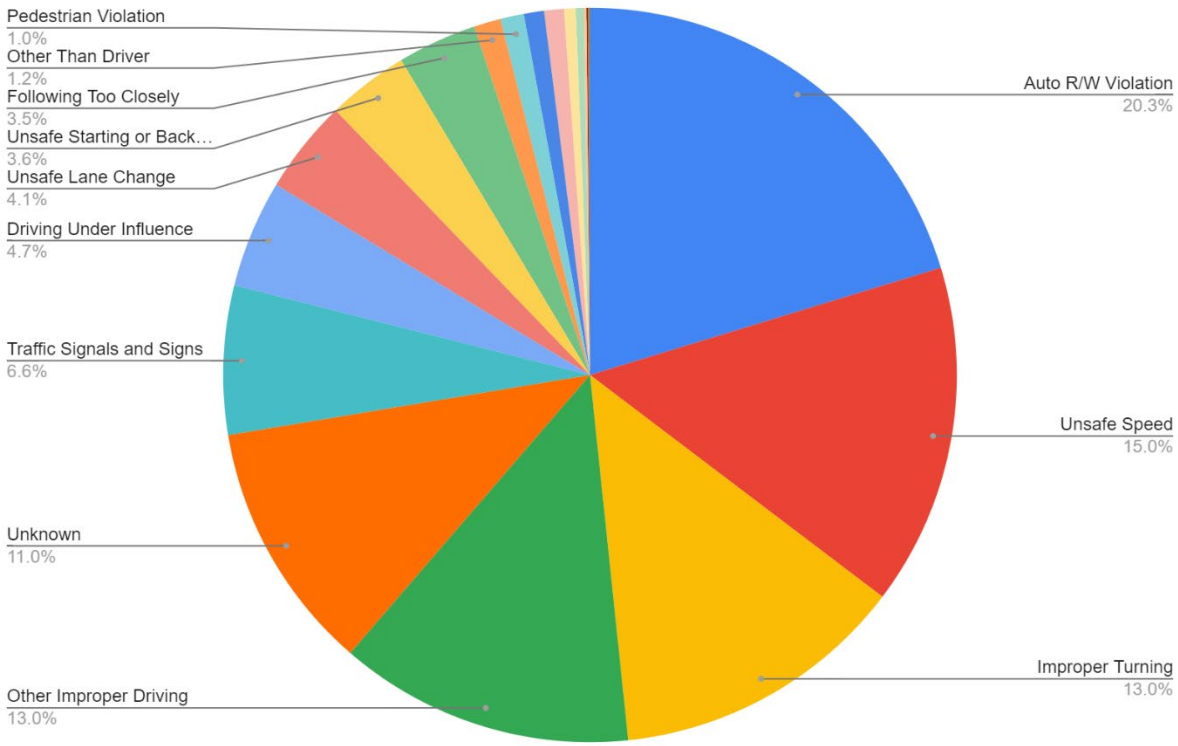


Source: Lancaster Crossroads Database (2015 – 2019)

Figure 6 – Collisions by Injury Levels (2015-2019)

7.4 Cause of Collision

The highest recorded cause of collisions in Lancaster during this time period is Auto Right-of-Way Violation at 20.3%, followed by Unsafe Speed at 15%. Issues with Improper Turning and Improper Driving also had a substantial impact on the City, each comprising 13% of the total collisions. **Figure 7** shows the percentage breakdown of the cause of collisions.



Source: Lancaster Crossroads Database (2015 – 2019)

Figure 7 – Cause of Collisions (2015-2019)

7.5 Vulnerable Users

7.5.1 Pedestrian Collisions

Three hundred and eighty-five (385) pedestrian involved collisions occurred during the study period, resulting in 28 fatal collisions, 33 severe injury collisions, and 299 collisions with some form of reported injury or pain. Approximately 38% of the collisions occurred at night. **Figure 8** shows the locations of pedestrian collisions during the study period.

7.5.2 Bicycle Collisions

During the study period, 223 collisions involving bicycles were reported. Of these, four (4) were fatal, and ten (10) resulted in severe injuries. The collision history shows 30% of the collisions occurred at night. **Figure 9** shows the location of bicycle collisions during the study period.

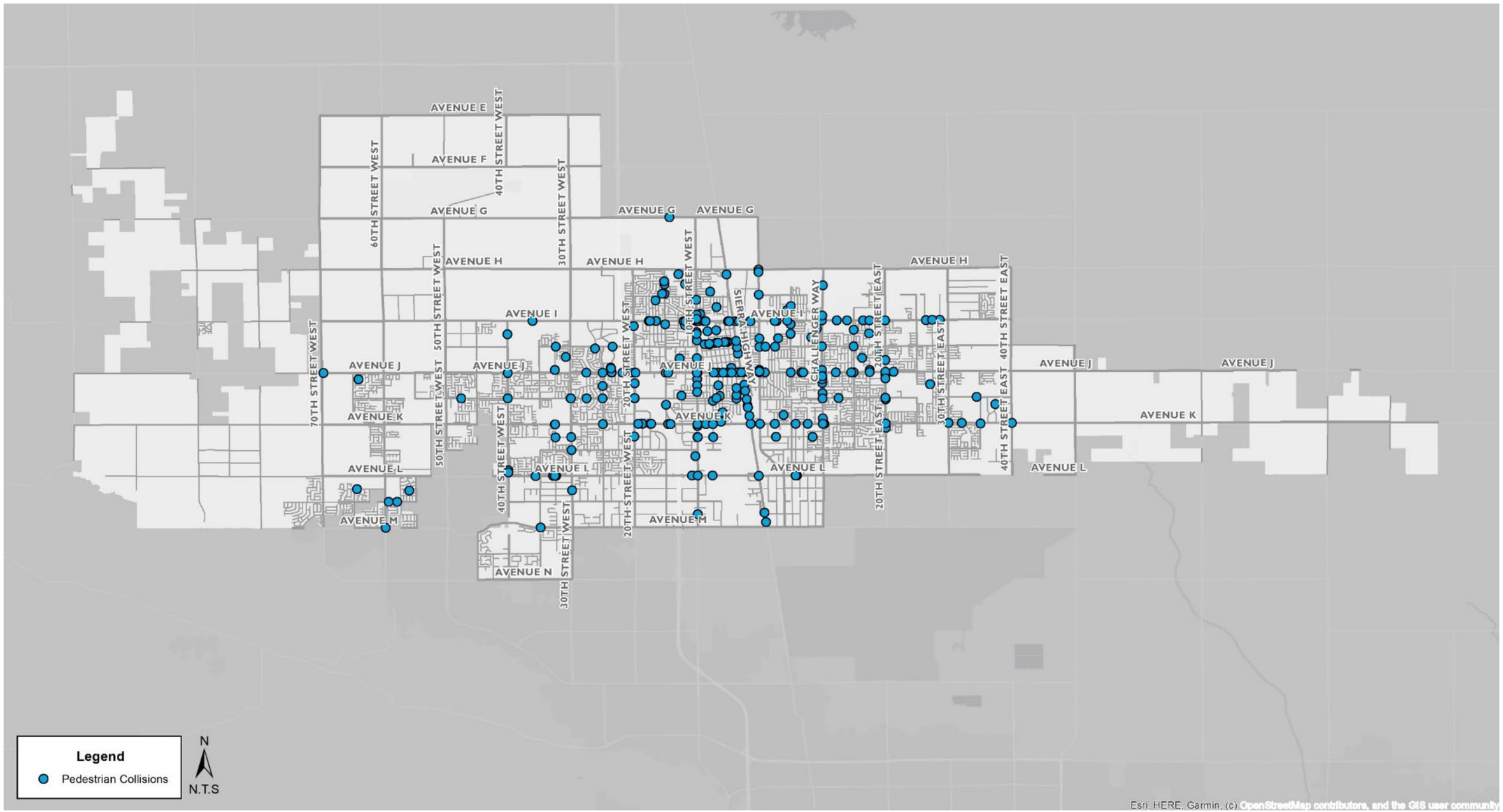


Figure 8 – Pedestrian Collisions (2015-2019)

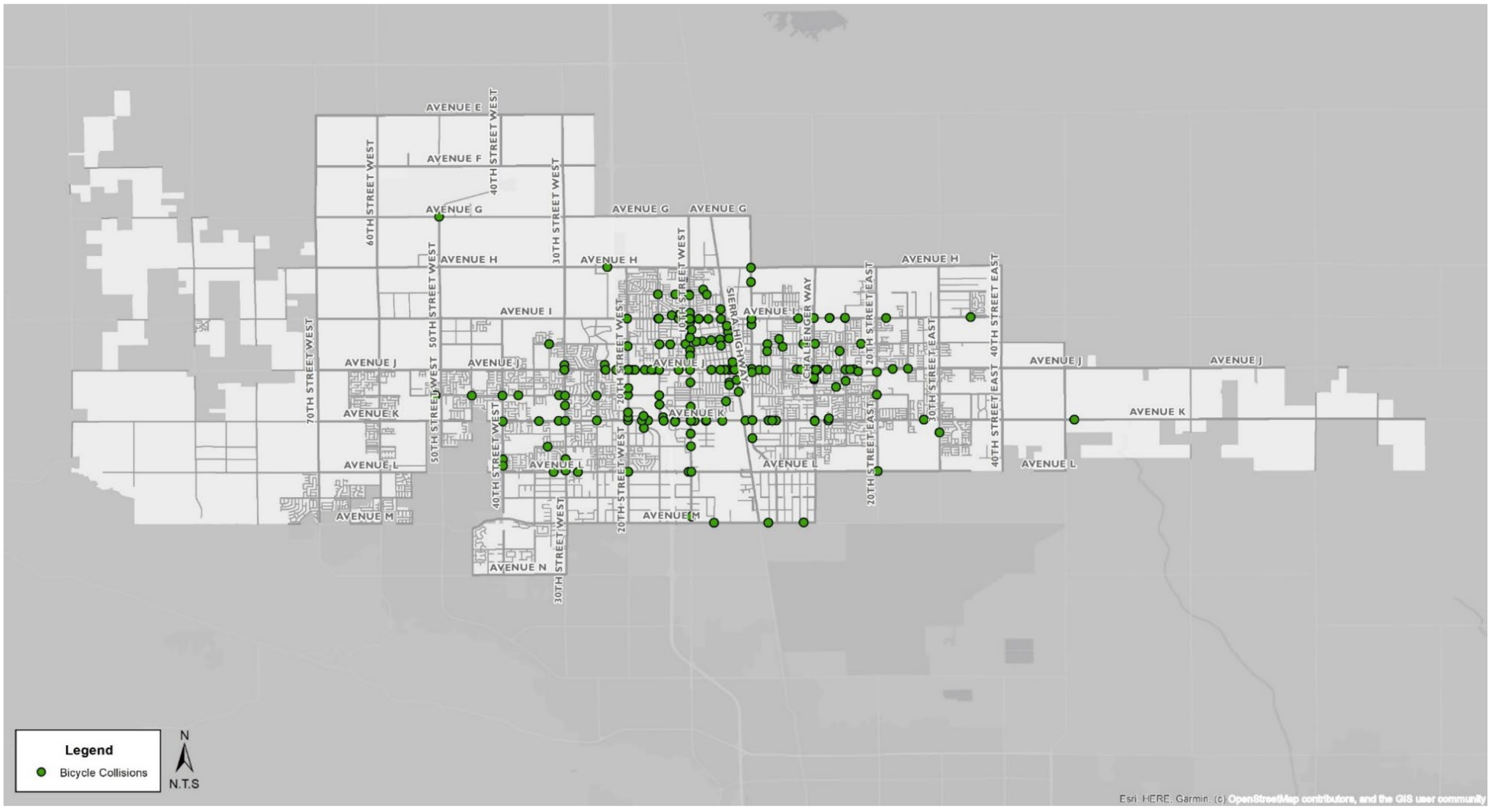


Figure 9 – Bicycle Collisions (2015-2019)

7.6 Other Significant Trends

In addition, the following trends were observed:

- Approximately 4.7% of the collisions (654) involved impaired driving. 1.8% of these collisions resulted in a fatal injury, 2.4% resulted in a severe injury, and 31.7% of these resulted in some other form of injury.
- Approximately 30% of collisions (4,145) occurred either at night or during dusk/dawn. Many of these collisions still occurred at or near intersections. Approximately 38% of the pedestrian collisions (148) and 30% of the bicycle collisions (67) occurred at night.
- Drivers aged 65 or older were found to be at fault in 9.0% of collisions. Drivers aged 55 and older were found to be at fault in 7.3% of collisions.
- Drivers aged between 16 and 25 years old were found to be at fault in 23.2% of collisions.

7.7 Collision Network Screening Analysis Results

Figure 10 and **Figure 11** show the results of the collision network screening analysis, with the number of collisions at both intersections and mid-block roadway segments.

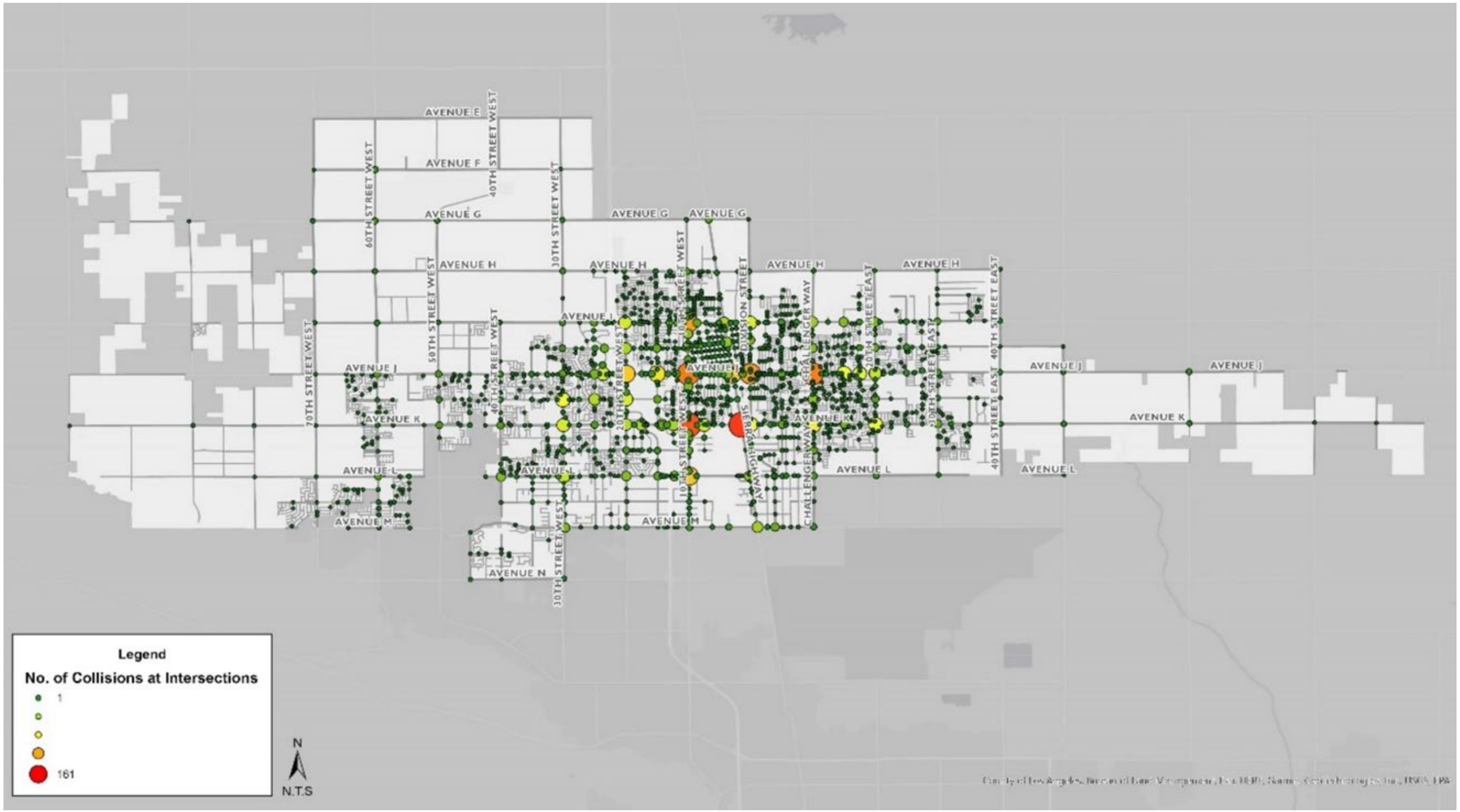


Figure 10 – Collision Network Screening Analysis Results: Intersections (2015-2019)

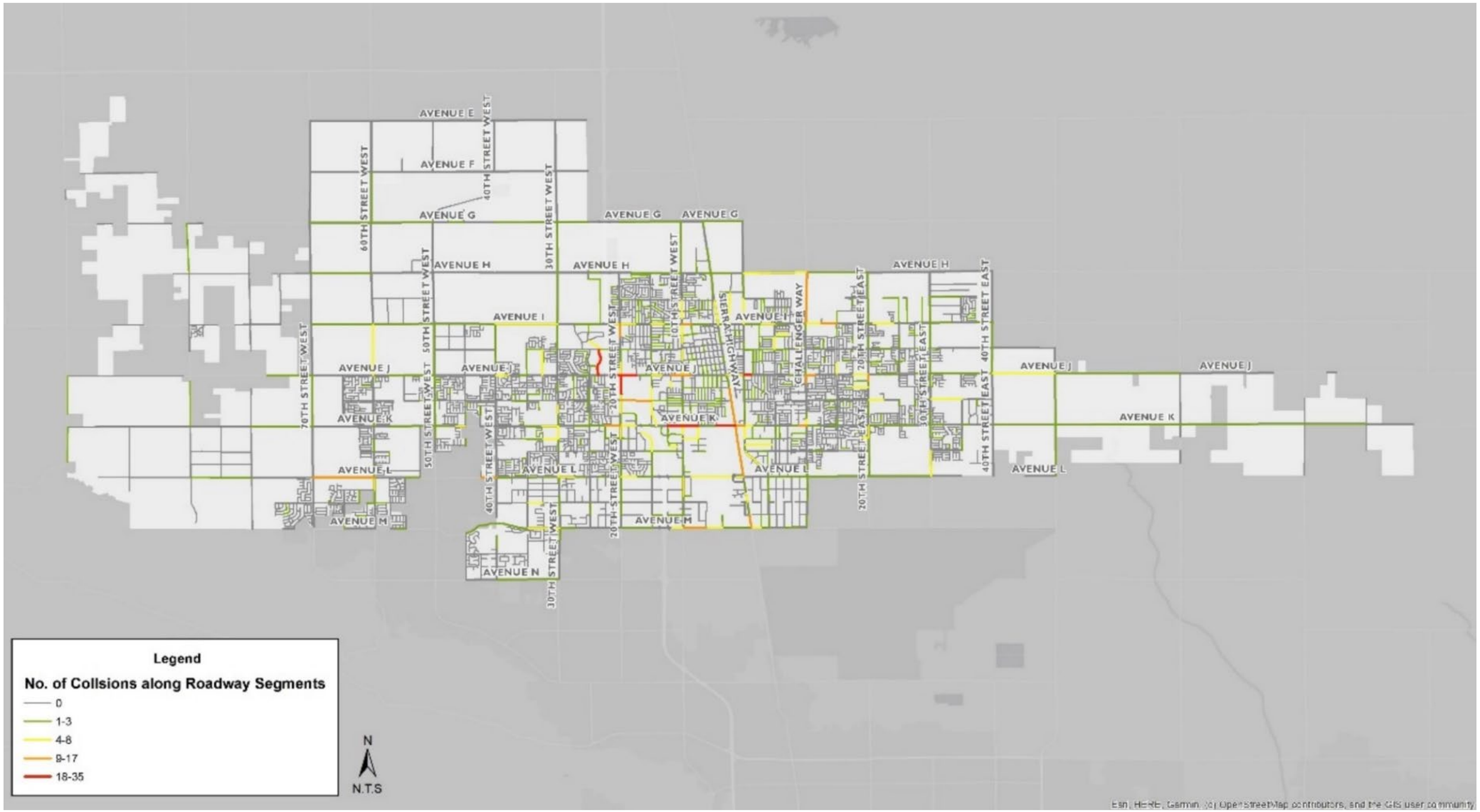


Figure 11 – Collision Network Screening Analysis Results: Roadway Segments (2015-2019)

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

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

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

Per guidance from the Local Roadway Safety Manual (LRSM) each sub-population of locations was ultimately ranked according to the number of collisions. The second column shows the CCR, which highlights whether the collision activity was higher or lower than the average for the sub-population based on the individual segment or intersection volume. This volume was either collected through data count resources or calculated based on the roadway classification. All averages used in the CCR calculation were established based on City of Lancaster crash data to determine what locations might be best to prioritize at the local level. The remaining columns total collisions by type (broadside, sideswipe, pedestrian, etc.), to evaluate each location type and understand what proportion of crashes in the city are of a particular type. The citywide proportion was compared with the local intersection or segment specific proportion to determine which locations have more of a given crash type than would be expected when considering the city average. A confidence level of 95% was used for the CCR Calculations. For this study, two categories of ranges were highlighted:

- **Light Gray:** >50% probability that this crash type is over-represented on this segment/intersection as compared to other characteristically similar locations within the City of Lancaster. Although these locations have a slightly higher probability of this crash type than their counterparts, they are not necessarily highly significant.
- **Dark Gray:** >75% probability that this crash type is over-represented on this segment/intersection as compared to other characteristically similar locations within the City of Lancaster. These locations are highly significant in regard to the number of collisions occurring here and should be further investigated.

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

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

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

Table Definitions:

- **Total Collisions:** Number of collisions observed at the intersection or segment from January of 2015 through December of 2019.
- **Local Critical Crash Rate (CCR) Differential:** The CCR specific to the intersection or segment. This is the difference between local (actual) crash rate and the critical crash rate, which is how many collisions per million vehicle miles are expected for a location of this type and volume. This tells us how many more collisions are occurring more than is expected. Locations with positive values have more collisions than expected, while locations with negative values have less collisions than expected. **Tables 5 and 6** below show the Local CCR Differential, while the tables in **Appendix A** also show the local crash rate, the average crash rate for each location type, and the critical crash rate for each location.
- **Equivalent Property Damage Only (EPDO):** This method assigns weighting factors to crashes based on injury level (severe, injury, property damage only) to develop a property damage only score. In this analysis, the injury crash costs were calculated for each location (based on the latest Caltrans injury costs) and then normalized by dividing by the value of a property damage only collision. Fatal and severe injury collisions are estimated at $2.19 million, Other Visible Injury (OVI) collisions at $142,300, Complaint of Pain (COP) collisions at $80,900, and Property Damage Only (PDO) collisions at $13,300.

  An example calculation is shown below for Sierra Highway & Avenue K, which had 0 fatal collisions, 1 severe injury collision, 8 OVI collisions, 45 COP collisions, and 107 PDO collisions.

$$EPDO = \frac{\big((1 * \$2{,}190{,}000) + (8 * \$142{,}300) + (45 * \$80{,}900) + (107 * \$13{,}300)\big)}{\$13{,}300} = 631$$

- **Severity:** The number of severe injury and fatal collisions that occurred at this location in the study period.
- **Fatality:** The number of fatal collisions that occurred at this location in the study period.
- **Broadside, Sideswipe, Rear-End, Head-On, Hit Object, Overturned, Pedestrian, Bicycle:** The number of these types of collisions that occurred at this location in the study period.
- **Other:** The number of miscellaneous collision types (mostly single vehicle) that occurred at this location in the study period.
- **Aggressive, Dark, Wet:** The number of the collisions with this factor identified as the cause of collision.

The locations in **Tables 5 and 6** are sorted by location type and number of collisions, but CCR, EPDO and the types of collisions occurring at each location were all used to choose locations for further study and case study development in **Section 9.1.2 Safety Project Case Studies**.

