

# HEMET COMPREHENSIVE SAFETY ACTION PLAN

Final Safety Analysis Report

*October 2025*



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## 1.0 Introduction

The Safety Analysis Report is one of the essential components of a Comprehensive Safety Action Plan (CSAP). This report examines the characteristics of recent collision history in the City of Hemet, occurring between January 2020, and December 2024. It summarizes and analyzes statistics related to each collision's notable attributes (party characteristics, injury severity, type of impact, primary collision factors, etc.), ranks the locations in the City with the most collisions and injury frequency, and identifies roadway infrastructure profiles in the City where collisions occur disproportionately.

The information derived from this report was used to identify a High Injury Network (HIN) to help guide future countermeasure prioritization.

### 1.1 Comprehensive Safety Action Plan Overview

A CSAP is a locally specific document used to guide jurisdictions pursuing a policy commitment toward reducing and eventually eliminating traffic fatalities and serious injuries. CSAPs are made within the framework and guidance of the U.S. Department of Transportation administered Safe Streets and Roads for All (SS4A) program. The SS4A program oversees about \$5 billion of funding between 2022 and 2026. The funding is separated into two pools, one which funds the development of CSAP plans and another to fund the implementation of traffic safety countermeasure projects. SS4A requires a CSAP to be eligible for receiving from the latter pool of grant funding. Besides the completion of a safety analysis, CSAPs must include or accomplish the following objectives:

- **Leadership Commitment and Goal Setting:** Establishment of a policy commitment from the City's governing body to reduce and eventually eliminate fatal and severe traffic collisions with timeline or target reduction specificity.
- **Planning Structure:** Establishment of a task force to assist with the development of the plan.
- **Engagement and Collaboration:** Involvement of the public and relevant stakeholders in the development of the plan, and incorporation of their input.
- **Equity Considerations:** Effort made to be inclusive of politically and economically disadvantaged populations in the public engagement process, an assessment of the jurisdiction's conditions of structural inequality, and fair consideration of these groups in project recommendations.
- **Policy and Process Changes:** Assess and refine the City's current transportation safety policies.
- **Strategy and Project Selections:** Identification of infrastructural, behavioral, and/or operational safety projects informed by the analysis of data, stakeholder input and equity considerations, with prioritization and implementation phasing.
- **Progress and Transparency:** Method to analyze progress over time and a means to ensure ongoing transparency with the public.

## 1.2 Report Structure

Following the introduction, the report includes the following sections:

- **Section 2.0:** Collision Descriptive Statistics: a summary and analysis of notable collision attributes by collision location type and travel modes involved in collisions.
- **Section 3.0:** Intersection and Segment Collision Frequency: Ranking of locations in the City with the most collisions by modes and by injury. Identifies an HIN in response to recent history severe and fatal vehicular-only collisions, and pedestrian and bicycle injury collisions.
- **Section 4.0:** Systemic/High Risk Road Environment Features: An assessment of most common vehicle code violations resulting in leading crash types across different sets of roadway conditions, including roadway size, posted speed limit, and type of traffic control. Supplements the HIN with an overlay of intersection and midblock infrastructure safety hotspots, based on systemic analysis.
- **Section 5.0:** Next Steps: Overview of how the safety analysis relates to the forthcoming activities and components of the CSAP.

## 2.0 Collision Descriptive Statistics

The safety analysis examined the characteristics of police-reported injury collisions occurring on Hemet public roadways between January 2020 and December 2024. The collisions in this study exclude those which resulted in property damage only. A main justification for not including property damage only collisions is that because of their large quantity, their obscure findings related to reducing fatalities and severe injuries, which is the main objective of a CSAP. From this point onward in the report, references to “collisions” mean collisions resulting in an injury.

Data for this study originated from two sources: California’s Statewide Integrated Traffic Records System (SWITRS) and Crossroads data, maintained by the Hemet Police Department. Prior to crash analysis, the data was examined for locational accuracy, attribute consistency, cleaned and assigned with definitions.

### 2.1 Data Preparation Methods

#### Reconciliation of SWITRS and Crossroads Datasets

SWITRS data was retrieved from University of California Berkeley SafeTREC’s *Transportation Injury Mapping System* (TIMS) website, where users can download geographically referenced (geocoded) injury collision history throughout the state. In total, there were 1,746 geocoded records in their dataset between the years 2020 and 2024. The Crossroads data contained a larger population of data (1,928 injury collision records) from the same period of years; however, its records were not geocoded. While most of the data overlapped, some records were only contained in one of the two datasets. The two datasets were reconciled, to ensure the most possible records were available for the safety analysis. Collisions identified in Crossroads which were not included in TIMS’s dataset, were geocoded using the locational attributes in the data (primary road, secondary road, distance from intersection and offset direction). Both sources use the same standardized data attributes, so the combination of these two datasets did not pose any issues for the analysis. The reconciliation of these two data sources led to the identification of 1,990 injury collision records.

#### Excluded Cases and Verification of Data’s Locational Accuracy

The accuracy of the geocoded locations were verified by confirming the collision’s locational attributes to its location overlaid on a map. This review identified 35 collision records with incorrectly geocoded locations, which were edited to their correct location. Thirty (30) records were removed from the analysis because the crashes either occurred beyond the City boundary or occurred on private property or had indecipherable locational attributes. The removal of these records resulted in a final total of 1,960 injury collisions in the data used for the analysis.

### 2.2 Defining Mode Category and Location of Collisions

Crashes were classified into one of three categories: pedestrian-involved collisions, bicycling-involved collisions, and vehicular-only collisions.

This was determined primarily by the *Pedestrian Collision* and *Bicycle Collision* attribute in the fields of the database, which if “yes” in one or the other, indicated the collision involved a pedestrian or a bicyclist. If both attributes were null, then collisions were assumed to be vehicular-only. These initial category assignments were verified with comparisons to other attributes, such as *Motor Vehicle Involved With* (which includes categories for pedestrians and bicyclists, along with other motor vehicle, parked motor vehicle, fixed object, other object, etc.) and party types/party vehicle