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

Intersection	Total Collisions	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
City Traffic Signal																						
Sierra Hwy & Avenue K	161	0.79	631	0	1	8	45	107	22	25	96	4	8	0	5	1	1	86	6	9	33	8
10th St W & Avenue K	155	0.47	574	0	1	9	33	112	45	48	50	2	5	0	3	2	3	50	5	8	44	9
10th St W & Avenue J	141	0.53	832	0	2	15	43	81	36	50	43	5	3	0	1	5	1	47	6	3	25	0
Challenger Way & Avenue J	139	0.97	632	1	0	14	38	86	39	32	55	7	4	0	2	0	4	41	3	7	36	10
Division St & Avenue J	126	0.47	531	0	1	6	36	83	34	29	48	7	3	2	1	2	1	44	2	5	30	7
10th St W & Avenue I	125	0.65	865	0	3	10	30	82	27	33	41	10	3	0	3	7	3	35	2	5	39	8
Sierra Hwy & Avenue J	112	0.34	501	0	1	8	29	74	13	27	58	2	2	1	6	3	6	49	8	8	27	4
10th St W & Avenue L	110	0.02	469	1	0	7	25	77	27	21	49	3	5	0	3	1	2	49	7	5	30	5
20th St W & Avenue J	105	0.03	485	0	1	5	33	66	23	26	44	2	6	0	2	3	2	45	1	3	22	8
15th St W & Avenue J	94	0.20	308	0	0	10	23	61	19	19	41	5	4	0	2	3	1	34	2	4	17	0
Caltrans Traffic Signal																						
SR-14 NB Off-Ramp & Avenue L	45	0.37	502	1	1	5	16	22	13	11	18	1	1	0	1	0	0	32	0	1	12	1
SR-14 NB Ramps/15th Street W & Avenue K	34	-0.56	149	0	0	4	15	15	10	9	12	2	0	0	0	3	1	18	1	0	12	0
SR-14 SB Ramps & Avenue I	27	-0.19	96	0	0	4	6	17	4	9	13	0	0	0	1	0	0	16	3	0	9	1
SR-14 NB Off-Ramp & 20th Street W	23	0.08	64	0	0	0	8	15	9	4	9	1	0	0	0	0	1	12	1	1	7	1
SR-14 SB Ramps & Avenue K	19	-0.72	80	0	0	1	10	8	7	5	6	0	0	0	1	0	1	14	0	0	4	0
SR-14 NB Ramps & Avenue I	12	-0.04	27	0	0	0	3	9	1	4	6	0	0	1	0	0	0	7	0	1	2	0
SR-14 SB Off-Ramp & Avenue L	11	-0.09	41	0	0	1	4	6	5	1	4	1	0	0	0	0	0	8	0	0	2	1
SR-14 SB Off-Ramp & Avenue J	9	-0.12	34	0	0	1	3	5	4	2	3	0	0	0	0	0	0	8	3	0	1	0
County Traffic Signal																						
45th St W & Avenue N	7	-0.63	37	0	0	2	2	3	3	1	2	1	0	0	0	0	0	2	0	0	3	0
Proposed Traffic Signal																						
36th St W & Avenue K	2	-0.14	17	0	0	1	1	0	0	0	1	0	1	0	0	0	0	1	0	0	1	0
Roundabout																						
15th St W & Lancaster Blvd	34	-0.40	297	0	1	4	12	17	15	6	5	6	2	0	0	0	1	15	0	0	10	0
Challenger Way & Avenue L	24	-0.22	242	0	1	3	5	15	6	5	7	0	4	1	1	0	0	10	0	2	8	2
15th St E & Lancaster Blvd	17	-0.02	72	0	0	3	5	9	8	2	2	0	3	0	0	2	0	10	2	0	4	1

Intersection	Total Collisions	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
School Beacon																						
27th St W & Avenue J-8	11	-0.10	41	0	0	2	2	7	3	6	1	0	0	0	0	1	0	2	0	0	4	0
32nd St W & Avenue K-8	6	-0.17	25	0	0	2	0	4	3	1	0	1	0	0	1	0	1	0	0	0	2	0
Heaton Ave & Avenue J-8	4	-0.19	4	0	0	0	0	4	0	1	1	0	2	0	0	0	0	0	0	0	3	0
School Beacon, RRFB																						
12th St W & Lancaster Blvd	6	-0.14	16	0	0	1	0	5	0	0	2	0	4	0	0	0	0	4	0	1	3	0
School Beacon, All-Way Stop																						
40th St W & Avenue J-8	15	-0.46	204	1	0	1	3	10	7	3	1	0	2	0	1	1	1	7	1	0	7	0
5th St E & Kettering St	8	-0.32	177	0	1	0	1	6	1	0	2	0	2	0	1	2	0	2	0	0	2	0
5th St E & Avenue H-11	5	-0.93	24	0	0	2	0	3	1	2	0	0	1	0	0	1	0	0	0	0	1	0
All-Way Stop																						
50th St W & Avenue K	25	0.16	60	0	0	1	5	19	13	1	9	1	1	0	0	0	0	5	2	1	9	1
15th St E & Avenue J-8	14	-0.04	218	0	1	1	6	6	9	3	1	0	1	0	0	0	0	4	2	0	2	1
70th St E & Avenue K	14	1.86	232	1	0	3	5	5	10	1	1	1	1	0	0	0	0	5	0	1	5	1
60th St W & Avenue H	13	1.78	226	1	0	3	4	5	9	1	0	0	2	1	0	0	0	3	0	0	3	0
25th St W & Avenue K-8	11	-0.34	46	0	0	2	3	6	6	1	2	1	1	0	0	0	0	7	0	0	4	1
Divison St & Avenue H	11	-0.34	209	0	1	2	3	5	4	2	3	0	0	0	0	2	1	3	0	1	4	0
12th St W & Avenue J-8	8	-0.53	13	0	0	0	1	7	3	2	2	0	0	1	0	0	0	2	0	0	2	0
30th St E & Lancaster Blvd	8	-0.50	18	0	0	0	2	6	4	1	2	1	0	0	0	0	0	4	0	1	2	0
Challenger Way & Avenue H	8	-0.31	207	1	0	1	5	1	6	1	1	0	0	0	0	0	0	5	1	0	5	1
32nd St W & Lancaster Blvd	7	-0.35	31	0	0	2	1	4	2	2	1	0	1	0	0	1	2	1	0	0	1	0
RRFB/Smart Crosswalk																						
17th St E & Avenue I	19	0.28	222	0	1	2	4	12	2	3	5	1	7	0	0	2	0	9	1	0	7	0
15th St W & Pillsbury St	4	-0.33	4	0	0	0	0	4	0	2	2	0	0	0	0	0	0	1	0	1	1	0
Unsignalized Intersection (Two-Way Stop)																						
Sierra Hwy & Avenue L	50	0.29	300	1	0	1	15	33	8	11	20	0	9	0	0	2	0	27	0	2	14	4
Beech Ave & Avenue J	49	0.80	120	0	0	0	14	35	20	19	3	2	1	0	3	1	1	2	0	0	11	2
10th St E & Avenue K-8	31	0.85	319	0	1	5	15	10	22	5	0	3	0	0	1	0	0	3	1	2	7	1
Trevor Ave & Avenue J	30	0.23	110	0	0	3	10	17	3	4	18	2	0	0	2	1	2	16	2	1	3	2

Intersection	Total Collisions	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Sierra Hwy & Avenue G	29	2.88	346	1	0	8	15	5	23	2	1	2	0	1	0	0	0	10	1	1	9	0
Fern Ave & Lancaster Blvd	28	0.38	92	0	0	4	5	19	8	8	2	0	3	0	4	4	3	2	1	3	8	0
Cedar Ave & Avenue J	27	0.31	92	0	0	2	9	16	12	10	2	1	0	0	1	1	1	4	0	1	8	2
13th St W & Avenue K	26	0.21	56	0	0	0	6	20	7	9	7	1	1	0	1	0	0	6	0	0	2	1
Division St & Avenue K-8	25	0.59	85	0	0	2	8	15	10	4	4	1	6	0	0	0	0	3	1	4	11	3
Challenger Way & Avenue J-14	25	0.37	250	0	1	0	12	12	10	5	3	4	2	0	0	1	0	3	1	1	9	4

= Local CCR Differential > 1.0

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

= Local CCR Differential 0.33-1.0

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

= Local CCR Differential < 0.33

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

[1]Local Critical Crash Rate Differential

[2]Equivalent Property Damage Only Crashes

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

Facility	Limits	Total Collisions	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Major Arterial																							
20TH STREET WEST	RT 14 NBOFF/R - AVENUE J	**35**	1.0	90	0	0	1	9	25	16	4	11	0	4	0	0	0	0	7	3	0	5	1
AVENUE K	SIERRA HIGHWAY - PARK AVENUE	**35**	1.5	114	0	0	4	8	23	0	5	30	0	0	0	0	0	0	27	3	1	11	3
AVENUE K	GADSDEN AVENUE - 10TH STREET WEST	**26**	1.3	66	0	0	1	6	19	13	3	7	1	1	0	1	0	1	6	1	0	4	1
AVENUE J	17TH STREET WEST - 20TH STREET WEST	**24**	1.3	123	0	0	5	10	9	10	7	4	0	2	0	1	0	2	4	1	0	2	2
AVENUE K	10TH STREET WEST - 12TH STREET WEST	**24**	1.1	247	1	0	3	6	14	9	5	9	0	1	0	0	0	0	8	1	1	3	4
AVENUE J	20TH STREET WEST - RT 14 NBON/R	**23**	1.3	247	1	0	1	10	11	10	4	5	0	1	0	0	3	1	2	0	0	6	1
AVENUE J	DIVISION STREET - GLENRAVEN ROAD	**22**	2.5	83	0	0	0	12	10	9	5	6	1	1	0	0	0	0	6	0	0	2	0
CHALLENGER WAY	AVENUE I - AVENUE H	**17**	1.6	255	0	1	4	7	5	3	2	8	1	0	1	0	2	0	8	1	1	5	0
CHALLENGER WAY	AVENUE J-3 - AVENUE J	**16**	2.1	245	0	1	2	9	4	8	3	2	0	1	0	0	2	1	1	1	0	2	0
AVENUE J	CHALLENGER WAY - 11TH STREET EAST	**14**	1.3	44	0	0	2	2	10	1	6	2	2	2	0	1	0	1	1	0	1	4	0
Secondary Arterial																							
AVENUE J-8	15TH STREET WEST - 20TH STREET WEST	**10**	0.28	40	0	0	0	6	4	3	0	5	1	1	0	0	0	0	5	1	0	7	0
AVENUE J-8	30TH STREET EAST - 35TH STREET EAST	**7**	3.93	17	0	0	0	2	5	4	1	1	0	0	0	0	1	0	1	0	0	0	0
15TH STREET WEST	YOUNGBLOOD PLACE - AVENUE J-8	**6**	0.06	175	1	0	0	1	4	1	0	3	1	0	0	0	1	0	3	0	0	2	1
5TH STREET EAST	LANCASTER BLVD - KETTERING STREET	**5**	1.41	20	0	0	0	3	2	1	0	3	1	0	0	0	0	0	2	0	0	2	0
AVENUE L-8	32ND STREET WEST - 35TH STREET WEST	**5**	2.00	5	0	0	0	0	5	0	1	1	0	3	0	0	0	0	0	2	0	1	1
15TH STREET WEST	AVENUE J-8 - AVENUE J-4	**4**	-0.19	14	0	0	0	2	2	1	0	2	1	0	0	0	0	0	2	0	0	0	0
15TH STREET EAST	AVENUE J - NUGENT STREET	**4**	0.52	14	0	0	0	2	2	2	0	1	1	0	0	0	0	0	1	0	0	2	0
15TH STREET WEST	AVENUE K - YOUNGBLOOD PLACE	**4**	-0.18	14	0	0	0	2	2	2	1	0	0	1	0	0	0	1	0	0	0	1	0
AVENUE J-8	20TH STREET EAST - 22ND STREET EAST	**4**	2.09	14	0	0	0	2	2	2	1	0	0	1	0	0	0	0	1	0	0	0	0

Facility	Limits	Total Collisions	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
15TH STREET WEST	AVENUE K-8 - AVENUE K-2	**4**	2.40	19	0	0	1	1	2	0	1	1	0	2	0	0	0	0	1	0	0	3	0
Collector																							
VALLEY CENTRAL WAY	CENTRAL COURT - LANCASTER BLVD	**28**	16.40	77	0	0	3	4	21	20	4	3	0	0	0	1	0	0	2	0	0	5	3
VALLEY CENTRAL WAY	AVENUE J - CENTRAL COURT	**23**	27.13	73	0	0	2	6	15	12	5	3	0	1	0	0	2	1	1	0	0	4	1
VALLEY CENTRAL WAY	LANCASTER BLVD - LINE DRIVE	**5**	7.84	29	0	0	2	1	2	3	1	0	0	1	0	0	0	0	0	0	1	1	0
Local																							
KINGTREE AVENUE	AVENUE J-4 - AVENUE J-2	**6**	10.98	16	0	0	1	0	5	0	3	1	0	2	0	0	0	0	2	0	1	2	1
32ND STREET WEST	AVENUE J - LANCASTER BLVD	**6**	4.71	16	0	0	1	0	5	1	4	0	0	0	0	0	1	0	0	0	0	0	0
AVENUE K-4	GADSDEN AVENUE - 10TH STREET WEST	**5**	8.02	24	0	0	2	0	3	2	0	0	1	2	0	0	0	0	0	0	0	1	0
AVENUE J-4	17TH STREET EAST - 20TH STREET EAST	**4**	7.84	9	0	0	0	1	3	0	2	1	0	1	0	0	0	0	1	0	0	2	0
GADSDEN AVENUE	AVENUE K-4 - AVENUE K	**4**	3.66	9	0	0	0	1	3	2	1	0	0	1	0	0	0	0	0	0	1	1	0
JENNER STREET	SANCROFT AVENUE - ANDALE AVENUE	**4**	1.56	4	0	0	0	0	4	0	3	0	0	0	0	1	0	0	0	0	1	2	2
AVENUE K-4	30TH STREET WEST - 32ND STREET WEST	**4**	3.63	9	0	0	0	1	3	2	0	1	1	0	0	0	0	0	0	0	0	2	0
AVENUE K-6	DIVISION STREET - GINGHAM AVENUE	**4**	2.52	9	0	0	0	1	3	2	2	0	0	0	0	0	0	0	1	0	0	0	0
AVENUE K-4	STANCLIFF AVENUE - 20TH STREET EAST	**4**	0.78	9	0	0	0	1	3	2	0	0	0	2	0	0	0	0	0	0	0	2	0
MOTOR LANE	DRIVERS WAY - 12TH STREET WEST	**4**	10.68	9	0	0	0	1	3	0	0	3	0	1	0	0	0	0	4	0	0	3	0

= Local CCR Differential > 1.0

= Local CCR Differential 0.33-1.0

= Local CCR Differential < 0.33

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

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

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

[1]Local Critical Crash Rate Differential

[2]Equivalent Property Damage Only Crashes

8. Best Practices Evaluation and Emphasis Areas

8.1 Best Practices Evaluation

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

Table 7 – Summary of Opportunities for Best Practices

Topic	Current Status	Implement or Enhance	Emphasis Area
Speed Surveys /Speed Limits	Citywide Surveys: 2014 and 2017. Started a 3-year rolling study for at least one-third of the city every year in 2019. A citywide speed limit update will be completed in August 2022.	Continue to update as required by California Vehicle Code; review new guidance from Assembly Bill 43. In cases where speed continues to be a challenge, preventing the enforcement of desirable speed limits, consider roadway design characteristics that might support lower speeds.	Aggressive Driving
Traffic Calming Policies	City is currently working on a updating its Citywide Traffic Calming Policy.	Continue to enact traffic calming implementations throughout the City and establish a monitoring program to determine which traffic calming measures are most effective with the least inconvenience to local roadway users.	Aggressive Driving
Traffic Impact Fees	City currently collects traffic impact fees from new development projects.	Continue to assess traffic impact fees and incorporate safety and VMT measures in future nexus studies.	All
Traffic Safety Education	Website dedicated to City's award-winning See and Be Seen campaign outlines bicycle and pedestrian safety information and events. Community bike rides, bike repair program, affordable bikes, bicycle donation. STEAM (Science, Technology, Engineering, Arts, Mathematics) education for safe and active travel behavior, civic engagement.	Continue to explore opportunities to expand See and Be Seen campaign to encourage safety bicycling and walking practices for youth and other vulnerable populations. Programs can be offered through schools, community centers, and at community events.	All

Topic	Current Status	Implement or Enhance	Emphasis Area
Program for Reviewing Crash Activity	Crash activity review conducted bi-annually unless specific circumstances occur that warrant more timely review. Safety updates / before and after studies. Could be used to develop SPF/ CMF information locally, build into safety audit program; outreach and awareness campaign.	The City Traffic Engineering staff to be trained in the use of City crash records systems and conduct periodic analyses City crashes as part of an on-going monitoring program. Crash activity can be reviewed one-year after safety improvements are implemented to evaluate their short-term effectiveness. Longer-term effectiveness can be evaluated as part of the periodic LRSP update process. Develop City calibrated safety performance functions to facilitate predictive analysis in preparation for vision zero implementation.	All
Crossroads/RMS Database Updates	Quarterly at minimum	Implement automatic regular updates of collision data into database and have City staff conduct a data validation process.	All
Sobriety / Seatbelt Checks	Conducted by Los Angeles County Sheriff's Department (LASD). City has input on speed enforcement, LASD responsible for establishing and manning check points. City has radar feedback signs and corridors equipped with signal systems capable of monitoring speed.	Look for opportunities for City staff to be more engaged in the selection of enforcement campaigns and align City messaging and safety priorities to provide consistent messaging to roadway users.	All
City Law Enforcement Coordinate with Adjacent Jurisdictions	Quarterly coordination with LASD, California Highway Patrol (CHP), City of Palmdale, and the County of Los Angeles. ABC spell out) and planning commission are the primary steps, public safety works with code changes. Collaboration is reactive.	Continue to discuss enforcement priorities with neighboring jurisdictions to develop a more coordinated and deliberate approach to inter-agency operations.	All

Topic	Current Status	Implement or Enhance	Emphasis Area
Coordination of Transit Providers and City Staff	City recently issued a task order to study all bus stops on frontage road medians to determine best course of action for improving that specific set for accessibility. City staff serves as Antelope Valley Transit Authority (AVTA) liaison, stops placement and maintenance. Always part of stakeholder meetings for construction projects. Project managers liaise directly.	Continue coordination; work to identify areas for improvements. Prioritize stop area improvements based on overall passenger volumes, impact to more vulnerable users (seniors, youth, persons with disabilities).	All
Inventory of Regulatory and Warning Signage	Sign inventory has been completed in the last 6 months to year. Contains some (stop signs/speed limit) but not all data.	Conduct a road sign safety audit including sign positioning, condition, appropriateness. Identify potential missing or inadequate signage.	All
Emergency Response and City Transportation Planning	The city traffic engineering team meetings quarterly with LASD and CHP traffic leads. These agencies are also included as stakeholders on any traffic safety community engagement work.	Continue engaging emergency response in transportation planning and safety-related coordination processes; Incorporate professional development opportunities for City staff and emergency response personnel to avoid limitations on potentially effective safety countermeasures based on personal biases and anecdotal experience.	All
Local Health Agencies and City Transportation Planning	Agencies are included as stakeholders on any traffic safety community engagement work.	Consider cross-promotion of City programs such as See and Be Seen to further promote healthy lifestyle choices through active transportation and safer transportation behaviors.	All
Resident Feedback	City maintains 'Connect with Lancaster' portal to receive resident feedback.	Continue to seek out resident feedback and build in more active outreach through City events and other opportunities to directly solicit resident feedback in addition to the existing portal.	All
Maintenance of Roadway Surfaces	City conducts regular maintenance.	Continue regular maintenance of roadway surfaces; make incorporations of safety countermeasures part of the routine maintenance program.	All

Topic	Current Status	Implement or Enhance	Emphasis Area
Transportation Demand Management Policies/Programs	Policies and programs are currently provided in the Lancaster Municipal Code, but City is planning to update.	Update Transportation Demand Management ordinance to reflect recent trends and incorporate into the City's SB 743 CEQA and development approval process.	All
Use of overlays, specific plans, redevelopment areas to encourage infill development to reduce VMT	City will implement a VMT mitigation program to encourage infill development.	Continue this process; identify area where infill development will require safety improvements. Where possible, incorporate incentives into the City's impact fee programs to encourage higher density in-fill development.	All
Program for Installing Wayfinding Signage	City has an existing program for installing wayfinding signage.	Continue to identify funding for wayfinding signage; implement in high pedestrian/bicycle locations. Use and update City branding guidance to highlight local identity and increase civic awareness of local recreational and cultural amenities and key active transportation infrastructure.	All
Traffic Safety Audit Program	Wide-ranging safety study considers all road users and accounts for human factors. Not currently implemented; would like to create one as a result of the LRSP. Proactive safety audit program, but needs to be manageable with existing staff resources.	Establish and maintain a High Injury Network that will help the City prioritize roadway segments for in depth safety audits as part of a routine program. The city can allocate a defined set of resources to maintain the plan at a comfortable pace and revisit the prioritized list as segments are completed.	Context Sensitive Roadway Design
Warrants for Traffic Control Devices	City uses warrants provided in CA MUTCD to identify locations where traffic control devices are deemed appropriate.	Continue to use and update local warrants as appropriate to supplement CA MUTCD warrants for traffic control devices and beacons.	Context Sensitive Roadway Design
Access Management Policy for Major and Secondary Roadways	Not currently	Develop consistent policies around access control that can be applied systemically as roadways are redesigned or maintained. Preserving property access while limiting vehicle conflicts can be part of the City's design standards.	Context Sensitive Roadway Design

Topic	Current Status	Implement or Enhance	Emphasis Area
Signal Timing Coordination	City currently operates a coordinate network of nearly 150 traffic signals.	The city can use corridor signal progression to both manage peak direction traffic speed and to reduce stop-and-go patterns that contribute to rear-end crashes. Where possible the City can update its signal systems with detection and modern capabilities to respond to traffic conditions and reduce rear-end collisions.	Context Sensitive Roadway Design
Complete Streets Policy	City has adopted a Master Plan of Complete Streets.	Identify obsolete high-capacity intersection designations and evaluate potential lane reduction strategies and allocation of space for other transportation modes.	Vulnerable Road Users
Safe Routes to School Funding	City is currently updating its Safe Routes to School Plan.	Implement recommendations from the ongoing Safe Routes to School plan and consider opportunities for more systemic implementation where appropriate.	Vulnerable Road Users
City Enforcement on Bicycle Rules	Biggest challenge is lack of enforcement funds; limited ability to request additional enforcement; currently uses vehicle code, vacancies on enforcement team.	Seek opportunities for more enforcement funding through sources such as Office of Traffic Safety and through the annual budgeting process. Establish rotating enforcement targets for high visibility campaigns when feasible to address specific behavior challenges with the goal of improving the long-term culture of safety in the City.	Vulnerable Road Users
Transit Vehicles Accommodation of Bicycles	Coordinating with AVTA to ensure transit vehicles can accommodate bicycles	Continue to accommodate bicycles on transit to promote multi-modal trips and continue to focus on first/last mile active transportation connections with bus stops, particularly related to roadway crossings.	Vulnerable Road Users
Bicycle and Pedestrian Master Plans	City has an adopted Master Plan for Trails and Bikeways that guides bike/ped activities.	Continue to update master plans to reflect changing trends and focus on plan implementation. Ensure coordination between planning, engineering, and maintenance teams to avoid missed opportunities to fund and implement changes as part of routine City operations.	Vulnerable Road Users

Topic	Current Status	Implement or Enhance	Emphasis Area
General Plan Addresses Multimodal Traffic Safety	Master Plan of Complete Streets and General Plan 2030 addresses multimodal traffic safety.	Regularly assess progress and areas for improvement.	Vulnerable Road Users
Inventory of Bicycle, Pedestrian, Parking, and other facilities	Existing bicycle facilities are available in GIS. City is working to update current information.	Continue to improve GIS database and regularly update. The city could make and interactive map part of its public facing website and potentially simplify map maintenance in the process by designating an active transportation coordinator that adds new facilities as they are planned and flagging them as "open" when they come online.	Vulnerable Road Users
Regular Collection of Traffic / Bicycle / Pedestrian Volumes	City has 60 ADT locations; collects data every three years. City has capability to collect bicycle and pedestrian data at many signalized intersections with video detection systems.	Continue traffic & active transportation volume collection; utilize this data in collision analysis. Update City traffic analysis guidelines to require bicycle and pedestrian counts as part of all future traffic count activities.	Vulnerable Road Users

8.2 Emphasis Areas

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

8.2.1 Emphasis Area #1: Aggressive Driving

Description: Aggressive driving, as defined by Caltrans' SHSP, includes several behaviors including speeding, tailgating, and ignoring traffic signals and signs. Aggressive driving behaviors (unsafe speed or following too closely) accounted for 3,464 crashes or 25 percent of collisions within the City of Lancaster.

Goals for Emphasis Area #1:

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

Strategies for Emphasis Area #1:

- Continue to update speed limits with additional flexibility given by Assembly Bill 43. In cases where speed continues to be a challenge, preventing the enforcement of desirable speed limits, consider roadway design characteristics that might support lower speeds.
- Implement traffic calming improvements and establish a monitoring program to determine which measures are most effective; this is applicable in local and residential streets
- Install additional regulatory signage
- Upgrade pavement markings to make intersections more visible
- Enhance roadway and intersection striping
- Reduce intersection size or number of lanes
- Target speed enforcement and increased enforcement at high aggressive driving collision locations

These strategies will be implemented by the city, law enforcement, and community organizations. Funding sources for these strategies may include HSIP, OTS, Senate Bill 1 (SB 1), or Safe Streets for All (SS4A) grant programs.

8.2.2 Emphasis Area #2: Vulnerable Road Users (Pedestrians & Bicyclists)

Description: Pedestrians and bicyclists are classified by Caltrans as vulnerable users, meaning they possess the highest potential for severe harm during a crash. These groups need appropriate infrastructure to travel to key destinations such as schools, workplaces, and core commercial areas. The City's Circulation Element lays out plans and standards for non-motorized transportation. Of the 608 crashes involving vulnerable road users, 103 resulted in a fatal injury to the pedestrian or bicyclist and 247 resulted in a severe injury to the pedestrian or bicyclist. The city should aim to implement countermeasures to further protect these users from injury.

Goals for Emphasis Area #2:

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

Strategies for Emphasis Area #2:

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

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

8.2.3 Emphasis Area #3: Context Sensitive Roadway Design

Description: According to the FHWA, roadway factors that may impact the safety of a particular roadway include facility pavement condition, access control, speed, roadway cross-section and traffic volumes. The City has several locations where the roadway characteristics provide more capacity than there is demand. Identifying these locations and implementing context sensitive roadway design can help to address some of the collisions the city has seen recently.

Goals for Emphasis Area #3:

- Increase roadway safety by improving roadway geometry relative to demand

Strategies for Emphasis Area #3:

- Identify locations throughout the City that can be modified due to more capacity than demand
- Upgrade intersection striping and pavement markings
- Reduce intersection size or number of lanes to provide better visibility for conflicting movements
- Reduce the curb radius to reduce intersection size and move the stop sign/bar closer
- Install curb extensions
- Evaluate built infrastructure (lane widths/lane configuration) in relation to existing demand
- Continue to use MUTCD/local warrants for determining use of traffic control devices
- Develop consistent access management policies that can be applied systemically as roadways are redesigned or maintained

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

9. Countermeasure Toolbox

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

9.1 Infrastructure Improvements

9.1.1 Countermeasure Selection Process

Part D of the HSM provides information on crash modification factors (CMF) for roadway segments, intersections, interchanges, special facilities, and road networks. CMFs are used to estimate the safety effects of highway improvements, specifically to compare and select highway safety improvements. A CMF less than 1.0 indicates that a treatment has the potential to reduce crashes. A CMF greater than 1.0 indicates that a treatment has the potential to increase crashes. A Crash Reduction Factor (CRF) is directly connected to the CMF and is "mathematically defined as (1 – CMF) (the higher the CRF, the greater the expected reduction in crashes) [4]." CMFs can help decision makers weigh potential alternative projects, but are only one measure of a project's value and should be considered part of a larger decision-making process. Furthermore, it is important to note that not all CMFs are as reliable as others. The FHWA maintains a federal depository of CMFs and includes a star rating system to help users determine which CMFs are bolstered by the best and most thorough research. Key factors to consider when applying CMFs include:

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

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

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

9.1.2 Safety Project Case Studies

From the citywide analysis, ten (10) project case study locations were selected for further evaluation and countermeasure development. For each of these locations, Safety Project Case Studies were developed to provide a balanced understanding of common safety patterns at a variety of location types that can be used to associate countermeasures with specific roadway configurations and conditions. These locations were identified through the analysis process based on their crash histories, stakeholder engagement, the observed crash patterns, and their different characteristics to provide the most insight into potential systemic safety countermeasures that the city can employ to achieve the most cost-effective safety benefits.

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

1. Signalized Intersection: 10th Street and Avenue L
2. Signalized Intersection: Challenger Way and Avenue K
3. Signalized Intersection: Gadsden Avenue and Avenue K
4. Unsignalized Intersection: 40th Street W and Avenue J-8
5. Unsignalized Intersection: 50th Street W and Avenue K
6. Unsignalized Intersection: 15th Street E and Avenue J-8
7. Unsignalized Intersection: 70th Street E and Avenue K
8. Unsignalized Intersection: 25th Street E and Lancaster Boulevard
9. Segment: Avenue K from 10th Street W to 12th Street W
10. Segment: Avenue K-4 from Gadsden Avenue to 10th Street W

The following pages summarize conditions at each location, and potentially beneficial countermeasures. Countermeasures were subjected to a benefit/cost assessment and scored according to their potential return on investment. These case studies can be used to select the most appropriate countermeasure, and to potentially phase improvements over the longer-term. The potential benefit of these countermeasures at locations with similar design characteristics can then be extrapolated regardless of crash history, allowing for proactive safety enhancements that can prevent future safety challenges from developing. These case study sheets can also be used to position the city for future grant funding opportunities. The volumes shown in the ADT & TEV sections of the case study sheets below were taken from the 2020 SSAR and other sources from 2019. The monetary benefits are calculated from the latest Caltrans injury level cost data. Fatal and severe injury collisions are estimated at $2.19 million, Other Visible Injury collisions at $142,300, Complaint of Pain collision at $80,900, and Property Damage Only collisions at $13,300.

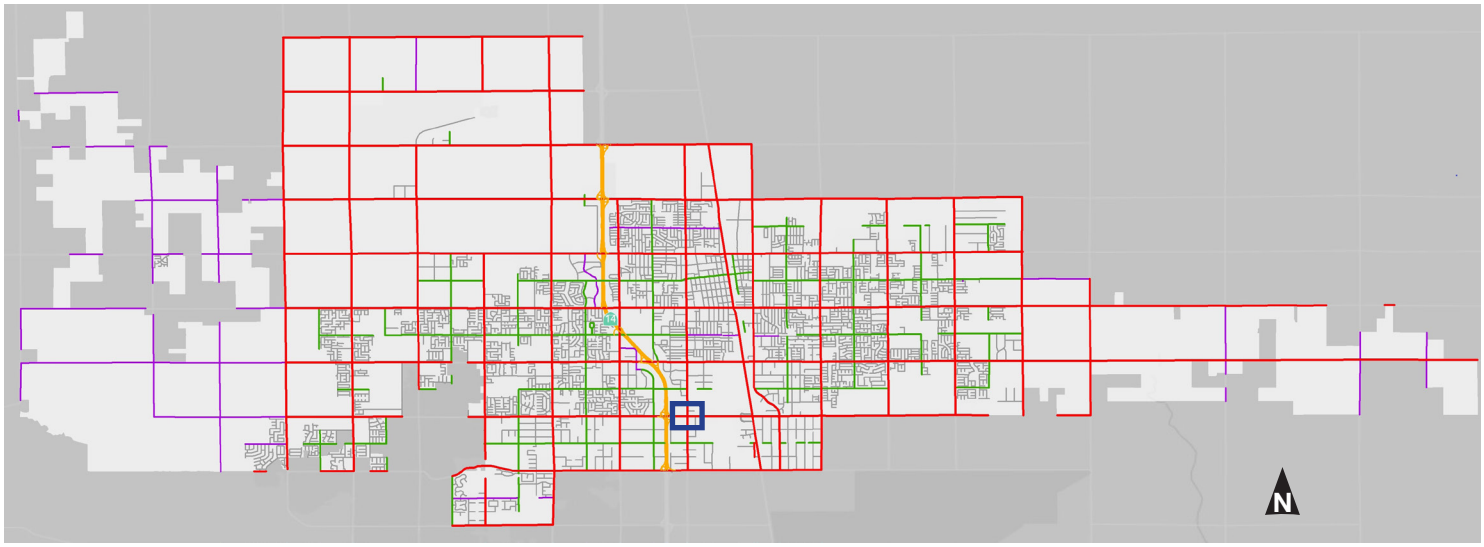
Case Study Sheet: Location # 1

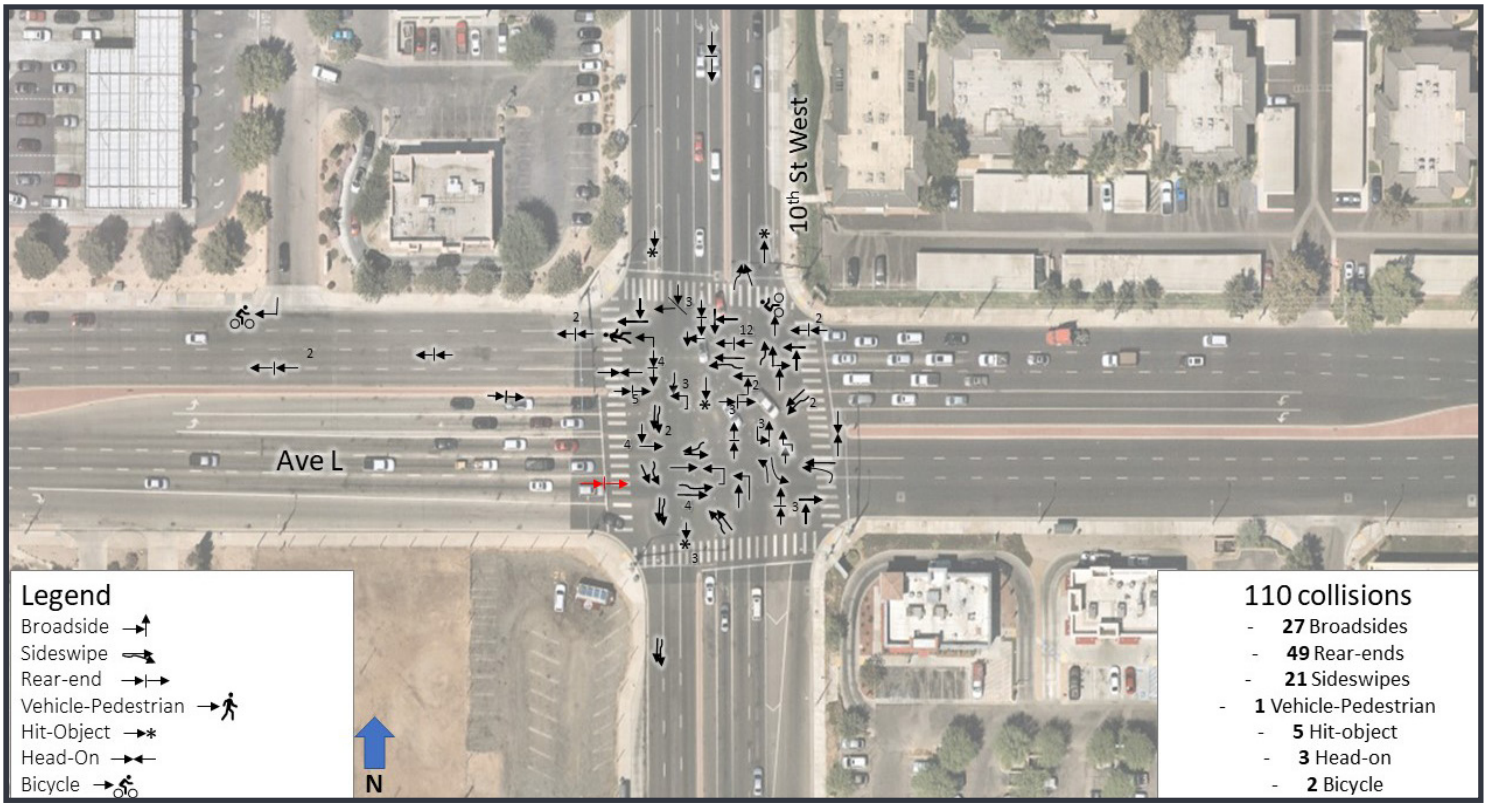
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

Project Location Description & Maps:

Intersection: 10th Street W and Avenue L
Example of Similar Intersections: 10th Street W and Avenue K; 20th St W and Avenue J





Kimley»Horn

Traffic and Geometric Data:

Collision Data	
Total Collisions	110
Fatal and Injury Collisions	1 Fatal; 0 Severe; 7 Visible
Top 3 Collision Types	Rear-End (44%) Broadside (24%) Sideswipe (19%)
Total Nighttime Collisions	30
Wet Surface Collisions	5
Drug and Alcohol Related Collisions	5

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	58,600
Crosswalk Condition	4 standard
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	55
Median	Yes, raised on all approaches

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
107	1	2

Field Visit Notes

- Signalized Intersection with protected left turns for all approaches.
- High Speed Limit (50 mph).
- Grade separation east of intersection at Sierra Highway.
- No emergency vehicle preemption (EVP) at this location.
- This intersection is among the two or three busiest in the City.
- Vehicles often speed through yellow or early red phases.
- Outside WB through-right lane queues heavily.
- Road diet recently completed along 10th Street W north of Avenue L. City is planning a similar road diet along 10th Street W south of Avenue L.

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Evaluate signal timing and cycle length including yellow for left turn movement. Evaluate and re-time traffic signal on Ave L between Costco Driveway and 10th St. W to improve traffic flow and lane utilization	15% (S03)	$3,739,620	$15,000	249.31
Evaluate striping for WB Avenue L for possible repurposing of the curb lane between 10th St. W. and SR-14 ramp	5%	$281,140	$30,000	9.37
Install retroreflective backplates	15% (S02)	$3,739,620	$12,000	311.64

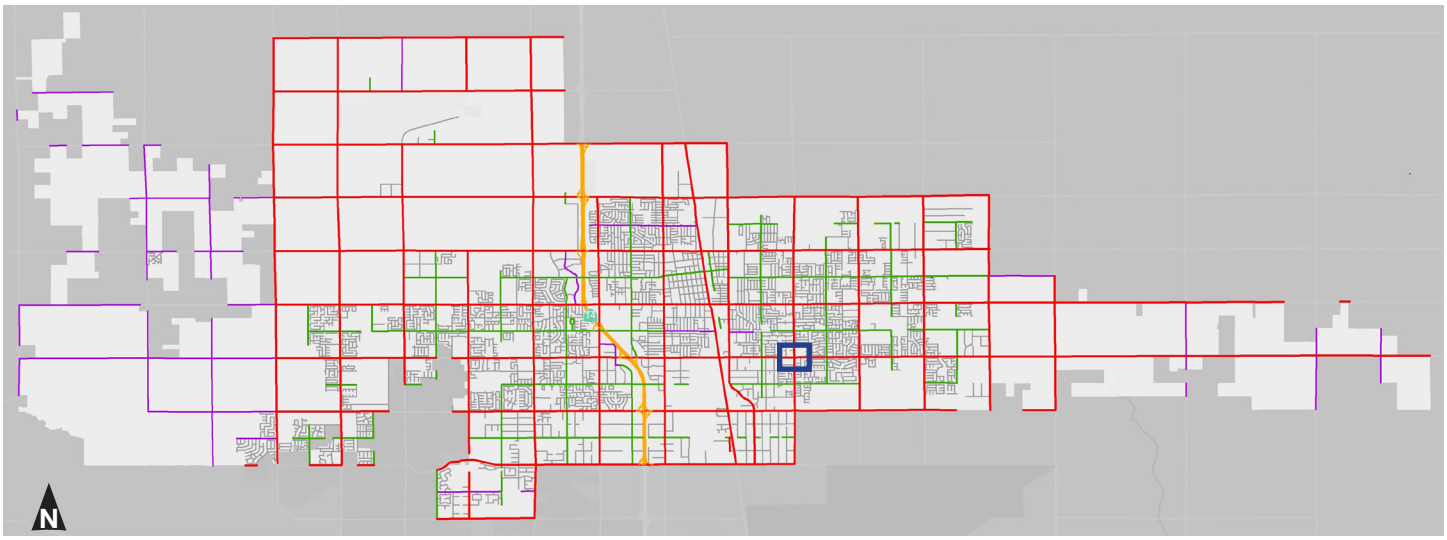
Case Study Sheet: Location # 2

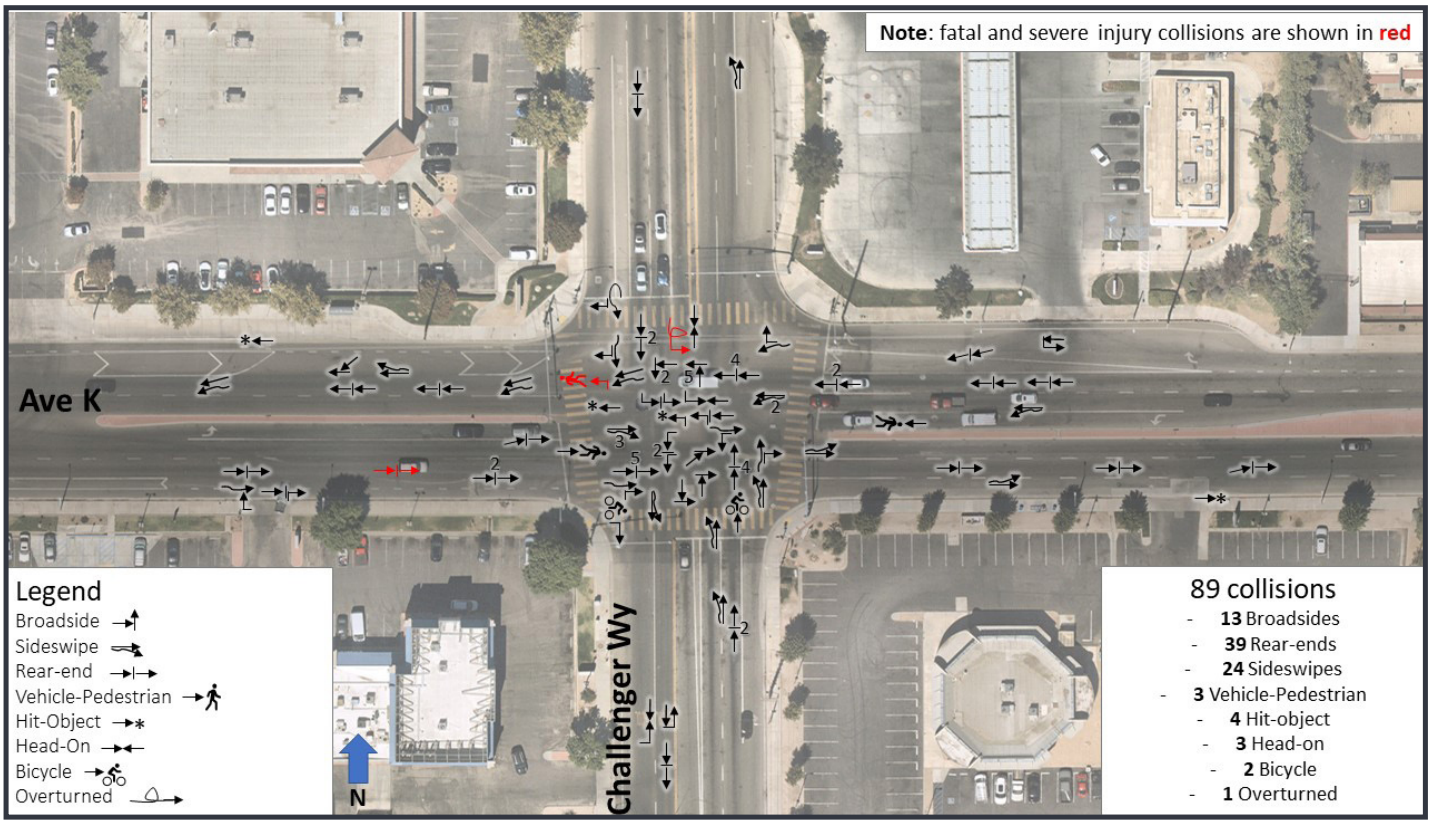
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

Prepared by: Kimley-Horn
Checked by: Sowmya Chandrasekhar, P.E.
Date: June 2022

Project Location Description & Maps:

Intersection: Challenger Way and Avenue K
Example of Similar Intersections: 20th Street E and Avenue K; 20th Street E and Avenue J-8





Traffic and Geometric Data:

Collision Data	
Total Collisions	89
Fatal and Injury Collisions	0 Fatal; 3 Severe; 6 Visible Injuries
Top 3 Collision Types	Rear-End (44%) Sidewsipe (27%) Broadside (17%)
Total Nighttime Collisions	35
Wet Surface Collisions	4
Drug and Alcohol Related Collisions	14

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	38,850
Crosswalk Condition	Yellow continental on all sides
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	50
Median	Yes, on N/S approaches

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
84	3	2

Field Visit Notes

- Concentration of driveways in all directions from intersection
- Speeding is likely a factor in some collisions.
- Very large WB right turn lane and gap in bike lane.
- Possible conflict points north of intersection where delineators in median end and left-turning vehicles exiting shopping plaza driveway cross traffic.
- High EB U-turn movements from people exiting residential areas on south side of Avenue K.
- This intersection is in close proximity to three schools.
- There are a number of establishments selling alcohol at this intersection.
- Per City, safety lighting was recently upgraded and may result in decrease of “Dark” collisions.

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Evaluate intersection striping and markings for possible enhancements	5%	$2,062,600	$30,000	68.75
Evaluate signal timing	15% (S03)	$6,187,800	$5,000	1237.56
Evaluate and enhance traffic signal head visibility	15 (S02)	$6,187,800	$12,000	515.65
Implement targeted DUI enforcement combined with education programs at local high schools	varies	varies	varies	-

Countermeasure Evaluation (continued)

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Evaluate built infrastructure (lane widths/ lane configuration) in relation to existing demand	5%	$2,062,600	$30,000	68.75
Install retroreflective backplates	15% (S02)	$6,187,800	$12,000	515.65

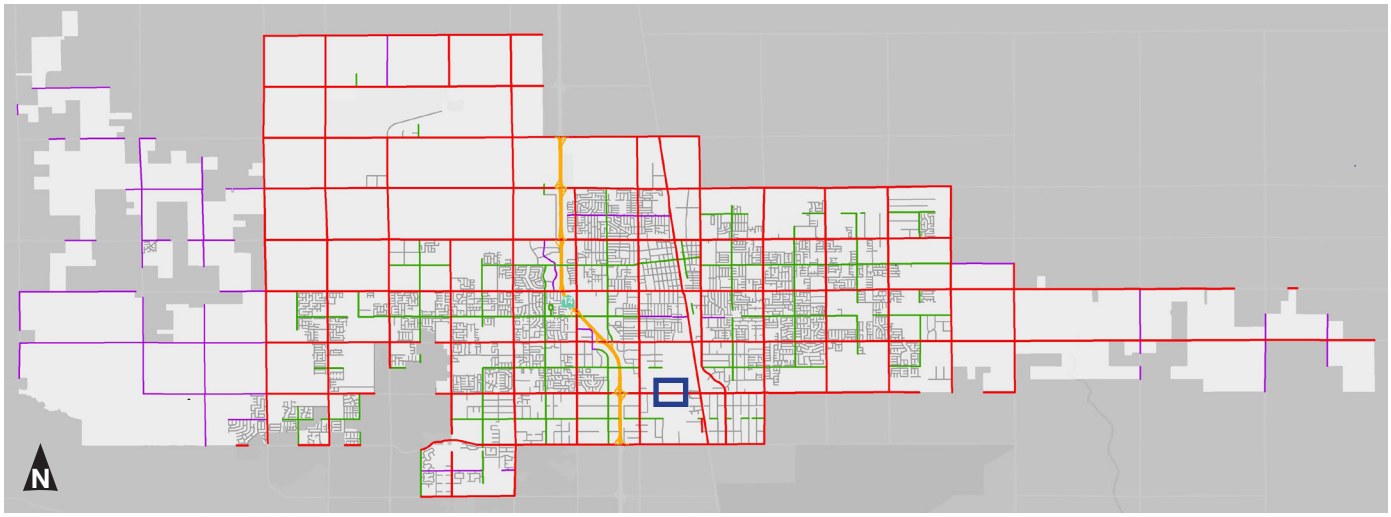
Case Study Sheet: Location # 3

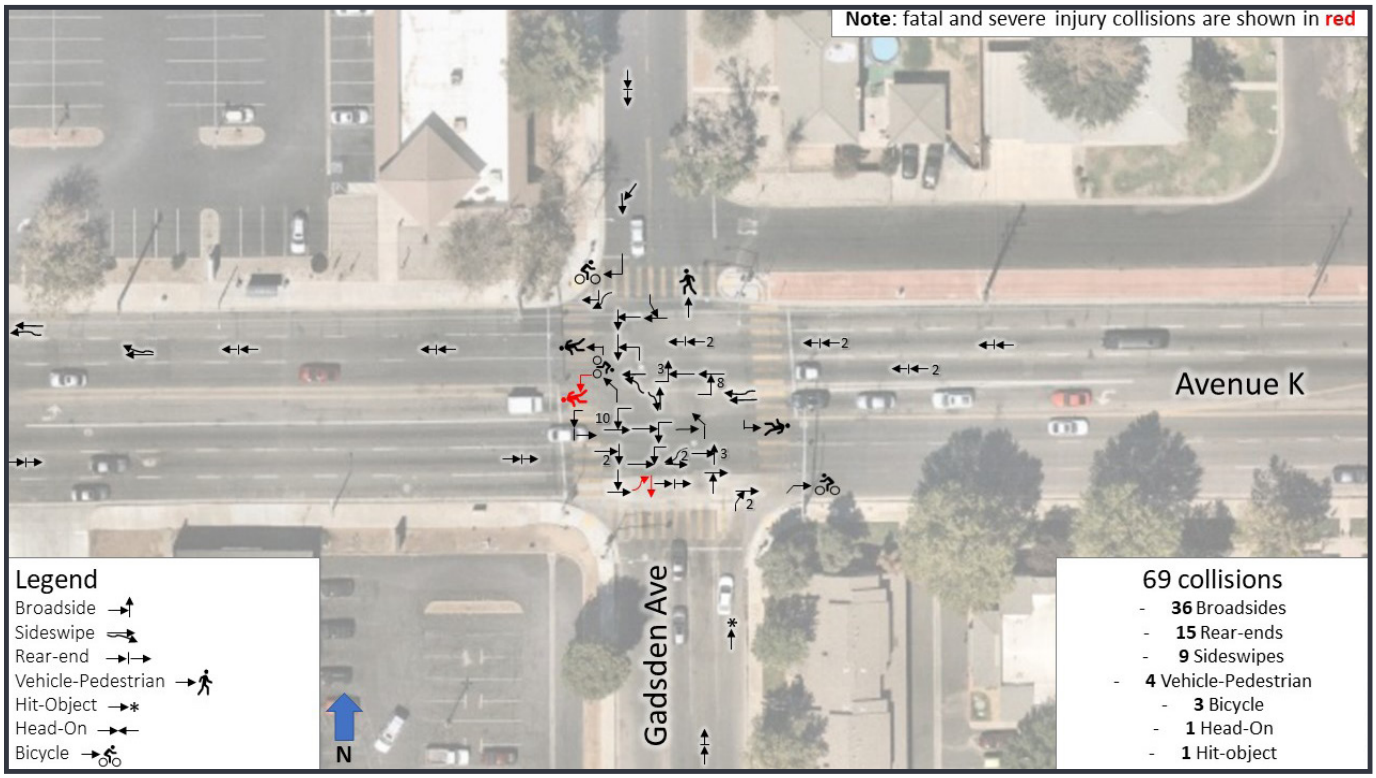
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

Project Location Description & Maps:

Intersection: Gadsden Avenue and Avenue K
Example of Similar Intersections: Avenue K and 12th St W; Avenue J and Fig Avenue





Kimley»Horn

Traffic and Geometric Data:

Collision Data	
Total Collisions	69
Fatal and Injury Collisions	0 Fatal; 2 Severe; 10 Visible Injuries
Top 3 Collision Types	Broadside (52%) Rear-End (22%) Sideswipe (15%)
Total Nighttime Collisions	10
Wet Surface Collisions	6
Drug and Alcohol Related Collisions	2

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	30,750
Crosswalk Condition	Continental crosswalks
Control Type	Signalized
Lighting	Yes
Highest Posted Speed Limit	50
Median	Yes

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
63	4	2

Field Visit Notes

- Per Safe Routes to School (SRTS) study, there is a crossing guard posted at this intersection.
- Per SRTS, speeding is a concern at this location.
- ACFD responded to traffic collision here recently, though there were likely not injuries - 9 minutes total spent on response and in intersection.
- Sidewalk gaps north of intersection and along Avenue K frontage road may lead to creative pedestrian activities, putting them at higher risk.
- Liquor store and smoke shop at this intersection may play role in pedestrian collisions
- City noted recent construction work that installed EB/WB protected left turns, completed around October 2020.

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Evaluate signal timing, including pedestrian clearance time	15% (S03)	$4,707,300	$5,000	941.46
Implement LPI based on pedestrian activity and signal timing coordination	60% (S21PB)	$6,553,440	$30,000	218.45
Evaluate intersection striping and marking, including possible addition of SBL turn pocket	5%	$1,569,100	$30,000	52.30

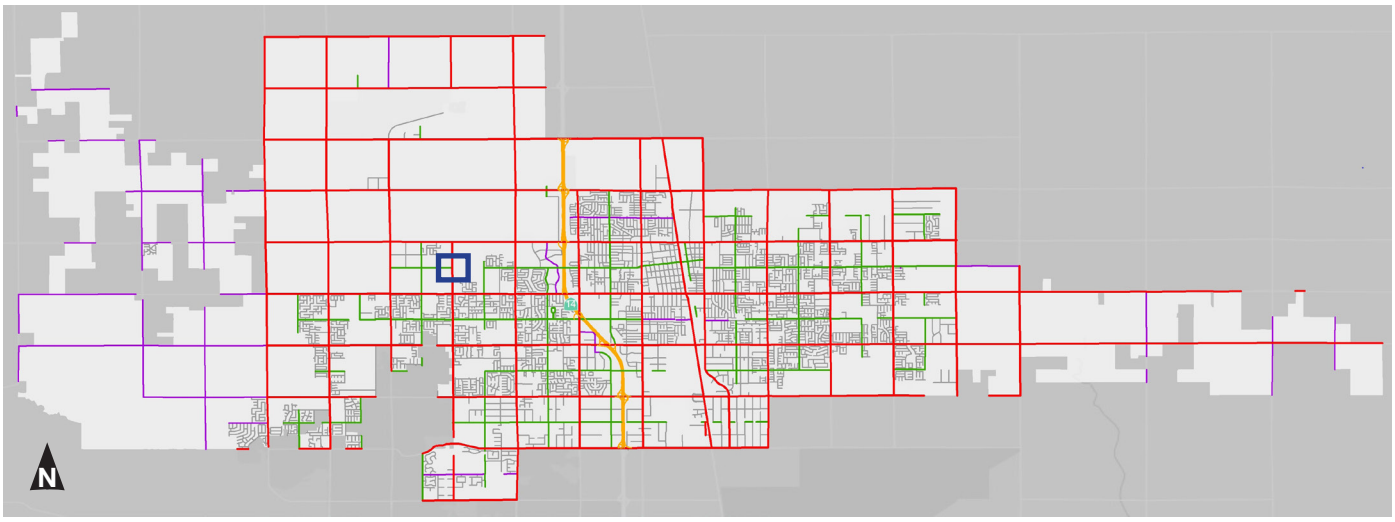
Case Study Sheet: Location # 4

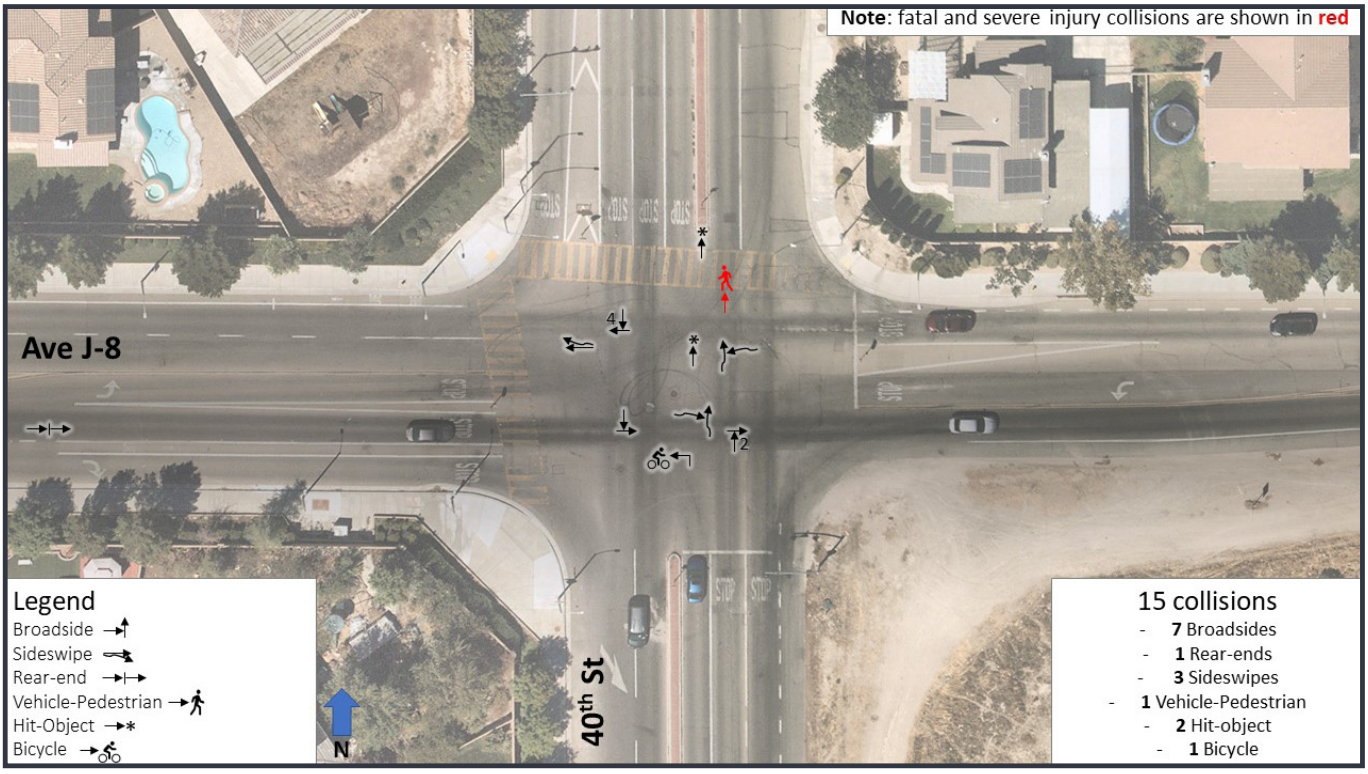
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

Project Location Description & Maps:

Intersection: 40th Street W and Avenue J-8
Example of Similar Intersections: 50th Street W and Avenue J-8; 35th Street W and Avenue J-8





Kimley»Horn

Traffic and Geometric Data:

Collision Data	
Total Collisions	15
Fatal and Injury Collisions	1 fatal; 0 severe; 1 visible injuries
Top 3 Collision Types	Broadside (47%) Sideswipe (20%) Head-On (14%)
Total Nighttime Collisions	7
Wet Surface Collisions	0
Drug and Alcohol Related Collisions	0

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	8,950
Crosswalk Condition	Yellow continental on W and S approaches
Control Type	All-way stop
Lighting	Yes
Highest Posted Speed Limit	50
Median	On N/S approaches

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
13	1	1

Field Visit Notes

- Location is marked school crossing.
- Exceptionally large intersection with high number of lanes for AWSC intersection.
- Currently no crosswalk to southeast corner of intersection despite residential development in vicinity.
- City frequently receives calls regarding speeding issues along Avenue J-8
- City frequently receives calls that drivers disobey stop signs.
- Thermoplastic resurfacing scheduled for August 2022 along Avenue J-8 between 35th Street W & 52nd Street W.
- City currently has no plans for traffic signal or road diet at this location.

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Implement a road diet	30% (R14)	$3,249,600	$25,000	129.98
Complete crosswalks to southeast corner (systemic opportunity)	25% (NS20PB)	$2,332,300	$22,000	106.01
Install ADA ramps	5%	$466,460	$10,000	46.65
Install curb extension on northeast corner	5%	$541,600	$30,000	18.05
Install increased signage including advanced warning signage	15% (NS06)	$1,624,800	$4,000	406.20

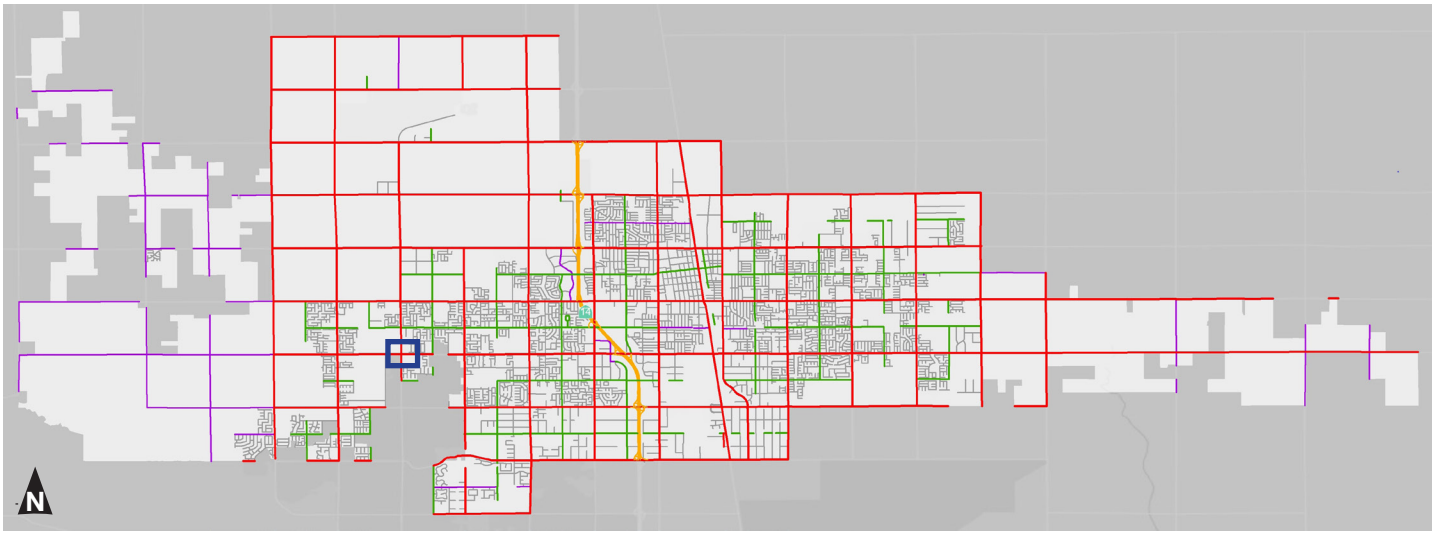
Case Study Sheet: Location # 5

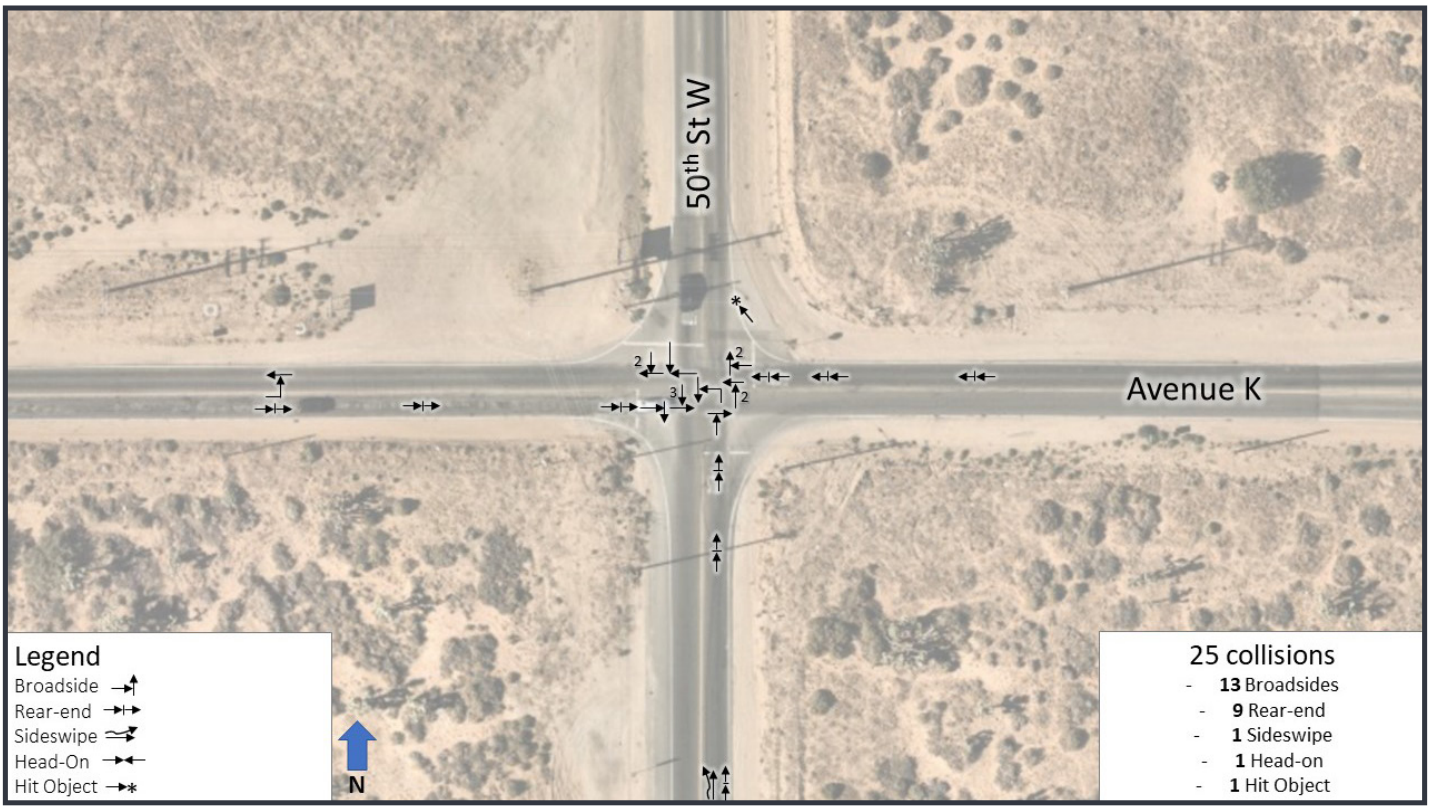
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

Project Location Description & Maps:

Intersection: 50th Street W and Avenue K
Example of Similar Intersections: 70th Street W and Avenue J; 50th Street W and Avenue H





Kimley»Horn

Traffic and Geometric Data:

Collision Data	
Total Collisions	25
Fatal and Injury Collisions	0 fatal; 0 severe; 1 visible injury
Top 3 Collision Types	Broadside (52%) Rear-End (36%) Sideswipe (4%)
Total Nighttime Collisions	9
Wet Surface Collisions	1
Drug and Alcohol Related Collisions	1

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	13,600
Crosswalk Condition	None
Control Type	All-way stop
Lighting	Yes
Highest Posted Speed Limit	55
Median	No

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
25	0	0

Field Visit Notes

- Speed and failure to obey stop signs likely factors contributing to collisions.
- Per City, fairly busy location during morning and afternoon peak periods, particularly EB/WB.
- Additional housing development planned here, will increase traffic.
- Flashing beacon recently removed.
- Luminaires newly installed on southeast corner between 2019-2021.
- City conducted field investigation regarding thermoplastic last year.

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Evaluate intersection striping and marking	5%	$159,900	$30,000	5.33
Reduce the curb radius to reduce intersection size and move the stop sign/bar closer	5%	$159,900	$100,000	1.60
Conduct an intersection control evaluation (signal)	30%	$959,400	$500,000	1.92
Conduct an intersection control evaluation (roundabout)	35%	$1,119,300	$1,500,000	0.75

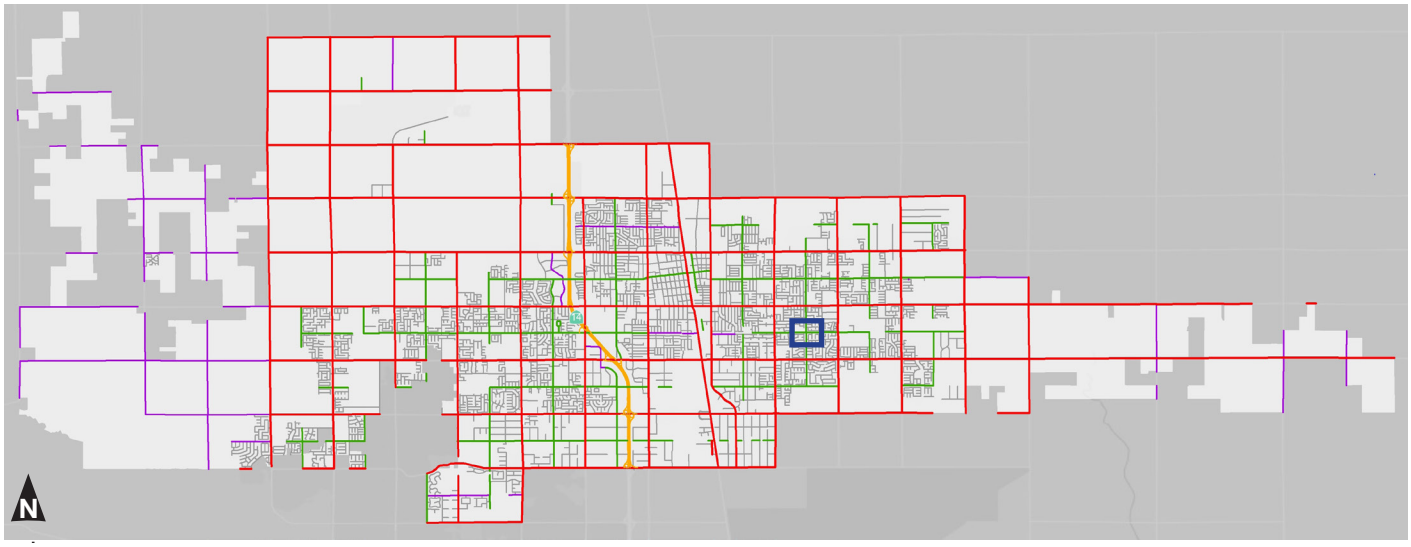
Case Study Sheet: Location # 6

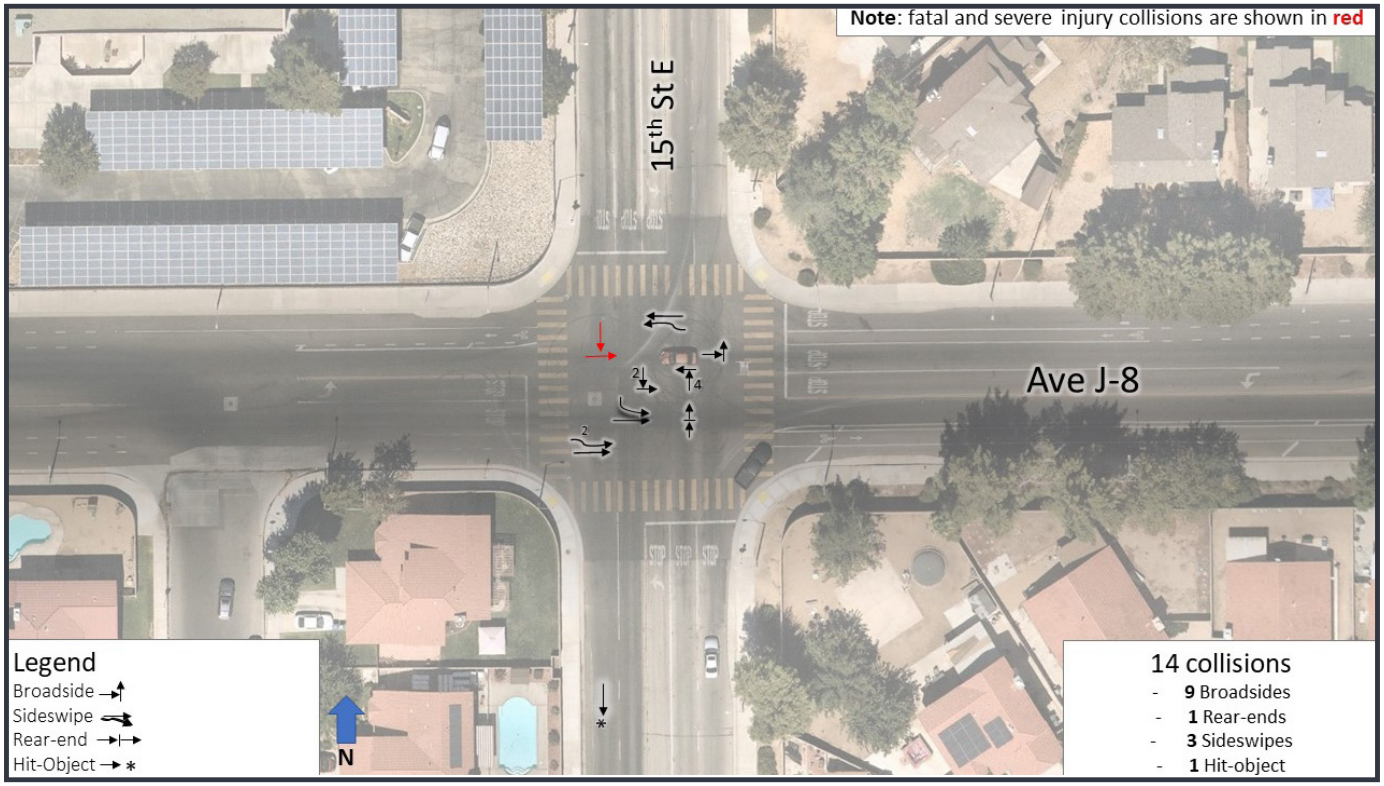
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

Project Location Description & Maps:

Intersection: 15th Street E and Avenue J-8
Example of Similar Intersections: Lancaster Boulevard and 30th St E; Lancaster Boulevard and 15th Street E





Kimley»Horn

Traffic and Geometric Data:

Collision Data	
Total Collisions	14
Fatal and Injury Collisions	0 fatal; 1 severe; 1 visible injury
Top 3 Collision Types	Broadside (64%) Sideswipe (21%) Rear-End (7%)
Total Nighttime Collisions	2
Wet Surface Collisions	1
Drug and Alcohol Related Collisions	0

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	8,750
Crosswalk Condition	Yellow standard on all sides
Control Type	All-way stop
Lighting	Yes
Highest Posted Speed Limit	45
Median	None

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

Field Visit Notes

- Exceptionally large intersection with high number of lanes for AWSC intersection.
- Surrounding parcels are developed.
- Lincoln Elementary School on northwest corner.
- Surrounding roadway segments have few driveways or intersections providing access points to neighborhoods.
- City frequently receives calls regarding speeding on Avenue J-8.
- City frequently receives calls that drivers disobey stop signs.
- Lack of nearby driveways/intersections on roadway segments encourage speeding.
- Lincoln Elementary School influences traffic patterns. Peak volumes at 4 PM - school-related, maybe too high for AWSC intersection.
- CHP reported crash with school bus a few years ago where a left-turning vehicle hit back of a school bus.
- Potential for queuing from school driveway to intersection.
- Per LASD, street racing in this area has been an ongoing issue.
- Per LASD, traffic speeds have been higher on Avenue J-8 after Avenue J underwent lane reductions.

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Reduce intersection size or number of lanes to provide better visibility for conflicting movements	5%	$579,500	$100,000	5.80

Case Study Sheet: Location # 7

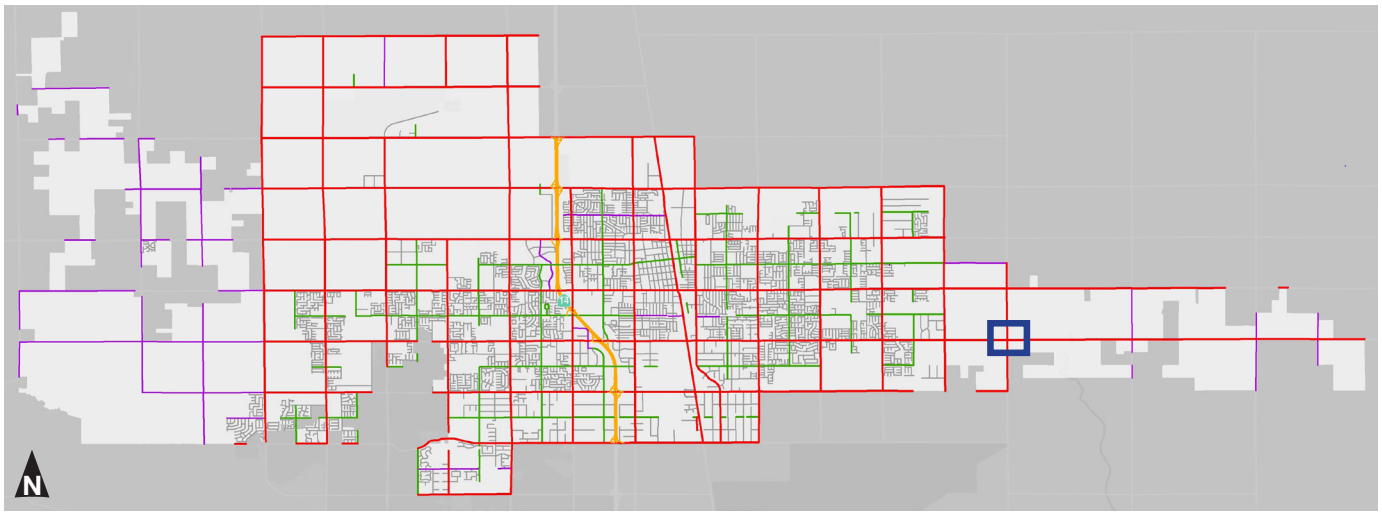
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

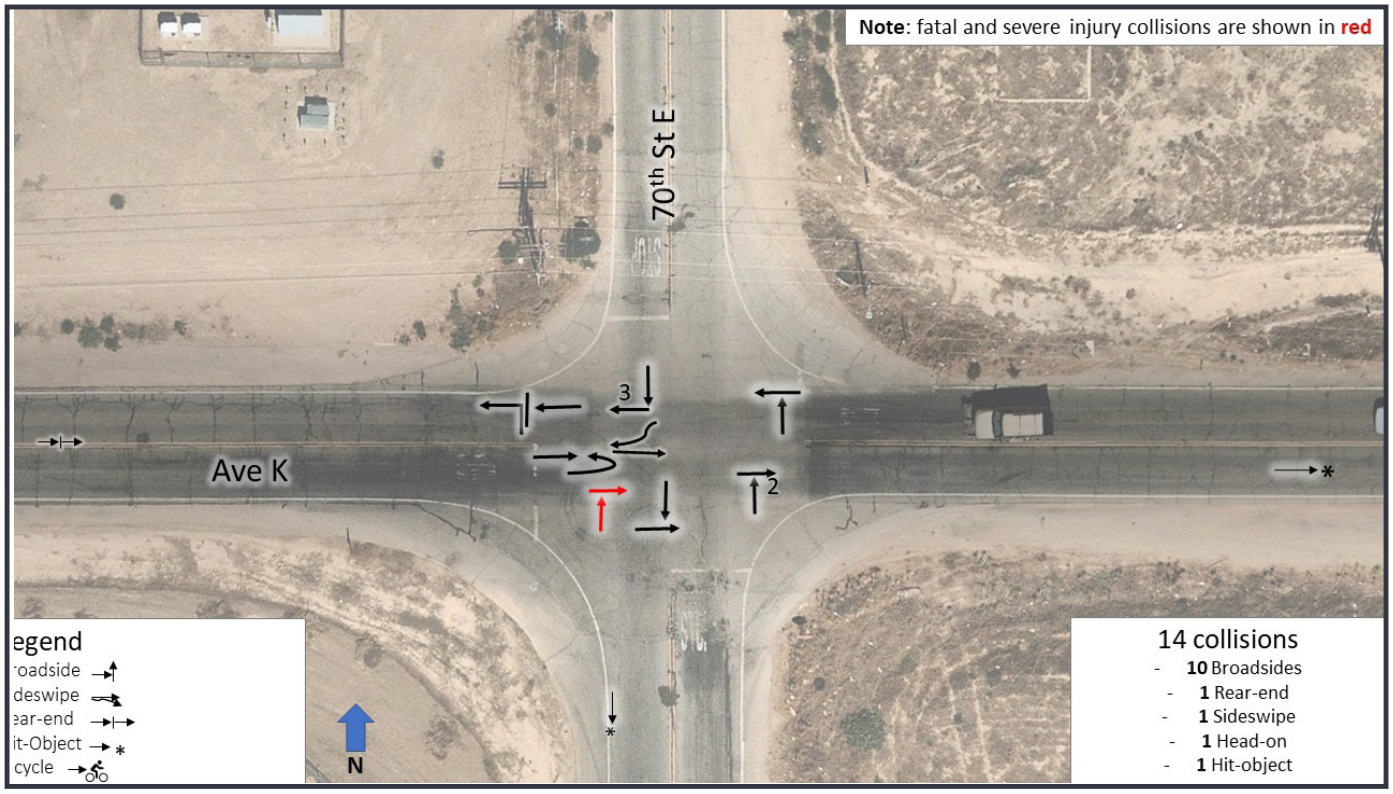
Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

INTERSECTION

Project Location Description & Maps:

Intersection: 70th Street E and Avenue K
Example of Similar Intersections: 50th Street E and Avenue K; 50th Street E and Avenue J





Kimley»Horn

Traffic and Geometric Data:

Collision Data	
Total Collisions	14
Fatal and Injury Collisions	1 fatal; 0 severe; 3 visible injury
Top 3 Collision Types	Broadside (71%) Sideswipe/Rear-End/ Head-On/Hit Object (7%)
Total Nighttime Collisions	5
Wet Surface Collisions	1
Drug and Alcohol Related Collisions	1

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	3,200
Crosswalk Condition	None
Control Type	All-way stop
Lighting	Yes
Highest Posted Speed Limit	None posted (prima facie 55 MPH)
Median	None

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

Field Visit Notes

- Pavement markings very faded.
- Surroundings are very rural.
- Luminaire on northeast corner of intersection.
- Frequent issues with speeding.
- Issues in surrounding area regarding drivers reporting tractors on roadway.
- Issues in surrounding area regarding high volume of commercial vehicles bypassing designated truck routes.
- Issues in surrounding area regarding trucks related to illegal marijuana growing facilities.
- Intersection upgraded from TWSC to AWSC intersection sometime between 2012 and 2019.
- Thermoplastic resurfacing planned for Avenue K between 35th St E to 107th St E in 2023.
- Large greenhouse proposed west of intersection at 65th Street E with potential for large number of truck trips generated.

Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Enhance visibility of stop signs	15% (NS06)	$1,852,740	$2,000	926.37
Enhance visibility of markings	25% (NS07)	$3,087,900	$22,000	140.36
Improve pavement condition	5%	$617,580	$100,000	6.18

Case Study Sheet: Location # 8

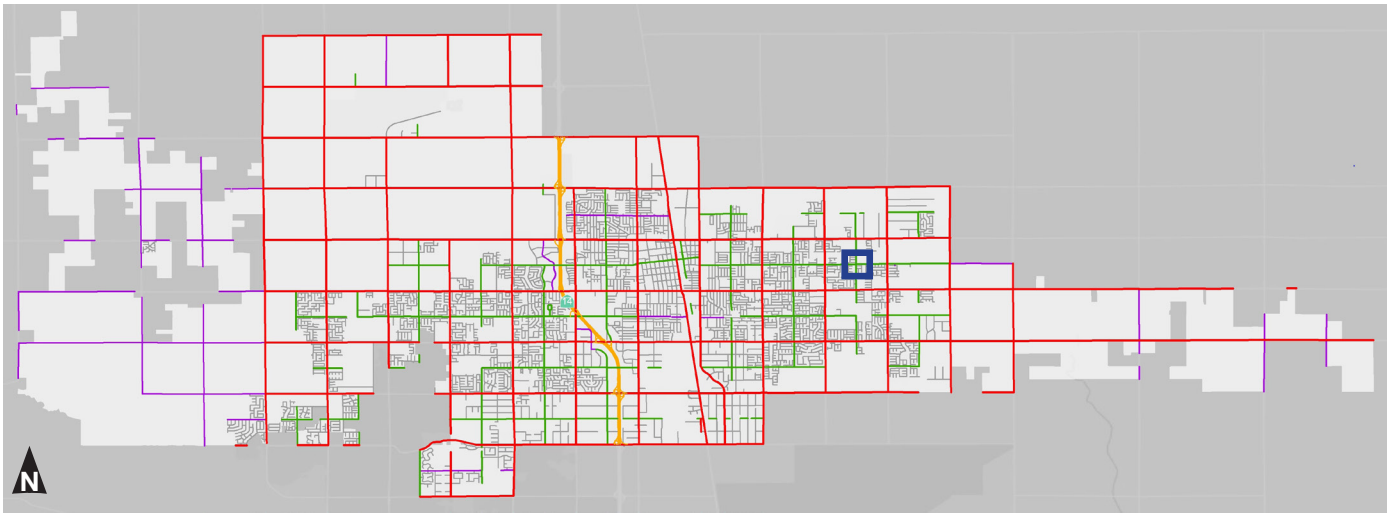
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

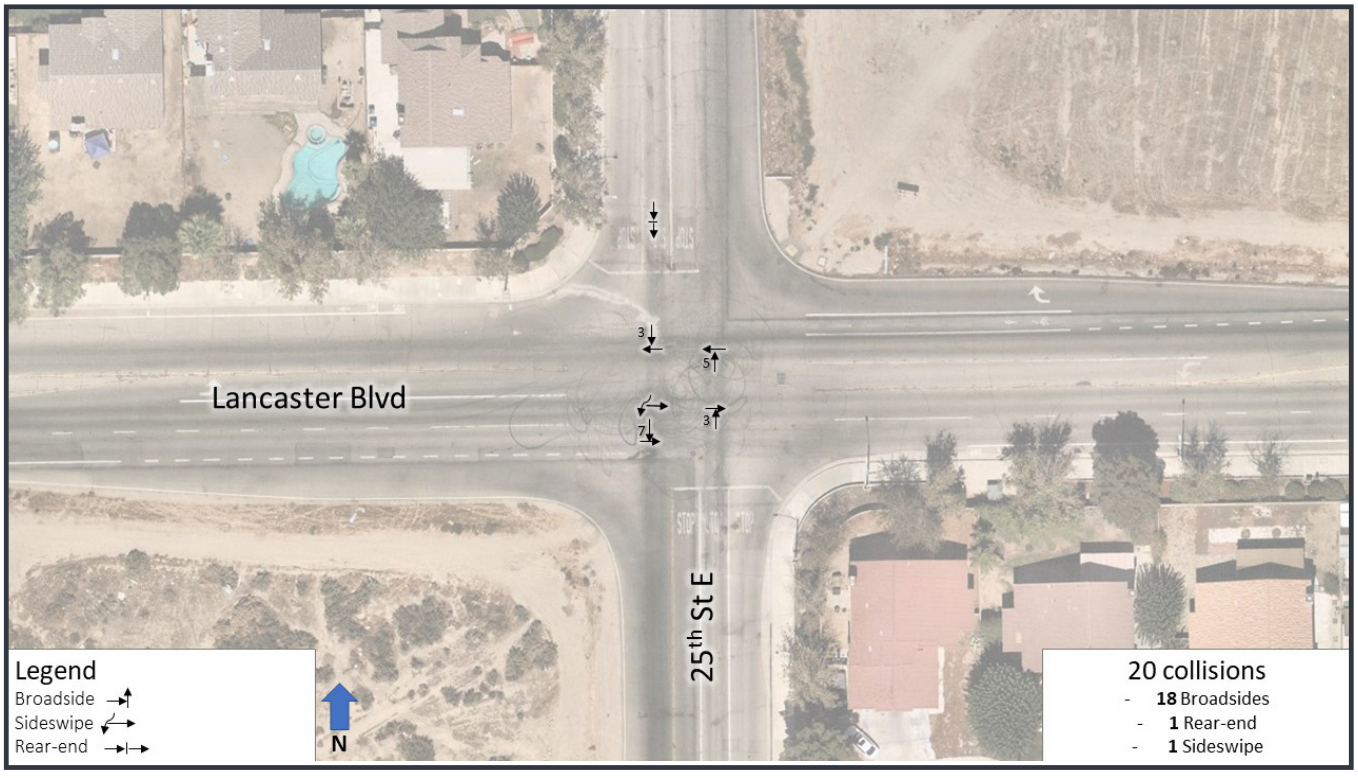
Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

INTERSECTION

Project Location Description & Maps:

Intersection: 25th Street E and Lancaster Boulevard
Example of Similar Intersections: 30th Street E and Lancaster Boulevard; 40th Street E and Lancaster Boulevard





Kimley»Horn

Traffic and Geometric Data:

Collision Data	
Total Collisions	20
Fatal and Injury Collisions	0 fatal; 0 severe; 3 visible injuries
Top 3 Collision Types	Broadside (85%) Sideswipe (10%) Rear-End (5%)
Total Nighttime Collisions	7
Wet Surface Collisions	2
Drug and Alcohol Related Collisions	0

Traffic Data	
Number of Approaches	4
Total Entering Vehicles	9,200
Crosswalk Condition	None
Control Type	Two-way stop
Lighting	Yes
Highest Posted Speed Limit	45
Median	None

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
20	0	0

Field Visit Notes

- Parcels on northwest and southeast corners developed.
- Parcels on northeast and southwest corners vacant.
- No marked crosswalks despite Tierra Bonita Elementary School to the East.
- High number of lanes for side street (25th Street E) for TWSC intersection.
- City frequently receives calls regarding vehicles speeding.
- City frequently receives calls regarding vehicles disobeying the stop signs.
- Number of lanes and width of intersection make it difficult for drivers to adequately judge speed of oncoming drivers.
- Dedicated turn lanes for north and south legs raise possibility of trucks pulling up on either side of and blocking visibility for vehicles.
- Housing developments planned nearby, will increase student population and use of intersection.

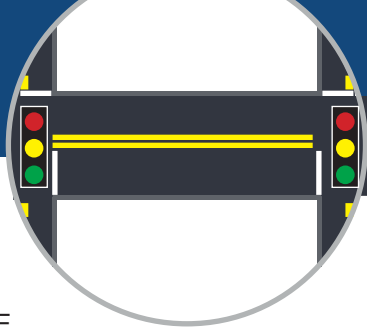
Countermeasure Evaluation

Potential Countermeasures	Crash Reduction Factor (LRSM/ CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Install high visible pavement markings	25% (NS07)	$1,058,600	$22,000	48.12
Evaluate lane reduction along 25th St E	5%	$211,720	$50,000	4.23
Conduct an intersection control evaluation (signal)	30% (NS03)	$1,270,320	$500,000	2.54
Conduct an intersection control evaluation (roundabout)	35% (NS04)	$1,482,040	$1,500,000	0.99

Project Template: Location # 9

Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candce Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

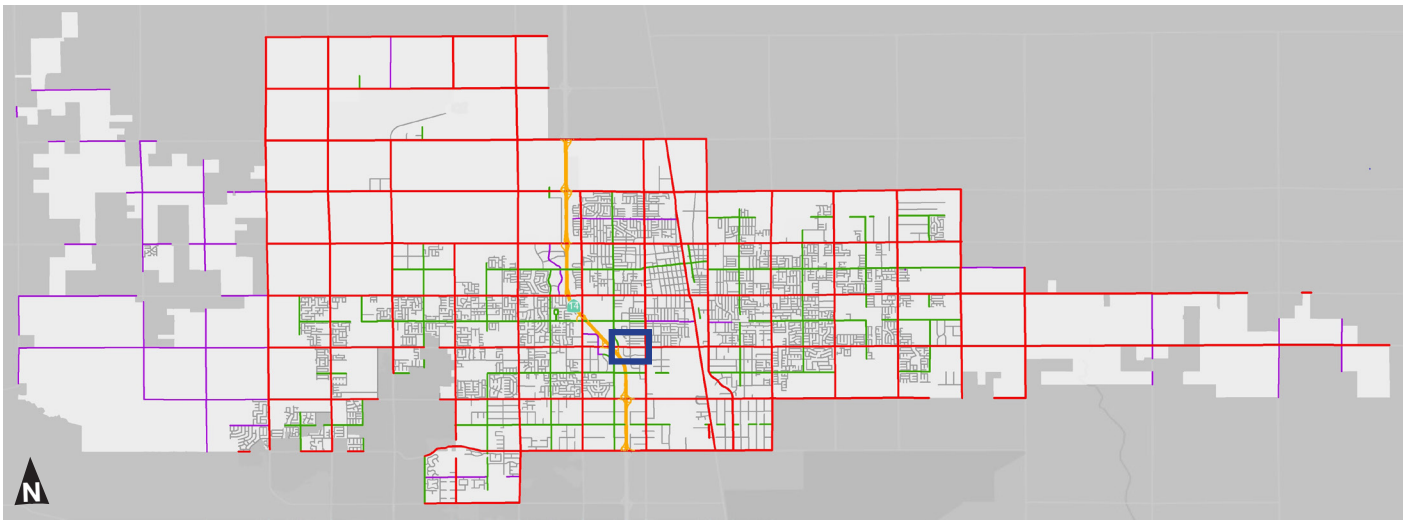
Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

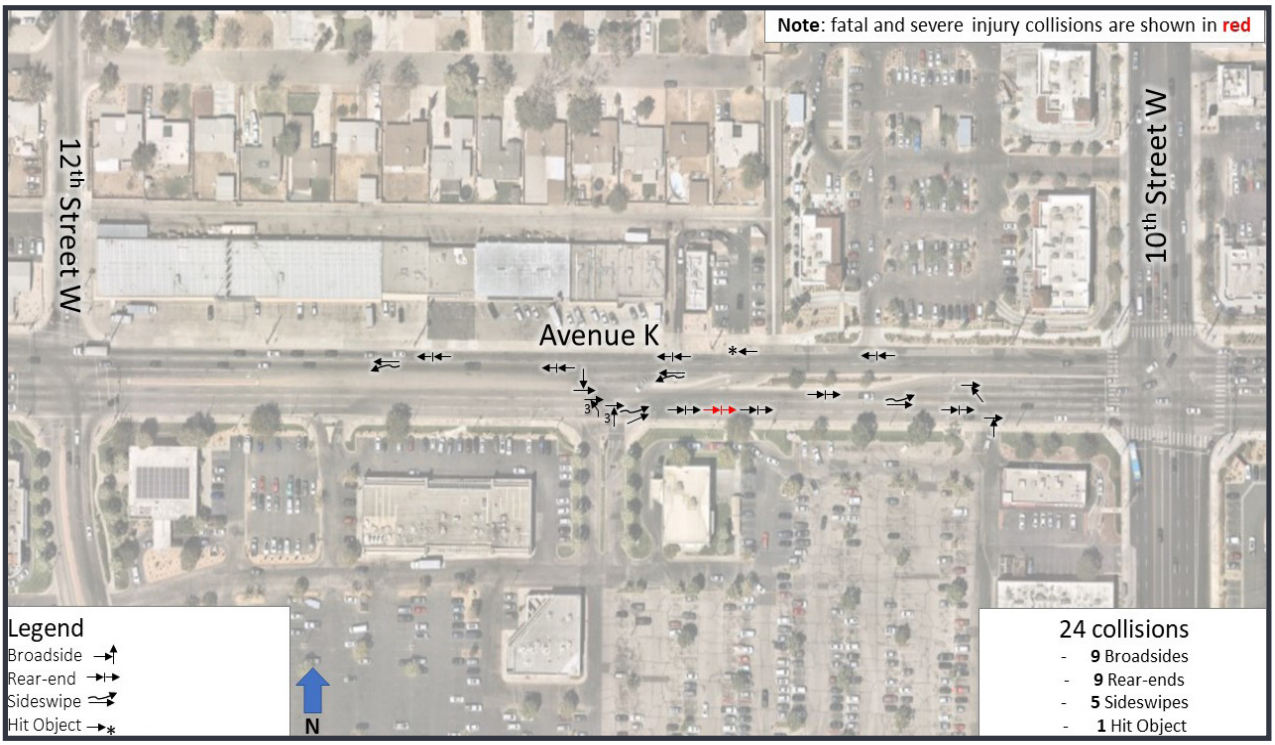


SEGMENT

Project Location Description & Maps:

Segment: Avenue K: 10th Street W to 12th Street W
Example of Similar Segments: Avenue K: 20th Street W to 22nd Street W; 20th Street W: Avenue J to Avenue J-8





Kimley»Horn

Traffic and Geometric Data:

Collision Data	
Total Collisions	24
Fatal and Injury Collisions	1 fatal; 0 severe; 3 visible injury
Top 3 Collision Types (percentage)	Broadside/Rear-End (38%) Sideswipe (21%) Hit Object (4%)
Total Nighttime Collisions	3
Wet Surface Collisions	4
Drug and Alcohol Related Collisions	1

Traffic Data	
Average Daily Traffic (ADT)	28,880
Lighting	Yes
Highest Posted Speed Limit	35 MPH

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
24	0	0

Field Visit Notes

- Parcels on northwest and southeast corners developed. Parcels on northeast and southwest corners vacant.
- No marked crosswalks despite Tierra Bonita Elementary School to the East.
- High number of lanes for side street (25th Street E) for TWSC intersection.
- Per City, this location was a partially completed “increased capacity intersection”.
- City frequently receives calls regarding vehicles speeding.
- City frequently receives calls regarding vehicles disobeying the stop signs.
- Line-of-sight issues for NB and SB vehicles due to development and walls on northwest and southeast corners of intersection.
- Number of lanes and width of intersection make it difficult for drivers to adequately judge speed of oncoming drivers.
- Dedicated turn lanes for north and south legs raise possibility of trucks pulling up on either side of and blocking visibility for vehicles.

Countermeasure Evaluation

Potential Countermeasures	Crash Modification Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Restrict left-turn out from the Target driveway, approximately 600’ w/o 10th St. W	50% (NS15)	$6,577,000	$100,000	65.77
Assess sight visibility for Target driveway	20% (NS11)	$2,630,800	$3,000	876.93
Improve WB striping along Ave K, particularly the transition area	5%	$657,700	$15,000	43.85

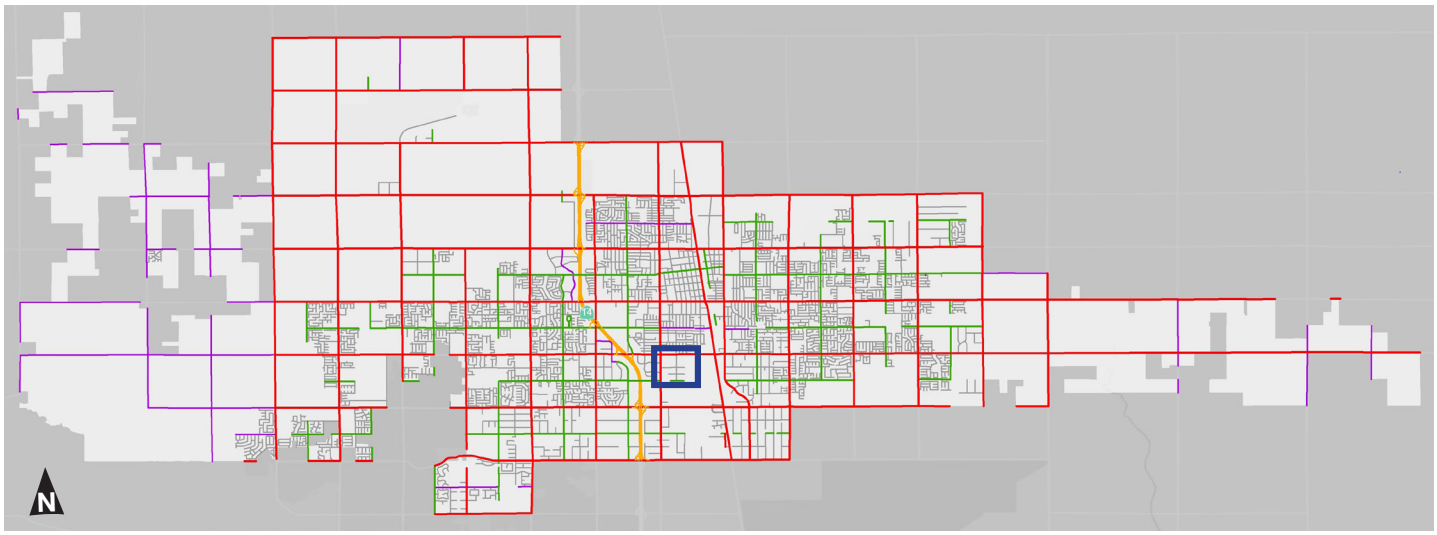
Project Template: Location # 10

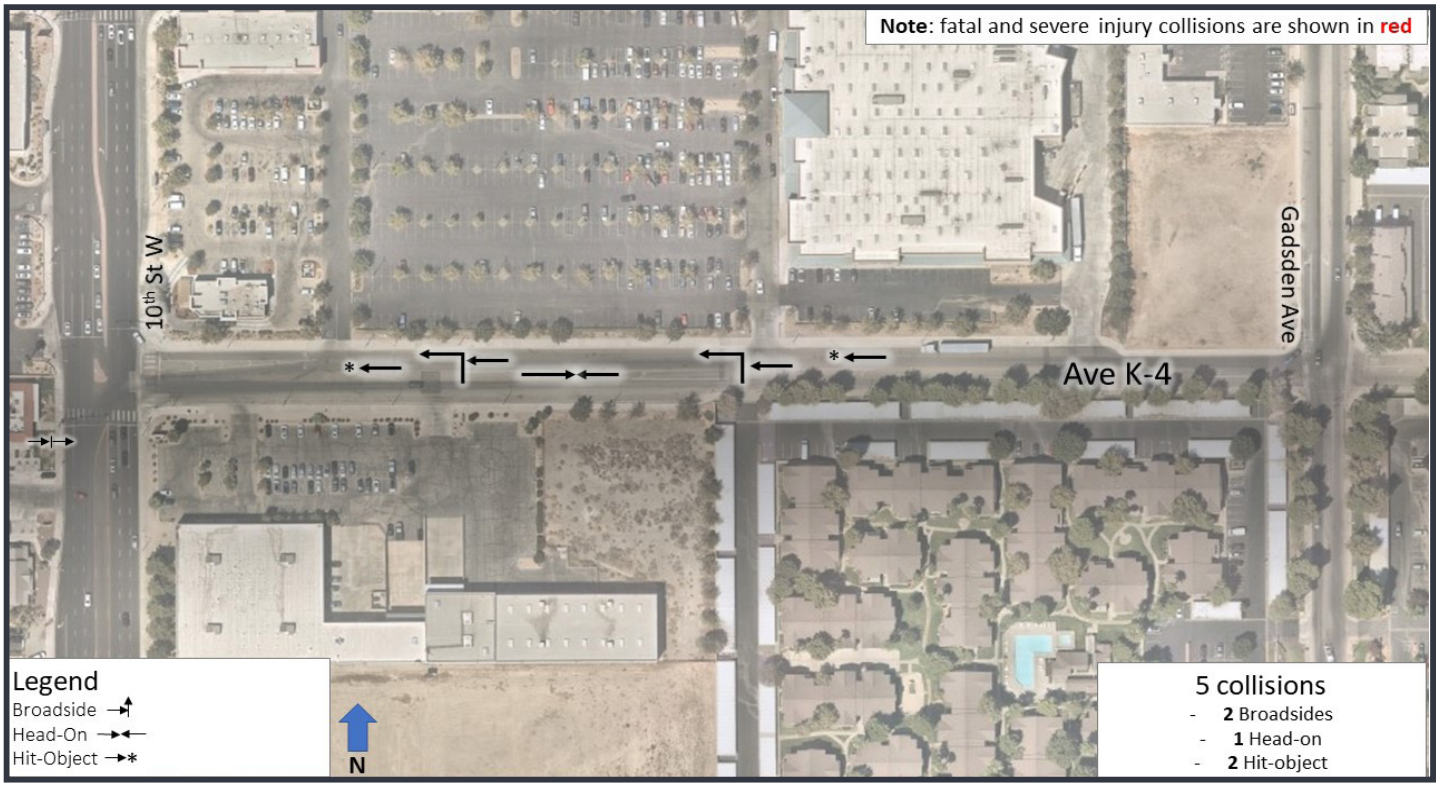
Project Name: Lancaster LRSP
Agency Name: City of Lancaster
Contact Name: Candice Vander Hyde
Email: cvanderhyde@cityoflancasterca.gov

Prepared by: Kimley-Horn
Checked by:
Sowmya Chandrasekhar, P.E.
Date: June 2022

Project Location Description & Maps:

Segment: Ave K-4: Gadsden Avenue to 10th Street W
Example of Similar Segments: Avenue J-4: 17th Street E to 20th St E; Gadsden Ave: Ave K to Avenue K-4





Traffic and Geometric Data:

Collision Data	
Total Collisions	5
Fatal and Injury Collisions	0 fatal; 0 severe; 2 visible injuries
Top 3 Collision Types (percentage)	Broadside (40%) Hit Object (20%) Head-On (20%)
Total Nighttime Collisions	3
Wet Surface Collisions	4
Drug and Alcohol Related Collisions	1

Traffic Data	
Average Daily Traffic (ADT)	1,000 (estimate)
Lighting	Yes
Highest Posted Speed Limit	35 MPH

Collision Breakdown		
Veh vs. Veh	**Veh vs. Ped**	**Veh vs. Bike**
5	0	0

Field Visit Notes

- Large retail center and parking lot on south side of segment.
- Smaller but busy retail/restaurant establishments along north end of segment.
- High concentration of driveways along segment.
- Crosswalk missing from west leg of 12th Street W & Avenue K.
- Heavy queuing from EB vehicles at 10th Street W.
- Vehicles exiting primary shopping plaza driveway:
  - NB left turning vehicles have to cross three lanes of traffic.
  - Vehicles wanting to make an EB left turn onto 10th Street W have to cut across three lanes into frequent queuing.
- Vehicles exiting Habit Burger and surrounds (north side of segment) that want to go EB on Avenue K have to make U-turn and compete with many vehicle movements.
- Competition for turning movements results in heavy weaving across segment, elevating collision risk.
- Short storage length for EB and WB left turn pockets can result in queuing into through lanes.
- Raised median along Avenue K implemented within last two years in conjunction with development at northwest corner of 10th Street W & Avenue K.
- Large development with high-intensity uses planned for northeast corner of 15th Street W & Avenue K, could result in more driveway challenges with traffic on Avenue K.

Countermeasure Evaluation

Potential Countermeasures	Crash Modification Factor (LRSM/CMF ID)	20 Year Safety Benefit	Total 20-Year Costs	Safety Related B/C
Evaluate lane width in westbound direction	5%	$64,900	$20,000	3.25

9.2 Citywide Countermeasure Toolbox

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

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

Table 8 – Citywide Safety Countermeasure Toolbox

ID	Potential Countermeasures	Where to apply?	CRF	Per Unit Cost	Unit	Timeline
NS03	Install signal	Unsignalized intersections with significant collision activity where warrants are met	30%	$500,000	per intersection	Long-term
NS04	Convert intersection to roundabout (from all-way stop)	Unsignalized intersections with significant collision activity, where warranted	35%	$1,500,000	per intersection	Long-term
NS06	Install/upgrade larger or additional stop signs/other intersections warning/regulatory sign	Areas identified in road sign safety audit	15%	$500	per sign	Near-term
NS07	Upgrade intersection pavement markings (to make more visible)	Intersections where outdated or degraded striping and pavement markings exist	25%	$22,000	per intersection	Near-term
NS15	Create direction median openings to restrict left-turns (right-in/right-out)	Entrances/exits from driveways with high numbers of turning movement collisions	50%	$100,000	per location	Mid-term
NS20PB	Install/upgrade pedestrian crossing at uncontrolled locations	Intersections with high pedestrian activity where speed limit is 35 mph or less and sufficient sight distance is available	25%	$22,000	per location	Mid-term
R14	Change lane configurations	Roadway segments with high number of sideswipe collisions	30%	$12,500	per mile	Near-term
S02	Update signal heads to meet current standards	Signalized intersections where signals heads to do not meet current standards	15%	$12,000	per intersection	Mid-term
S03	Improve signal timing (coordination, phasing, red, yellow, operation)	Signalized intersections where there is insufficient clearance time with current timing plans or where signals placed closely enough to impact free flowing operations of the street	15%	$5,000	per intersection	Near-term
S21PB	Modify signal phasing to implement a Leading Pedestrian Interval (LPI) with new controller	Signalized Intersections – especially those with high pedestrian activity	60%	$30,000	per intersection	Near-term
-*	Evaluate intersection/roadway striping and markings for possible enhancements	Intersection and roadway segments with high collision activity	5%	$30,000	per location	Near-term
-*	Implement targeted DUI enforcement combined with education programs at local high schools	Locations citywide, specifically those with high DUI collisions	5%	varies	varies	Near-term
-*	Evaluate built infrastructure (lane widths/lane configuration) in relation to existing demand	Locations with more capacity than demand	5%	$30,000	per location	Near-term
-*	Install ADA ramps	Intersections with high pedestrian activity	5%	$10,000	per location	Near-term
-*	Install curb extensions	Intersections with high pedestrian activity	5%	$30,000	per extension	Mid-term

ID	Potential Countermeasures	Where to apply?	CRF	Per Unit Cost	Unit	Timeline
-*	Reduce the curb radius to reduce intersection size and move the stop sign/bar closer	Locations with sight distance issues	5%	$100,000	per intersection	Mid-term
-*	Reduce intersection size or number of lanes to provide better visibility for conflicting movements	Locations with more capacity than demand	5%	$100,000	per intersection	Mid-term
-*	Improve pavement condition	Roadway segments that have degraded pavement conditions	5%	$100,000	per intersection	Near-term
-*	Improve striping along roadway segment	Roadway segments that have degraded roadway striping	5%	$30,000	per mile	Near-term

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

10. Funding Sources, Implementation Plan, and Next Steps

10.1 Funding Sources

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

10.1.1 Highway Safety Improvement Program

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

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

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

Additional information regarding this program at the Federal level can be found online at: https://safety.fhwa.dot.gov/hsip/. California specific HSIP information – including dates for upcoming call for projects - can be found at: http://www.dot.ca.gov/hq/LocalPrograms/hsip.html.

The city can apply for HSIP Cycle 11 funding in September 2022, while using the LRSP to develop projects most appropriate for the funding criteria. The next cycle of funding will be in fall 2024.

10.1.2 Caltrans Active Transportation Program

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

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

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

The most recent ATP Cycle 6 applications were due in July 2022. The next ATP funding cycle will be announced in the coming years. The city can apply for funding in the next cycle, utilizing the LRSP to develop projects most appropriate for the funding criteria.

10.1.3 California SB 1

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

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

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

10.1.4 California Office of Traffic Safety Grants

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

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

The most recent cycle of funding for OTS grants was completed on January 31st, 2022. Within the coming months, another round of funding is expected to be announced. The city can apply for funding in the next cycle, utilizing the LRSP to develop projects most appropriate for the funding criteria.

10.1.5 SCAG Sustainable Communities Program

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

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

The most recent round of SCAG Sustainable Communities Program grant funding closed in April 2021. The next round of funding, with a focus on Civic Engagement, Equity & Environmental Justice, is anticipated to be released in Fall 2022. The city can apply for funding in the next cycle, utilizing the LRSP to develop projects most appropriate for the funding criteria.

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

This program has allocated $1 billion annually for the next four years for local cities, counties, MPOs, and other roadway owners (except state DOTs) for safety improvement grants for safety planning, education, enforcement, and roadway improvements. This program is not benefit / cost based. Evaluation criteria are oriented to the project's alignment with the Safe Systems approach. There is a 20% local match requirement (can be in-kind contribution via staff billable hours). Planning grants are open to any eligible agency and Implementation grants are open to agencies with a completed safety plan such as a Local Roadway Safety Plan. Planning grants are expected to range from $100,000 to $1 million and Implementation grants are expected to range from $1 million to $20 million. Grant applications are due in September 2022. Implementing a Local Road Safety Plan and the City's adoption of a Vision Zero resolution makes the City eligible to apply for SS4A implementation grants.

Safe Streets and Roads for All (SS4A) grant funding applications are due September 15, 2022. The city can apply for this grant program while using the LRSP to develop projects most appropriate for the funding criteria. Funding cycles are expected to be announced regularly for this program over the next 5 years.

10.1.7 Infrastructure Investment and Jobs Act

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

10.2 Implementation Plan

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

10.2.1 Monitoring

The city can plan to regularly monitor the success of the LRSP and its related implementations by performing the following steps. This before and after analysis can be performed every second year. The City can also meet with the Sheriff department quarterly to discuss roadway safety issues and compare to the latest collision analysis.

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

10.2.2 Analysis Update

The city can plan to update the analysis every two years as part of a monitoring program, as described in **Section 10.2.1 Monitoring**. Every 4 years the city will perform a major update to the analysis and the Local Roadway Safety Plan by performing the following steps. This update will maintain eligibility for the HSIP grant funding for the City. This analysis should continue to focus on both systemic and location-specific safety needs.

1. Obtain updated Statewide Integrated Traffic Records System (SWITRS) collision data from the Crossroads database.
2. Use Excel software to update the collision trend analysis completed in **Section 7 Crash Safety Trends**, continue to compare new collision to historic trends
3. Update the roadway shapefile with any new or upgraded roadways.

4. Update the intersection shapefile with any new or upgraded intersections.
5. Re-run the GIS collision tool to determine the number of collisions at intersections and roadways within the updated study period. The city can plan to run the collision tool for all collisions, as well as the collision types identified in **Section 3.2.2 Network Screening Analysis**.
6. Update the collision analysis performed in this report, including the collision analysis tables shown in **Section 7.7 Collision Network Screening Analysis Report.**
7. Review the Collision Toolbox to determine if any additional countermeasures should be considered for implementation in the city.

10.2.3 Implementation Strategies

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

- Aggressive Driving
- Vulnerable Road Users (Pedestrians and Bicyclists)
- Context Sensitive Roadway Design

Analysis conducted at the citywide level indicated that these factors were some of the most frequent influences contributing to collisions within the city. The countermeasure opportunities previously discussed in this report for both systemic and project-specific improvements can be used as a basis for developing projects at locations where addressing these focus areas would be of the most benefit. Projects that address these focused areas citywide can be developed with a high benefit-to-cost ratio (by applying City-wide collision rates), allowing competitive projects to be developed even at sites with little to no direct collision history, but with conditions that might contribute to future collisions. For location-specific improvements, the city can utilize benefit-cost ratio calculations to help prioritize projects as funding and resources become available. The countermeasure toolbox in **Table 8** also identified a potential prioritization timeline for each improvement, based on cost, effectiveness and feasibility.

This project prioritization process will help the city be ready for the funding opportunities identified in **Section 10.1 Funding**. Project prioritization will also help to guide the projects as they are taking into the design and construction project. Coordination with City departments will be key in the completion of these implementations.

The city can also implement identified projects in previously completed plans and studies. This LRSP incorporates by reference the project and strategy lists identified in the following modal or focused plans, as well as the equity considerations and evidence-based analysis and the stakeholder and public engagement that were used to develop the lists, such as:

- Safe Routes to School Master Plan (2016, as amended 2022)

- Master Plan of Trails and Bikeways
- Safe Streets Action Plan
- Master Plan of Complete Streets

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

To aid in these actions, the city can assemble a 'Task Force' of representatives from different City departments, such as Public Works, Development Services, and Public Safety. This task force will be instrumental in the monitoring, analysis update, project development and project implementation outlined in this plan.

10.3 Next Steps

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

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

Appendix A – Analysis Rankings

Table – Analysis Results: Intersections

Intersection	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
City Traffic Signal																									
Sierra Hwy & Avenue K	161	1.81	0.85	1.02	0.79	631	0	1	8	45	107	22	25	96	4	8	0	5	1	1	86	6	9	33	8
10th St W & Avenue K	155	1.48	0.85	1.01	0.47	574	0	1	9	33	112	45	48	50	2	5	0	3	2	3	50	5	8	44	9
10th St W & Avenue J	141	1.55	0.85	1.02	0.53	832	0	2	15	43	81	36	50	43	5	3	0	1	5	1	47	6	3	25	0
Challenger Way & Avenue J	139	2.01	0.85	1.05	0.97	632	1	0	14	38	86	39	32	55	7	4	0	2	0	4	41	3	7	36	10
Divison St & Avenue J	126	1.50	0.85	1.03	0.47	531	0	1	6	36	83	34	29	48	7	3	2	1	2	1	44	2	5	30	7
10th St W & Avenue I	125	1.69	0.85	1.04	0.65	865	0	3	10	30	82	27	33	41	10	3	0	3	7	3	35	2	5	39	8
Sierra Hwy & Avenue J	112	1.37	0.85	1.03	0.34	501	0	1	8	29	74	13	27	58	2	2	1	6	3	6	49	8	8	27	4
10th St W & Avenue L	110	1.03	0.85	1.01	0.02	469	1	0	7	25	77	27	21	49	3	5	0	3	1	2	49	7	5	30	5
20th St W & Avenue J	105	1.04	0.85	1.01	0.03	485	0	1	5	33	66	23	26	44	2	6	0	2	3	2	45	1	3	22	8
15th St W & Avenue J	94	1.23	0.85	1.04	0.20	308	0	0	10	23	61	19	19	41	5	4	0	2	3	1	34	2	4	17	0
Challenger Way & Avenue K	89	1.26	0.85	1.04	0.21	775	0	3	6	27	53	15	24	39	3	4	1	0	3	2	22	0	14	35	4
30th St W & Avenue J-8	83	2.26	0.85	1.12	1.14	600	1	0	17	37	28	40	18	5	16	2	0	0	2	1	22	3	2	29	4
15th St E & Avenue J	82	1.76	0.85	1.09	0.67	500	0	1	10	31	40	34	10	14	14	9	0	0	2	1	18	4	5	38	5
Divison St & Avenue K	80	1.15	0.85	1.04	0.10	444	0	1	6	28	45	10	22	43	1	2	0	1	1	1	35	2	5	17	9
20th St E & Avenue K	80	2.17	0.85	1.12	1.05	671	1	1	13	27	38	30	15	18	10	5	1	0	1	0	18	0	3	30	2
17th St E & Avenue J	77	2.44	0.85	1.14	1.30	639	2	0	8	31	36	35	17	7	8	6	1	2	2	0	11	0	1	13	1
Divison St & Avenue I	74	1.38	0.85	1.07	0.31	1091	1	4	9	22	38	34	15	15	5	4	0	1	0	1	21	3	3	28	2
20th St W & Avenue J-8	73	1.01	0.85	1.04	-0.04	738	1	2	9	17	44	29	14	24	1	2	0	1	2	1	29	1	1	23	4
30th St W & Avenue K	72	0.99	0.85	1.04	-0.05	255	0	0	10	17	45	15	19	29	1	2	0	6	0	1	29	2	2	10	1
Valley Central Way & Avenue J	72	1.44	0.85	1.08	0.36	410	1	0	8	19	44	29	16	16	5	1	0	2	2	3	17	1	3	18	3
20th St W & Avenue I	71	1.16	0.85	1.06	0.10	363	0	1	8	10	52	18	19	29	0	4	1	0	0	2	21	2	5	31	5
Gadsen Ave & Avenue K	69	1.23	0.85	1.07	0.16	590	0	2	10	19	38	36	10	15	2	1	0	2	4	2	19	1	2	10	6
30th St W & Avenue L	68	0.89	0.85	1.04	-0.14	188	0	0	4	16	48	7	12	42	3	2	0	2	0	1	25	6	5	15	1
20th St E & Avenue J	68	1.59	0.85	1.10	0.49	544	0	2	8	14	44	14	19	23	4	3	0	3	2	0	22	1	2	24	4

Intersection	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
20th St W & Avenue K	61	0.77	0.85	1.03	-0.27	310	1	0	2	13	45	18	16	19	2	1	0	4	0	1	13	2	0	13	1
25th St W & Avenue J-8	61	1.85	0.85	1.13	0.71	240	0	0	9	18	34	22	11	15	6	3	0	3	1	1	24	2	2	17	5
Sierra Hwy & Avenue I	59	1.02	0.85	1.06	-0.04	517	1	1	4	18	35	11	11	33	0	3	0	0	1	0	28	1	5	15	2
17th St W & Avenue K	58	0.95	0.85	1.06	-0.11	204	0	0	4	21	33	13	15	22	1	5	0	0	2	1	26	3	2	16	0
20th St W & Lancaster Blvd	58	1.00	0.85	1.06	-0.06	415	0	1	10	19	28	28	10	11	6	2	0	1	0	1	13	0	0	22	1
12th St W & Avenue K	57	1.03	0.85	1.07	-0.04	163	0	0	2	17	38	9	13	25	2	4	1	2	0	2	26	2	1	13	2
Sierra Hwy & Columbia Way	55	0.85	0.85	1.05	-0.20	169	0	0	6	11	38	12	11	20	4	7	0	0	0	0	20	2	5	19	2
Challenger Way & Avenue I	54	1.40	0.85	1.11	0.29	501	0	2	6	12	34	14	9	21	2	6	0	1	1	1	15	0	7	21	2
10th St W & Lancaster Blvd	52	0.78	0.85	1.05	-0.27	188	0	0	3	21	28	16	9	20	5	2	0	0	0	0	12	2	2	15	4
Sierra Hwy & Lancaster Blvd	51	1.02	0.85	1.08	-0.06	131	0	0	2	12	37	8	6	23	4	3	0	6	2	1	15	3	0	11	1
Challenger Way & Avenue J-8	48	1.20	0.85	1.11	0.10	387	1	0	6	23	18	27	6	7	4	1	0	0	3	0	9	0	3	19	3
20th St W & Avenue L	46	0.62	0.17	0.26	0.36	363	0	1	8	15	22	8	8	23	5	2	0	0	0	1	20	2	2	10	1
10th St W & Jackman St	46	1.13	0.85	1.11	0.02	354	0	1	7	15	23	19	10	10	1	0	0	3	3	2	12	0	0	11	2
Challenger Way & Lancaster Blvd	45	1.51	0.85	1.15	0.36	359	1	0	4	22	18	19	5	16	2	1	0	1	1	1	11	3	1	15	1
40th St W & Avenue L	44	0.80	0.85	1.07	-0.27	308	1	0	2	16	25	19	8	8	8	1	0	0	0	0	10	0	2	10	5
10th St W & Avenue J-4	44	0.81	0.85	1.07	-0.26	114	0	0	3	8	33	13	9	18	0	2	0	1	1	1	14	4	4	9	2
15th St E & Avenue I	44	1.46	0.85	1.15	0.31	634	2	1	5	10	26	19	5	14	2	3	0	1	0	2	10	0	4	21	5
20th St E & Avenue I	43	1.86	0.85	1.19	0.66	303	1	0	1	17	24	15	9	10	4	4	0	0	1	0	14	2	2	18	1
30th St W & Avenue M	42	1.02	0.85	1.10	-0.08	295	0	1	5	8	28	7	5	22	5	3	0	0	0	0	16	2	4	14	1
25th St W & Avenue J	42	0.95	0.85	1.10	-0.14	489	1	1	5	14	21	12	8	18	1	0	0	1	2	0	20	3	1	9	3
Divison St & Lancaster Blvd	42	1.88	0.85	1.20	0.68	171	0	0	6	14	22	18	7	5	5	5	0	1	1	0	12	0	4	11	1
15th St E & Avenue K	39	1.04	0.85	1.12	-0.07	332	0	1	7	12	19	19	8	4	3	4	0	1	0	0	8	1	2	11	1
4th St W & Avenue M	37	0.96	0.85	1.11	-0.15	319	0	1	7	10	19	13	4	10	5	3	1	1	0	0	12	1	2	13	0
10th St W & Avenue K-4	37	0.65	0.85	1.07	-0.41	127	0	0	4	10	23	11	5	8	2	5	0	2	3	2	9	3	2	7	2
15th St W & Avenue I	37	0.68	0.85	1.07	-0.39	281	0	1	3	10	23	12	9	7	2	3	1	3	0	2	13	0	5	13	0
Costco Dwy & Avenue L	37	0.61	0.85	1.06	-0.45	118	0	0	1	14	22	11	4	17	3	1	0	0	1	0	18	2	2	10	1
Valley Central Way & Lancaster Blvd	36	1.43	0.85	1.18	0.26	82	0	0	0	9	27	9	7	13	2	1	0	3	1	0	10	2	0	8	1
Fern Ave & Avenue I	35	0.64	0.85	1.07	-0.43	293	1	0	4	11	19	11	7	13	0	1	0	1	4	1	15	0	1	10	2

Intersection	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
5th St E & Avenue K	34	0.74	0.85	1.09	-0.35	317	0	1	6	12	15	15	3	11	1	3	0	1	0	0	13	1	0	10	0
5th St E & Avenue J	34	0.60	0.85	1.07	-0.47	163	0	0	6	14	14	12	3	8	6	4	0	0	1	0	10	0	2	10	4
15th St W & Avenue L	33	0.52	0.85	1.05	-0.53	306	1	0	5	12	15	13	7	9	3	0	0	1	0	0	14	1	3	5	4
20th St E & Lancaster Blvd	33	1.55	0.85	1.21	0.34	440	1	1	4	8	19	17	4	8	3	1	0	0	0	0	17	1	0	9	1
10th St W & Commerce Center Dr	32	0.56	0.85	1.06	-0.51	102	0	0	3	8	21	9	9	8	2	4	0	0	0	0	18	1	1	6	0
15th St W & Avenue J-8	32	0.55	0.85	1.06	-0.52	127	0	0	4	11	17	9	7	10	2	1	0	2	0	1	12	3	0	8	1
30th St W & Avenue J	32	0.92	0.85	1.13	-0.20	282	0	1	1	15	15	10	3	17	0	2	0	0	0	1	18	2	1	8	2
10th St W & Avenue K-8	31	0.50	0.85	1.06	-0.56	81	0	0	2	6	23	13	5	9	1	2	0	0	0	1	10	0	1	9	4
30th St E & Avenue K	31	1.33	0.85	1.19	0.14	121	0	0	3	12	16	13	2	8	5	3	0	0	1	0	7	2	1	14	1
20th St E & Avenue J-8	31	1.18	0.85	1.17	0.01	264	0	1	3	8	19	10	3	7	4	4	0	1	2	1	12	3	1	14	2
10th St W & Newgrove St	30	0.63	0.17	0.28	0.35	85	0	0	2	7	21	12	6	7	2	2	0	0	1	1	7	1	1	7	3
Kingtree Ave & Avenue J	29	0.59	0.85	1.08	-0.49	108	0	0	4	8	17	11	3	11	1	3	0	0	0	1	19	2	1	4	0
Valley Central Way & Avenue I	29	1.43	0.85	1.22	0.21	84	0	0	1	9	19	12	9	5	0	1	0	2	0	0	9	0	2	12	1
40th St W & Avenue K	28	0.72	0.85	1.11	-0.39	129	0	0	2	16	10	15	2	5	6	0	0	0	0	1	9	3	1	12	0
60th St W & Avenue J	28	1.31	0.85	1.21	0.10	301	0	1	6	10	11	14	5	4	2	1	0	2	0	0	11	2	0	6	1
25th St W & Avenue K	27	0.50	0.85	1.07	-0.57	259	0	1	5	4	17	8	4	9	1	3	0	1	1	1	8	0	0	8	0
13th St W & Avenue I	27	0.49	0.85	1.07	-0.58	77	0	0	2	6	19	8	5	8	1	4	0	1	0	0	6	0	0	7	0
17th St W & Avenue I	27	0.50	0.85	1.07	-0.57	261	0	1	2	10	14	12	7	2	3	1	0	1	2	0	7	0	2	10	1
60th St W & Avenue L	26	0.81	0.85	1.14	-0.33	71	0	0	1	7	18	3	3	14	2	3	1	0	0	0	11	1	2	8	3
20th St W & Avenue K-8	26	0.60	0.85	1.10	-0.50	289	0	1	4	12	9	17	4	4	1	0	0	0	0	0	12	1	1	10	0
30th St E & Avenue I	26	1.10	0.85	1.19	-0.09	408	2	0	3	5	16	14	3	4	2	3	0	0	0	0	13	0	1	15	2
Divison St & Avenue K-4	25	0.89	0.85	1.16	-0.27	104	0	0	4	8	13	10	4	8	3	0	0	0	0	0	6	2	2	2	2
10th St W & Avenue H	25	1.01	0.85	1.18	-0.17	90	0	0	2	9	14	12	2	4	5	2	0	0	0	0	2	0	2	11	0
50th St W & Avenue J	25	1.13	0.85	1.20	-0.07	253	1	0	3	7	14	12	2	4	3	4	0	0	0	0	10	0	0	11	2
4th St E & Avenue L	24	0.46	0.85	1.08	-0.62	44	0	0	0	4	20	5	5	5	3	6	0	0	0	0	3	0	2	12	0
30th St W & Avenue K-8	24	0.62	0.85	1.11	-0.49	133	0	0	7	8	9	11	3	3	3	2	0	0	2	0	5	0	0	9	1
30th St E & Avenue J	24	1.00	0.85	1.19	-0.19	69	0	0	1	7	16	3	1	16	0	3	1	0	0	0	13	2	1	6	1
5th St E & Avenue I	24	0.61	0.85	1.11	-0.50	257	0	1	3	8	12	4	6	11	1	2	0	0	0	0	10	2	2	7	1

Intersection	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
10th St W & Avenue M	23	0.38	0.85	1.06	-0.68	68	0	0	1	7	15	6	4	12	0	1	0	0	0	0	12	1	1	6	1
15th St W & Avenue K-8	22	0.90	0.85	1.18	-0.28	91	0	0	4	6	12	5	6	6	2	3	0	0	0	0	6	0	2	6	1
30th St W & Lancaster Blvd	22	0.88	0.85	1.18	-0.30	121	0	0	6	8	8	13	2	3	1	3	0	0	0	0	7	0	2	5	1
20th St E & Avenue L	21	1.39	0.85	1.28	0.11	125	0	0	6	9	6	14	4	1	2	0	0	0	0	1	7	0	0	5	0
27th St W & Avenue J	21	0.68	0.85	1.14	-0.47	76	0	0	1	9	11	7	2	8	1	1	0	1	1	0	5	2	1	2	2
Fig Ave & Avenue J	20	0.44	0.85	1.09	-0.65	105	0	0	3	11	6	10	3	4	1	1	0	0	1	1	6	1	0	4	0
30th St W & Avenue I	20	0.84	0.85	1.19	-0.35	561	2	1	1	8	8	9	3	3	2	3	0	0	0	0	9	3	0	7	1
40th St W & Avenue J	19	0.70	0.85	1.16	-0.47	93	0	0	4	7	8	5	4	9	0	0	0	0	1	0	11	0	0	2	0
30th St W & Avenue H	19	1.43	0.85	1.31	0.12	416	1	1	4	6	7	13	0	3	3	0	0	0	0	0	5	0	0	4	1
Lowtree Ave & Avenue J	17	0.33	0.85	1.08	-0.74	42	0	0	0	5	12	3	2	9	3	0	0	0	0	0	12	1	0	3	2
25th St W & Lancaster Blvd	17	0.76	0.85	1.20	-0.44	101	0	0	5	7	5	5	3	5	1	1	0	1	0	0	5	0	1	3	1
Trevor Ave & Avenue I	17	0.35	0.85	1.08	-0.74	47	0	0	0	6	11	3	5	3	2	3	0	1	0	0	4	2	1	6	1
30th St W & Avenue L -8	16	0.54	0.85	1.15	-0.61	51	0	0	1	5	10	5	1	9	1	0	0	0	0	0	10	2	0	2	0
25th St W & Avenue I	16	0.72	0.85	1.20	-0.48	71	0	0	2	7	7	8	1	3	1	3	0	0	0	0	7	0	0	6	1
Shopping Center Entrance & Avenue K	16	0.31	0.85	1.08	-0.77	56	0	0	2	4	10	5	5	3	0	2	0	0	1	0	5	0	0	3	1
35th St W & Avenue J	15	0.69	0.85	1.20	-0.52	70	0	0	3	5	7	4	4	5	1	1	0	0	0	0	9	0	0	2	1
60th St W & Avenue I	15	1.03	0.85	1.29	-0.26	242	0	1	5	3	6	6	4	2	1	2	0	0	0	0	8	0	0	5	0
20th St W & Avenue J-12	14	0.35	0.85	1.11	-0.76	44	0	0	0	6	8	6	1	5	2	0	0	0	0	0	2	0	1	5	0
32nd St W & Avenue J	14	0.71	0.17	0.35	0.36	74	0	0	3	6	5	7	2	5	0	0	0	0	0	0	7	1	0	2	0
20th St W & Avenue M	13	0.37	0.85	1.13	-0.76	43	0	0	0	6	7	5	1	2	2	2	0	1	0	0	3	0	0	3	1
10th St W & Avenue L -8	13	0.27	0.85	1.08	-0.82	227	1	0	2	6	4	4	0	5	2	2	0	0	0	0	7	0	1	4	1
30th St E & Avenue J-8	13	1.45	0.85	1.42	0.03	37	0	0	2	1	10	2	4	4	0	1	1	1	0	0	5	1	0	2	0
21st St E & Avenue J	13	0.70	0.17	0.36	0.34	33	0	0	0	4	9	0	2	10	0	0	0	0	1	0	9	1	0	2	0
Sierra Highway & Jackman St	13	0.84	0.17	0.38	0.46	52	0	0	4	0	9	1	4	4	0	2	0	2	0	1	2	0	1	2	1
35th St W & Avenue L	12	0.25	0.85	1.09	-0.83	215	1	0	2	4	5	2	4	4	0	2	0	0	0	0	6	0	1	3	2
32nd St W & Avenue K	12	0.30	0.85	1.11	-0.81	51	0	0	3	2	7	4	2	4	1	0	0	0	2	0	7	1	0	3	1
20th St W & Avenue H	12	0.52	0.85	1.19	-0.68	206	0	1	1	4	6	4	2	4	2	0	0	0	0	0	5	0	0	3	0
15th St W & Avenue J-3	11	0.29	0.85	1.11	-0.83	46	0	0	2	3	6	4	4	2	1	0	0	0	0	0	4	1	0	2	2

Intersection	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Sierra Hwy & Milling St	11	0.38	0.17	0.32	0.07	46	0	0	2	3	6	1	2	5	0	2	0	0	1	0	4	0	1	2	0
3rd St E & Lancaster Blvd	11	0.58	0.85	1.23	-0.65	46	0	0	1	5	5	2	0	4	1	2	0	1	1	1	4	0	1	2	0
45th St W & Avenue K	11	1.32	0.85	1.44	-0.12	200	1	0	1	3	6	3	0	4	2	1	1	0	0	0	5	0	2	5	0
30th St W & Avenue N	11	0.63	0.85	1.25	-0.62	36	0	0	1	3	7	2	1	5	2	0	0	1	0	0	5	0	0	5	0
6th St W & Avenue M	10	0.25	0.85	1.11	-0.86	45	0	0	1	5	4	3	2	4	0	0	0	1	0	1	4	0	1	2	0
10th St W & Avenue L -12	10	0.20	0.85	1.08	-0.88	45	0	0	1	5	4	0	2	5	1	0	0	1	1	0	6	0	0	1	0
30th St E & Avenue L	10	1.05	0.85	1.40	-0.35	49	0	0	3	2	5	7	2	1	0	0	0	0	0	0	2	0	0	3	0
Business Center Pkwy & Avenue K-10	10	0.35	0.85	1.16	-0.81	44	0	0	3	1	6	0	1	3	0	6	0	0	0	0	2	1	1	4	1
5th St E & Lancaster Blvd	10	0.43	0.85	1.19	-0.76	25	0	0	1	1	8	2	4	2	0	1	1	0	0	0	2	0	2	3	0
3rd St E & Avenue I	10	0.25	0.85	1.11	-0.86	49	0	0	3	2	5	1	3	5	1	0	0	0	1	0	4	0	0	1	0
60th St W & Avenue L -8	9	0.34	0.85	1.17	-0.83	33	0	0	2	1	6	5	2	0	1	1	0	0	0	0	1	0	1	1	1
60th St W & Avenue K	9	0.70	0.85	1.32	-0.62	28	0	0	2	0	7	0	2	5	0	2	0	0	0	0	4	1	0	2	1
Challenger Way & Avenue K-4	8	0.31	0.85	1.17	-0.86	42	0	0	3	1	4	3	2	2	0	1	0	0	0	0	3	1	0	1	0
60th St W & Avenue J-8	8	0.57	0.85	1.30	-0.72	47	0	0	3	2	3	2	4	0	2	0	0	0	0	0	1	0	0	2	0
Divison St & Milling St	8	0.21	0.85	1.12	-0.90	33	0	0	1	3	4	4	1	0	1	1	0	0	1	0	2	0	1	1	1
50th St W & Avenue I	8	0.52	0.85	1.27	-0.76	206	1	0	2	3	2	2	2	2	1	1	0	0	0	0	6	1	0	0	0
20th St W & Shopping Center Entrance	8	0.13	0.85	1.06	-0.93	28	0	0	1	2	5	1	1	3	1	1	0	0	1	0	4	1	0	0	0
25th St W & Avenue L	7	0.12	0.85	1.06	-0.94	27	0	0	1	2	4	0	0	7	0	0	0	0	0	0	6	0	0	2	0
30th St W & Avenue J-12	7	0.21	0.17	0.31	-0.09	12	0	0	0	1	6	2	1	4	0	0	0	0	0	0	4	0	0	2	0
20th St W & Avenue K-4	7	0.39	0.85	1.24	-0.85	17	0	0	0	2	5	0	2	3	1	0	0	0	1	0	2	1	1	3	1
Yucca Ave & Lancaster Blvd	6	0.15	0.85	1.11	-0.96	16	0	0	0	2	4	2	1	2	0	1	0	0	0	0	3	1	0	1	0
7th St W & Avenue H	5	0.29	0.10	0.25	0.04	20	0	0	1	1	3	2	1	0	0	2	0	0	0	0	2	0	1	2	1
25th St W & Avenue H	5	0.26	0.85	1.23	-0.97	10	0	0	0	1	4	1	1	2	0	1	0	0	0	0	1	0	1	3	0
20th St E & Walmart Entrance	5	0.33	0.85	1.28	-0.95	20	0	0	1	1	3	1	3	1	0	0	0	0	0	0	1	0	0	2	0
15th St W & Antelope Valley Center Entrance	4	0.11	0.85	1.12	-1.01	14	0	0	0	2	2	0	1	0	0	2	0	1	0	1	0	0	0	1	0
27th St W & Avenue I	3	0.17	0.85	1.24	-1.07	8	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0	0	0	1	0

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Caltrans Traffic Signal																									
SR-14 NB Off-Ramp & Avenue L	45	0.63	0.85	0.26	0.37	502	1	1	5	16	22	13	11	18	1	1	0	1	0	0	32	0	1	12	1
SR-14 NB Ramps/15th Street W & Avenue K	34	0.48	0.85	1.04	-0.56	149	0	0	4	15	15	10	9	12	2	0	0	0	3	1	18	1	0	12	0
SR-14 SB Ramps & Avenue I	27	0.62	0.85	0.43	-0.19	96	0	0	4	6	17	4	9	13	0	0	0	1	0	0	16	3	0	9	1
SR-14 NB Off-Ramp & 20th Street W	23	0.34	0.85	0.26	0.08	64	0	0	0	8	15	9	4	9	1	0	0	0	0	1	12	1	1	7	1
SR-14 SB Ramps & Avenue K	19	0.35	0.85	1.07	-0.72	80	0	0	1	10	8	7	5	6	0	0	0	1	0	1	14	0	0	4	0
SR-14 NB Ramps & Avenue I	12	0.26	0.85	0.22	-0.04	27	0	0	0	3	9	1	4	6	0	0	1	0	0	0	7	0	1	2	0
SR-14 SB Off-Ramp & Avenue L	11	0.17	0.85	0.26	-0.09	41	0	0	1	4	6	5	1	4	1	0	0	0	0	0	8	0	0	2	1
SR-14 SB Off-Ramp & Avenue J	9	0.15	0.85	0.27	-0.12	34	0	0	1	3	5	4	2	3	0	0	0	0	0	0	8	3	0	1	0
County Traffic Signal																									
45th St W & Avenue N	7	0.8	0.9	1.4	-0.63	37	0	0	2	2	3	3	1	2	1	0	0	0	0	0	2	0	0	3	0
Proposed Traffic Signal																									
36th St W & Avenue K	2	0.06	0.10	0.20	-0.14	17	0	0	1	1	0	0	0	1	0	1	0	0	0	0	1	0	0	1	0
Roundabout																									
15th St W & Lancaster Blvd	34	0.68	0.62	1.08	-0.40	297	0	1	4	12	17	15	6	5	6	2	0	0	0	1	15	0	0	10	0
Challenger Way & Avenue L	24	0.62	0.62	0.84	-0.22	242	0	1	3	5	15	6	5	7	0	4	1	1	0	0	10	0	2	8	2
15th St E & Lancaster Blvd	17	0.87	0.62	0.89	-0.02	72	0	0	3	5	9	8	2	2	0	3	0	0	2	0	10	2	0	4	1
School Beacon																									
27th St W & Avenue J-8	11	0.55	0.39	0.65	-0.10	41	0	0	2	2	7	3	6	1	0	0	0	0	1	0	2	0	0	4	0
32nd St W & Avenue K-8	6	0.60	0.39	0.77	-0.17	25	0	0	2	0	4	3	1	0	1	0	0	1	0	1	0	0	0	2	0
Heaton Ave & Avenue J-8	4	0.73	0.39	0.92	-0.19	4	0	0	0	0	4	0	1	1	0	2	0	0	0	0	0	0	0	3	0
School Beacon, RRFB																									
12th St W & Lancaster Blvd	6	0.18	0.18	0.32	-0.14	16	0	0	1	0	5	0	0	2	0	4	0	0	0	0	4	0	1	3	0
School Beacon, All-Way Stop																									
40th St W & Avenue J-8	15	0.92	0.95	1.38	-0.46	204	1	0	1	3	10	7	3	1	0	2	0	1	1	1	7	1	0	7	0
5th St E & Kettering St	8	1.39	0.95	1.71	-0.32	177	0	1	0	1	6	1	0	2	0	2	0	1	2	0	2	0	0	2	0
5th St E & Avenue H-11	5	0.68	0.95	1.62	-0.93	24	0	0	2	0	3	1	2	0	0	1	0	0	1	0	0	0	0	1	0
All-Way Stop																									
50th St W & Avenue K	25	1.01	0.58	0.85	0.16	60	0	0	1	5	19	13	1	9	1	1	0	0	0	0	5	2	1	9	1

Intersection	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
15th St E & Avenue J-8	14	0.88	0.58	0.92	-0.04	218	0	1	1	6	6	9	3	1	0	1	0	0	0	0	4	2	0	2	1
70th St E & Avenue K	14	0.53	0.58	0.88	1.86	232	1	0	3	5	5	10	1	1	1	1	0	0	0	0	5	0	1	5	1
60th St W & Avenue H	13	0.54	0.58	0.88	1.78	226	1	0	3	4	5	9	1	0	0	2	1	0	0	0	3	0	0	3	0
25th St W & Avenue K-8	11	0.32	0.58	0.85	-0.34	46	0	0	2	3	6	6	1	2	1	1	0	0	0	0	7	0	0	4	1
Divison St & Avenue H	11	0.36	0.58	0.87	-0.34	209	0	1	2	3	5	4	2	3	0	0	0	0	2	1	3	0	1	4	0
12th St W & Avenue J-8	8	0.67	0.58	0.98	-0.53	13	0	0	0	1	7	3	2	2	0	0	1	0	0	0	2	0	0	2	0
30th St E & Lancaster Blvd	8	0.66	0.58	1.01	-0.50	18	0	0	0	2	6	4	1	2	1	0	0	0	0	0	4	0	1	2	0
Challenger Way & Avenue H	8	0.60	0.58	1.02	-0.31	207	1	0	1	5	1	6	1	1	0	0	0	0	0	0	5	1	0	5	1
32nd St W & Lancaster Blvd	7	1.03	0.58	1.18	-0.35	31	0	0	2	1	4	2	2	1	0	1	0	0	1	2	1	0	0	1	0
RRFB/Smart Crosswalk																									
17th St E & Avenue I	19	0.78	0.30	0.50	0.28	222	0	1	2	4	12	2	3	5	1	7	0	0	2	0	9	1	0	7	0
15th St W & Pillsbury St	4	0.19	0.30	0.52	-0.33	4	0	0	0	0	4	0	2	2	0	0	0	0	0	0	1	0	1	1	0
Unsignalized Intersection (Two-Way Stop)																									
Sierra Hwy & Avenue L	50	1.01	0.58	0.16	0.29	300	1	0	1	15	33	8	11	20	0	9	0	0	2	0	27	0	2	14	4
Beech Ave & Avenue J	49	0.88	0.58	-0.04	0.80	120	0	0	0	14	35	20	19	3	2	1	0	3	1	1	2	0	0	11	2
10th St E & Avenue K-8	31	0.53	0.58	-0.34	0.85	319	0	1	5	15	10	22	5	0	3	0	0	1	0	0	3	1	2	7	1
Trevor Ave & Avenue J	30	0.54	0.58	-0.34	0.23	110	0	0	3	10	17	3	4	18	2	0	0	2	1	2	16	2	1	3	2
Sierra Hwy & Avenue G	29	0.32	0.58	-0.53	2.88	346	1	0	8	15	5	23	2	1	2	0	1	0	0	0	10	1	1	9	0
Fern Ave & Lancaster Blvd	28	0.36	0.58	-0.50	0.38	92	0	0	4	5	19	8	8	2	0	3	0	4	4	3	2	1	3	8	0
Cedar Ave & Avenue J	27	0.67	0.58	-0.31	0.31	92	0	0	2	9	16	12	10	2	1	0	0	1	1	1	4	0	1	8	2
13th St W & Avenue K	26	0.66	0.58	-0.35	0.21	56	0	0	0	6	20	7	9	7	1	1	0	1	0	0	6	0	0	2	1
Division St & Avenue K-8	25	0.60	0.58	-0.42	0.59	85	0	0	2	8	15	10	4	4	1	6	0	0	0	0	3	1	4	11	3
Challenger Way & Avenue J-14	25	1.03	0.58	-0.15	0.37	250	0	1	0	12	12	10	5	3	4	2	0	0	1	0	3	1	1	9	4

= Local CCR Differential > 1.0

= Local CCR Differential 0.33-1.0

= Local CCR Differential < 0.33

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

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

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

[1]Local Critical Crash Rate Differential

[2]Equivalent Property Damage Only Crashes

Table – Analysis Results: Roadway Segments

Facility	Limits	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
Major Arterial																										
20TH STREET WEST	RT 14 NBOFF/R - AVENUE J	**35**	1.62	0.36	0.59	1.03	90	0	0	1	9	25	16	4	11	0	4	0	0	0	0	7	3	0	5	1
AVENUE K	SIERRA HIGHWAY - PARK AVENUE	**35**	2.18	0.36	0.64	1.55	114	0	0	4	8	23	0	5	30	0	0	0	0	0	0	27	3	1	11	3
AVENUE K	GADSDEN AVENUE - 10TH STREET WEST	**26**	2.01	0.36	0.67	1.34	66	0	0	1	6	19	13	3	7	1	1	0	1	0	1	6	1	0	4	1
AVENUE J	17TH STREET WEST - 20TH STREET WEST	**24**	2.02	0.36	0.69	1.33	123	0	0	5	10	9	10	7	4	0	2	0	1	0	2	4	1	0	2	2
AVENUE K	10TH STREET WEST - 12TH STREET WEST	**24**	1.80	0.36	0.67	1.13	247	1	0	3	6	14	9	5	9	0	1	0	0	0	0	8	1	1	3	4
AVENUE J	20TH STREET WEST - RT 14 NBON/R	**23**	2.01	0.36	0.69	1.32	247	1	0	1	10	11	10	4	5	0	1	0	0	3	1	2	0	0	6	1
AVENUE J	DIVISION STREET - GLENRAVEN ROAD	**22**	3.35	0.36	0.82	2.53	83	0	0	0	12	10	9	5	6	1	1	0	0	0	0	6	0	0	2	0
CHALLENGER WAY	AVENUE I - AVENUE H	**17**	2.43	0.36	0.80	1.62	255	0	1	4	7	5	3	2	8	1	0	1	0	2	0	8	1	1	5	0
CHALLENGER WAY	AVENUE J-3 - AVENUE J	**16**	3.00	0.36	0.88	2.12	245	0	1	2	9	4	8	3	2	0	1	0	0	2	1	1	1	0	2	0
AVENUE J	CHALLENGER WAY - 11TH STREET EAST	**14**	2.17	0.36	0.82	1.35	44	0	0	2	2	10	1	6	2	2	2	0	1	0	1	1	0	1	4	0
AVENUE I	FERN AVENUE - 10TH STREET WEST	**13**	1.85	0.36	0.80	1.05	202	0	1	0	5	7	5	2	4	2	0	0	0	0	0	5	0	0	0	0
SIERRA HIGHWAY	AVENUE K - AVENUE J-8	**13**	0.59	0.36	0.66	-0.07	68	0	0	2	7	4	3	3	2	0	3	0	0	3	0	3	0	0	4	1
SIERRA HIGHWAY	SIERRA HIGHWAY - AVENUE K	**12**	0.58	0.36	0.67	-0.09	42	0	0	2	2	8	0	3	4	0	3	1	1	0	0	5	1	0	4	2
AVENUE J	GENOA AVENUE - 10TH STREET WEST	**12**	2.40	0.36	0.90	1.51	17	0	0	0	1	11	4	3	2	2	1	0	0	0	0	1	0	0	2	0

Facility	Limits	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
SIERRA HIGHWAY	AVENUE M - AVENUE L-12	**12**	1.10	0.36	0.78	0.32	47	0	0	1	5	6	1	0	8	2	0	0	0	1	0	8	1	0	5	0
AVENUE K	DIVISION STREET - SIERRA HIGHWAY	**12**	1.86	0.36	0.82	1.03	42	0	0	2	2	8	0	1	9	1	1	0	0	0	0	7	1	1	3	0
20TH STREET WEST	LINDA AVENUE - AVENUE I	**11**	2.44	0.36	0.93	1.51	56	0	0	2	5	4	4	2	4	0	0	0	0	1	0	2	0	0	6	1
AVENUE J	10TH STREET WEST - KINGTREE AVENUE	**11**	1.25	0.36	0.75	0.51	47	0	0	0	7	4	1	2	7	0	1	0	0	0	0	8	0	0	1	1
20TH STREET EAST	AVENUE J-2 - AVENUE J	**11**	3.62	0.36	1.09	2.54	234	0	1	4	4	2	7	1	1	0	0	0	2	0	1	2	0	0	4	1
AVENUE L	40TH STREET WEST - 42ND STREET WEST	**11**	1.07	0.36	0.71	0.35	205	0	1	1	4	5	3	5	1	0	2	0	0	0	0	2	2	1	5	1
SIERRA HIGHWAY	AVENUE J-8 - AVENUE J-4	**11**	0.99	0.36	0.78	0.22	56	0	0	2	5	4	3	2	3	1	2	0	0	1	1	2	1	0	6	1
SIERRA HIGHWAY	SIERRA HWY TO AVENUE L WB/R - AVENUE K-8	**11**	0.59	0.36	0.69	-0.10	65	0	0	4	3	4	2	2	4	1	2	0	0	0	0	4	0	1	5	0
AVENUE I	12TH STREET EAST - 15TH STREET EAST	**11**	1.72	0.36	0.82	0.89	234	1	0	3	6	1	6	1	1	1	1	0	0	1	0	3	1	0	4	0
AVENUE M	6TH STREET WEST - 10TH STREET WEST	**10**	0.70	0.36	0.65	0.05	40	0	0	1	4	5	1	2	6	0	1	0	0	0	0	5	0	0	3	1
AVENUE K	8TH STREET EAST - CHALLENGER WAY	**10**	1.87	0.36	0.88	1.00	55	0	0	1	7	2	7	1	2	0	0	0	0	0	0	1	1	0	1	0
AVENUE L	60TH STREET WEST - 70TH STREET WEST	**10**	1.24	0.36	0.77	0.47	10	0	0	0	0	10	3	4	2	0	0	1	0	0	0	2	1	0	1	0
AVENUE K	20TH STREET WEST - 21ST STREET WEST	**9**	0.74	0.36	0.68	0.06	44	0	0	1	5	3	3	2	1	1	2	0	0	0	0	1	1	1	2	0
AVENUE I	13TH STREET WEST - 15TH STREET WEST	**8**	0.75	0.36	0.62	0.13	28	0	0	1	2	5	2	1	3	0	1	0	1	0	0	2	1	0	2	1
AVENUE J	DIVISION STREET - TREVOR AVENUE	**8**	1.12	0.36	0.80	0.32	23	0	0	0	3	5	5	0	3	0	0	0	0	0	0	3	0	0	3	0
AVENUE J	LOWTREE AVENUE - 15TH STREET WEST	**8**	0.99	0.36	0.77	0.22	13	0	0	0	1	7	3	3	1	0	1	0	0	0	0	1	0	0	0	0
10TH STREET WEST	AVENUE J - OLDFIELD STREET	**8**	1.23	0.36	0.82	0.41	182	1	0	0	2	5	2	1	4	0	0	0	0	1	0	2	0	0	0	0

Facility	Limits	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
AVENUE M	SIERRA HIGHWAY - 3RD STREET EAST	**8**	1.16	0.36	0.81	0.36	28	0	0	1	2	5	1	0	7	0	0	0	0	0	0	5	0	1	3	1
AVENUE I	30TH STREET WEST - 40TH STREET WEST	**8**	0.50	0.36	0.63	-0.14	212	1	0	1	6	0	0	0	1	0	0	6	0	1	0	0	0	1	2	0
20TH STREET WEST	AVENUE J - NEWGROVE STREET	**7**	0.79	0.36	0.75	0.05	32	0	0	0	5	2	3	2	2	0	0	0	0	0	0	1	0	0	2	1
AVENUE I	CHALLENGER WAY - 12TH STREET EAST	**7**	1.09	0.36	0.82	0.27	22	0	0	0	3	4	0	2	0	0	5	0	0	0	0	1	0	1	1	1
AVENUE I	3RD STREET EAST - 5TH STREET EAST	**7**	0.81	0.36	0.75	0.06	41	0	0	3	1	3	0	3	2	0	1	0	0	1	0	2	0	0	3	0
AVENUE J	17TH STREET EAST - 20TH STREET EAST	**7**	0.95	0.36	0.79	0.16	27	0	0	1	2	4	1	3	1	0	2	0	0	0	0	1	0	0	2	0
AVENUE L	AVENUE L TO SIERRA HWY EB/R - 8TH STREET WEST	**7**	0.20	0.36	0.54	-0.34	17	0	0	0	2	5	2	3	2	0	0	0	0	1	0	3	0	0	1	0
20TH STREET WEST	AVENUE K-4 - AVENUE K	**6**	0.85	0.36	0.80	0.05	21	0	0	0	3	3	3	3	0	0	0	0	0	0	0	0	0	0	2	0
30TH STREET WEST	AVENUE J-12 - AVENUE J-9	**6**	1.21	0.36	0.90	0.31	21	0	0	0	3	3	4	1	1	0	0	0	0	0	1	0	0	0	1	0
10TH STREET WEST	JACKMAN STREET - AVENUE I	**6**	0.81	0.36	0.79	0.02	31	0	0	1	3	2	2	2	2	0	0	0	0	0	1	2	0	0	0	0
10TH STREET WEST	AVENUE K - AVENUE J-14	**6**	1.06	0.36	0.86	0.20	16	0	0	0	2	4	2	2	2	0	0	0	0	0	0	1	0	0	2	0
AVENUE L	17TH STREET WEST - 20TH STREET WEST	**6**	0.43	0.36	0.66	-0.23	6	0	0	0	0	6	2	1	1	2	0	0	0	0	0	1	0	1	3	0
AVENUE L	27TH STREET WEST - 28TH STREET WEST	**6**	0.84	0.36	0.80	0.04	30	0	0	2	1	3	5	1	0	0	0	0	0	0	1	0	0	0	1	0
60TH STREET WEST	AVENUE L-4 - AVENUE L	**6**	1.15	0.36	0.88	0.26	16	0	0	0	2	4	3	1	2	0	0	0	0	0	0	2	1	0	0	1
10TH STREET WEST	AVENUE L-6 - AVENUE L	**6**	0.34	0.36	0.62	-0.28	16	0	0	0	2	4	1	2	2	0	0	0	1	0	0	2	0	1	0	0
10TH STREET WEST	NEWGROVE STREET - LANCASTER WAY	**6**	0.64	0.36	0.73	-0.09	46	0	0	2	4	0	1	1	2	0	1	0	1	0	1	3	0	0	1	0
DIVISION STREET	AVENUE I - AVENUE H-8	**6**	1.26	0.36	0.91	0.34	16	0	0	0	2	4	2	3	0	0	1	0	0	0	0	0	0	1	2	0

Facility	Limits	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
AVENUE J	PALO VERDE STREET - 40TH STREET WEST	**6**	1.37	0.36	0.94	0.43	21	0	0	1	1	4	0	0	5	0	1	0	0	0	0	6	0	0	2	0
AVENUE K	17TH STREET WEST - 18TH STREET WEST	**5**	0.79	0.36	0.83	-0.04	15	0	0	0	2	3	0	0	3	0	2	0	0	0	0	2	1	0	1	0
AVENUE K	18TH STREET WEST - 20TH STREET WEST	**5**	0.78	0.36	0.82	-0.05	15	0	0	0	2	3	4	0	0	0	0	0	0	1	0	0	0	0	1	0
20TH STREET WEST	AVENUE J-12 - AVENUE J-8	**5**	0.53	0.36	0.73	-0.20	5	0	0	0	0	5	0	2	1	0	2	0	0	0	0	1	0	0	1	0
10TH STREET WEST	KILDARE STREET - JACKMAN STREET	**5**	0.91	0.36	0.87	0.04	20	0	0	1	1	3	2	0	1	0	2	0	0	0	0	3	0	0	2	0
DIVISION STREET	AVENUE K-4 - AVENUE K	**5**	0.77	0.36	0.82	-0.05	10	0	0	0	1	4	0	2	2	0	1	0	0	0	0	2	0	0	1	0
CHALLENGER WAY	AVENUE K - AVENUE J-14	**5**	1.09	0.36	0.93	0.16	15	0	0	0	2	3	0	4	0	0	1	0	0	0	0	0	0	0	1	1
AVENUE L	28TH STREET WEST - 30TH STREET WEST	**5**	0.70	0.36	0.80	-0.10	15	0	0	0	2	3	0	0	5	0	0	0	0	0	0	4	0	0	0	0
30TH STREET EAST	AVENUE L - AVENUE K-8	**5**	1.35	0.36	1.01	0.35	184	0	1	0	3	1	3	1	0	0	1	0	0	0	0	0	0	0	2	0
AVENUE M	30TH STREET WEST - 35TH STREET WEST	**5**	0.52	0.36	0.73	-0.21	193	1	0	2	1	1	0	0	3	0	2	0	0	0	0	2	0	0	2	0
AVENUE M	4TH STREET WEST - 6TH STREET WEST	**5**	0.49	0.36	0.71	-0.23	30	0	0	1	3	1	0	2	1	0	2	0	0	0	0	2	0	1	2	0
AVENUE M	10TH STREET WEST - RT 14 NBON/R	**5**	0.74	0.36	0.81	-0.07	25	0	0	1	2	2	1	0	2	0	2	0	0	0	0	1	0	1	4	1
AVENUE I	17TH STREET WEST - 20TH STREET WEST	**4**	0.31	0.36	0.67	-0.36	4	0	0	0	0	4	0	1	1	1	1	0	0	0	0	1	1	0	1	1
AVENUE K	30TH STREET WEST - 32ND STREET WEST	**4**	0.40	0.36	0.72	-0.32	4	0	0	0	0	4	1	0	1	0	1	0	1	0	1	1	0	1	2	0
30TH STREET WEST	AVENUE K-4 - AVENUE K	**4**	0.46	0.36	0.75	-0.29	29	0	0	1	3	0	0	0	4	0	0	0	0	0	0	3	0	0	0	0
AVENUE K	45TH STREET WEST - BLOSSOM DRIVE	**4**	1.98	0.36	1.30	0.68	331	0	2	0	0	2	0	0	2	0	2	0	0	0	0	1	0	0	0	0
10TH STREET WEST	AVENUE H-12 - AVENUE H-8	**4**	1.20	0.36	1.05	0.15	177	0	1	1	0	2	0	3	0	0	0	0	0	1	0	0	0	0	3	0

Facility	Limits	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
10TH STREET WEST	AVENUE H-14 - AVENUE H-12	**4**	1.94	0.36	1.29	0.66	173	0	1	0	1	2	1	2	0	1	0	0	0	0	0	0	0	0	3	0
20TH STREET EAST	SOUTH END - AVENUE K	**4**	1.45	0.36	1.13	0.32	14	0	0	0	2	2	0	2	1	0	0	0	0	1	0	2	0	0	3	0
10TH STREET WEST	COMMERCE CENTER DRIVE - AVENUE K	**4**	0.43	0.36	0.74	-0.30	9	0	0	0	1	3	1	2	0	1	0	0	0	0	0	0	0	0	1	0
AVENUE K	DIVISION STREET - SAHUAYO STREET	**4**	0.76	0.36	0.88	-0.12	14	0	0	0	2	2	0	1	3	0	0	0	0	0	0	3	0	0	1	1
30TH STREET WEST	AVENUE L - AVENUE K-12	**4**	0.67	0.36	0.84	-0.18	24	0	0	1	2	1	3	1	0	0	0	0	0	0	0	0	0	0	2	0
SIERRA HIGHWAY	AVENUE L-8 - ENTERPRISE PY	**4**	0.51	0.36	0.85	-0.35	9	0	0	0	1	3	0	0	1	1	2	0	0	0	0	1	0	0	2	0
60TH STREET WEST	AVENUE J - AVENUE I	**4**	0.39	0.36	0.72	-0.32	38	0	0	3	1	0	0	2	0	1	0	0	1	0	0	1	1	1	2	0
AVENUE J	40TH STREET EAST - 50TH STREET EAST	**4**	0.30	0.36	0.67	-0.37	341	1	1	0	2	0	0	2	0	2	0	0	0	0	0	0	0	1	2	0
AVENUE H	DIVISION STREET - CHALLENGER WAY	**4**	0.36	0.36	0.70	-0.34	28	0	0	2	1	1	0	1	0	0	2	1	0	0	0	0	1	0	2	0
AVENUE I	PRICE LANE - 23RD STREET EAST	**4**	0.58	0.36	0.81	-0.22	173	1	0	0	1	2	0	1	1	1	0	1	0	0	1	0	0	1	3	0
AVENUE I	20TH STREET WEST - RT 14 NBON/R	**4**	0.50	0.36	0.77	-0.27	24	0	0	0	4	0	1	0	2	0	1	0	0	0	0	2	1	0	0	1
BUSINESS CENTER PARKWAY	AVENUE K-15 - AVENUE K-10	**4**	0.46	0.36	0.66	-0.20	182	1	0	1	1	1	0	0	0	0	4	0	0	0	0	0	0	2	2	0
BUSINESS CENTER PARKWAY	AVENUE K-10 - AVENUE K-8	**4**	0.76	0.36	0.78	-0.03	173	0	1	0	1	2	0	1	0	0	3	0	0	0	0	0	0	0	2	2
SIERRA HIGHWAY	AVENUE I - AVENUE H-8	**4**	0.99	0.36	0.97	0.02	34	0	0	2	2	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0
AVENUE J	TREVOR AVENUE - SIERRA HIGHWAY	**4**	0.41	0.36	0.72	-0.32	9	0	0	0	1	3	0	0	4	0	0	0	0	0	0	3	1	0	0	0
20TH STREET WEST	AVENUE J-8 - RT 14 NBOFF/R	**4**	0.50	0.36	0.77	-0.27	4	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	3	0	0	0

Facility	Limits	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
AVENUE L	SIERRA HIGHWAY - SIERRA HWY TO AVENUE L EB/R	**4**	0.63	0.36	0.83	-0.20	14	0	0	0	2	2	1	1	0	1	1	0	0	0	0	0	0	1	3	0
SIERRA HIGHWAY	BEECH AVENUE - AVENUE H TO SIERRA HWY EB/R	**3**	0.85	0.36	1.12	-0.27	172	1	0	0	1	1	1	0	0	0	1	0	0	1	0	0	0	0	3	0
SIERRA HIGHWAY	LANCASTER BLVD - KETTERING STREET	**3**	2.20	0.36	1.69	0.51	13	0	0	0	2	1	2	0	1	0	0	0	0	0	1	0	0	0	1	0
20TH STREET WEST	NEWGROVE STREET - LANCASTER BLVD	**3**	0.33	0.36	0.74	-0.41	3	0	0	0	0	3	0	1	1	0	1	0	0	0	0	2	0	0	1	0
AVENUE K	WESTFIELD DRIVE - 25TH STREET WEST	**3**	0.42	0.36	0.79	-0.38	8	0	0	0	1	2	0	0	3	0	0	0	0	0	0	3	0	0	0	0
30TH STREET WEST	AVENUE K - AVENUE J-12	**3**	0.39	0.36	0.78	-0.39	8	0	0	0	1	2	2	0	1	0	0	0	0	0	0	1	0	0	0	0
DIVISION STREET	AVENUE H-8 - AVENUE H-6	**3**	2.62	0.36	1.72	0.91	13	0	0	0	2	1	0	1	2	0	0	0	0	0	0	1	0	0	0	0
20TH STREET WEST	AVENUE K - AVENUE J-13	**3**	0.49	0.36	0.84	-0.35	13	0	0	0	2	1	0	1	0	0	1	0	0	0	1	0	0	1	1	0
AVENUE I	KINGTREE AVENUE - 13TH STREET WEST	**3**	0.50	0.36	0.84	-0.34	22	0	0	2	0	1	1	1	0	0	1	0	0	0	0	0	0	1	2	0
AVENUE K	STANRIDGE AVENUE - KIRKLAND AVENUE	**3**	0.49	0.36	0.84	-0.35	335	2	0	0	1	0	0	0	1	0	0	0	0	1	1	1	0	0	2	0
AVENUE K	CHALLENGER WAY - 11TH STREET EAST	**3**	0.74	0.36	0.97	-0.23	3	0	0	0	0	3	0	2	1	0	0	0	0	0	0	1	0	0	0	0
20TH STREET EAST	AVENUE L - AVENUE K-8	**3**	0.54	0.36	0.87	-0.33	13	0	0	1	0	2	0	0	2	0	0	1	0	0	0	1	1	1	1	0
10TH STREET WEST	AVENUE M - AVENUE L-14	**3**	0.51	0.36	0.85	-0.34	13	0	0	1	0	2	0	1	2	0	0	0	0	0	0	1	0	0	0	1
10TH STREET WEST	AVENUE K-15 - CITY PARK WAY	**3**	0.20	0.36	0.65	-0.45	8	0	0	0	1	2	2	0	0	0	1	0	0	0	0	0	0	0	1	0
AVENUE K	70TH STREET EAST - 90TH STREET EAST	**3**	0.48	0.36	0.83	-0.35	3	0	0	0	0	3	0	2	0	0	1	0	0	0	0	0	0	0	2	0
20TH STREET EAST	AVENUE I - AVENUE H	**3**	2.05	0.36	1.51	0.54	8	0	0	0	1	2	0	1	0	0	1	1	0	0	0	1	0	0	2	0
AVENUE I	30TH STREET EAST - 28TH STREET EAST	**3**	0.64	0.36	0.92	-0.28	13	0	0	1	0	2	0	1	1	1	0	0	0	0	0	1	0	1	2	0

Facility	Limits	Total Collisions	Local Crash Rate	Average Crash Rate for Location Type	Critical Crash Rate	Local CCR Differential[1]	EPDO[2]	*Fatal*	*Serious Injury*	*Other Visible Injury*	*Complaint of Pain*	*PDO*	Broadside	Sideswipe	Rear End	Head On	Hit Object	Overturned	Other	Pedestrian	Bicycle	Aggressive	Distracted	Impaired	Dark	Wet
AVENUE I	40TH STREET WEST - 50TH STREET WEST	**3**	0.22	0.36	0.66	-0.44	3	0	0	0	0	3	0	1	0	0	1	1	0	0	0	0	0	1	2	0
AVENUE I	50TH STREET WEST - 60TH STREET WEST	**3**	0.28	0.36	0.71	-0.43	18	0	0	0	3	0	1	0	2	0	0	0	0	0	0	2	0	0	0	0
AVENUE I	YUCCA AVENUE - SIERRA HIGHWAY	**3**	0.58	0.36	0.89	-0.31	13	0	0	0	2	1	0	1	2	0	0	0	0	0	0	2	0	0	0	0
20TH STREET EAST	AVENUE K-8 - AVENUE K-4	**3**	1.05	0.36	1.12	-0.07	13	0	0	0	2	1	0	0	0	2	1	0	0	0	0	0	2	0	1	0
4TH STREET EAST	AVENUE L-4 - AVENUE L	**3**	0.76	0.36	0.98	-0.22	8	0	0	0	1	2	1	1	0	0	1	0	0	0	0	0	0	0	0	0
AVENUE M	DIVISION STREET - SIERRA HIGHWAY	**3**	0.60	0.36	1.36	0.76	13	0	0	0	2	1	2	0	1	0	0	0	0	0	0	0	0	0	2	0
Secondary Arterial																										
AVENUE J-8	15TH STREET WEST - 20TH STREET WEST	**10**	0.84	0.27	0.56	0.28	40	0	0	0	6	4	3	0	5	1	1	0	0	0	0	5	1	0	7	0
AVENUE J-8	30TH STREET EAST - 35TH STREET EAST	**7**	5.33	0.27	1.39	3.93	17	0	0	0	2	5	4	1	1	0	0	0	0	1	0	1	0	0	0	0
15TH STREET WEST	YOUNGBLOOD PLACE - AVENUE J-8	**6**	0.67	0.27	0.61	0.06	175	1	0	0	1	4	1	0	3	1	0	0	0	1	0	3	0	0	2	1
5TH STREET EAST	LANCASTER BLVD - KETTERING STREET	**5**	2.55	0.27	1.13	1.41	20	0	0	0	3	2	1	0	3	1	0	0	0	0	0	2	0	0	2	0
AVENUE L-8	32ND STREET WEST - 35TH STREET WEST	**5**	3.29	0.27	1.29	2.00	5	0	0	0	0	5	0	1	1	0	3	0	0	0	0	0	2	0	1	1
15TH STREET WEST	AVENUE J-8 - AVENUE J-4	**4**	0.39	0.27	0.59	-0.19	14	0	0	0	2	2	1	0	2	1	0	0	0	0	0	2	0	0	0	0
15TH STREET EAST	AVENUE J - NUGENT STREET	**4**	1.50	0.27	0.98	0.52	14	0	0	0	2	2	2	0	1	1	0	0	0	0	0	1	0	0	2	0
15TH STREET WEST	AVENUE K - YOUNGBLOOD PLACE	**4**	0.42	0.27	0.60	-0.18	14	0	0	0	2	2	2	1	0	0	1	0	0	0	1	0	0	0	1	0
AVENUE J-8	20TH STREET EAST - 22ND STREET EAST	**4**	3.62	0.27	1.53	2.09	14	0	0	0	2	2	2	1	0	0	1	0	0	0	0	1	0	0	0	0
15TH STREET WEST	AVENUE K-8 - AVENUE K-2	**4**	4.03	0.27	1.63	2.40	19	0	0	1	1	2	0	1	1	0	2	0	0	0	0	1	0	0	3	0

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AVENUE J-8	RT 14 SBON/R - 21ST STREET WEST	**3**	0.72	0.27	0.81	-0.09	8	0	0	0	1	2	0	1	2	0	0	0	0	0	0	2	0	0	0	0
15TH STREET WEST	AVENUE L - PARK SOMERSET STREET	**3**	1.04	0.27	0.95	0.10	13	0	0	0	2	1	2	1	0	0	0	0	0	0	0	0	0	0	1	0
Collector																										
VALLEY CENTRAL WAY	CENTRAL COURT - LANCASTER BLVD	**28**	17.7	0.30	1.33	16.4	77	0	0	3	4	21	20	4	3	0	0	0	1	0	0	2	0	0	5	3
VALLEY CENTRAL WAY	AVENUE J - CENTRAL COURT	**23**	29.0	0.30	1.94	27.1	73	0	0	2	6	15	12	5	3	0	1	0	0	2	1	1	0	0	4	1
VALLEY CENTRAL WAY	LANCASTER BLVD - LINE DRIVE	**5**	10.4	0.30	2.65	7.84	29	0	0	2	1	2	3	1	0	0	1	0	0	0	0	0	0	1	1	0
Local																										
KINGTREE AVENUE	AVENUE J-4 - AVENUE J-2	**6**	13.7	0.30	2.81	10.9	16	0	0	1	0	5	0	3	1	0	2	0	0	0	0	2	0	1	2	1
32ND STREET WEST	AVENUE J - LANCASTER BLVD	**6**	6.49	0.30	1.78	4.71	16	0	0	1	0	5	1	4	0	0	0	0	0	1	0	0	0	0	0	0
AVENUE K-4	GADSDEN AVENUE - 10TH STREET WEST	**5**	10.7	0.30	2.69	8.02	24	0	0	2	0	3	2	0	0	1	2	0	0	0	0	0	0	0	1	0
AVENUE J-4	17TH STREET EAST - 20TH STREET EAST	**4**	10.4	0.30	2.65	7.84	9	0	0	0	1	3	0	2	1	0	1	0	0	0	0	1	0	0	2	0
GADSDEN AVENUE	AVENUE K-4 - AVENUE K	**4**	5.76	0.30	2.10	3.66	9	0	0	0	1	3	2	1	0	0	1	0	0	0	0	0	0	1	1	0
JENNER STREET	SANCROFT AVENUE - ANDALE AVENUE	**4**	3.01	0.30	1.46	1.56	4	0	0	0	0	4	0	3	0	0	0	0	1	0	0	0	0	1	2	2
AVENUE K-4	30TH STREET WEST - 32ND STREET WEST	**4**	5.72	0.30	2.09	3.63	9	0	0	0	1	3	2	0	1	1	0	0	0	0	0	0	0	0	2	0
AVENUE K-6	DIVISION STREET - GINGHAM AVENUE	**4**	4.28	0.30	1.76	2.52	9	0	0	0	1	3	2	2	0	0	0	0	0	0	0	1	0	0	0	0
AVENUE K-4	STANCLIFF AVENUE - 20TH STREET EAST	**4**	1.95	0.30	1.17	0.78	9	0	0	0	1	3	2	0	0	0	2	0	0	0	0	0	0	0	2	0
MOTOR LANE	DRIVERS WAY - 12TH STREET WEST	**4**	14.5	0.30	3.83	10.6	9	0	0	0	1	3	0	0	3	0	1	0	0	0	0	4	0	0	3	0

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LIGHTCAP STREET	HANSTEAD AVENUE - DENMORE AVENUE	**4**	18.4	0.30	4.53	13.8	4	0	0	0	0	4	0	1	0	0	2	0	1	0	0	1	0	0	1	0
TREVOR AVENUE	AVENUE I - AVENUE H-6	**4**	8.07	0.30	2.59	5.48	14	0	0	1	0	3	0	0	1	0	2	1	0	0	0	1	1	1	0	0
27TH STREET WEST	AVENUE J-4 - AVENUE J	**3**	3.48	0.30	1.57	1.91	8	0	0	0	1	2	0	0	3	0	0	0	0	0	0	1	2	0	0	0
12TH STREET WEST	MOTOR LANE - AUTO MALL DRIVE	**3**	2.61	0.30	1.57	1.04	3	0	0	0	0	3	0	0	1	1	1	0	0	0	0	0	0	1	1	0
3RD STREET EAST	NUGENT STREET - LANCASTER BLVD	**3**	6.55	0.30	2.72	3.83	13	0	0	1	0	2	0	2	1	0	0	0	0	0	1	0	0	0	1	0
BEECH AVENUE	AVENUE J-7 - AVENUE J-5	**3**	24.46	0.30	6.94	17.5	13	0	0	1	0	2	0	1	2	0	0	0	0	0	0	1	0	1	3	0
12TH STREET WEST	COMMERCE CENTER DRIVE - AVENUE K	**3**	3.64	0.30	1.90	1.74	13	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	1	0
AVENUE H-12	ELM AVENUE - GADSDEN AVENUE	**3**	5.15	0.30	2.34	2.81	13	0	0	1	0	2	0	2	0	0	1	0	0	0	0	1	0	2	2	0

= Local CCR Differential > 1.0

= Local CCR Differential 0.33-1.0

= Local CCR Differential < 0.33

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

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

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

[1]Local Critical Crash Rate Differential

[2]Equivalent Property Damage Only Crashes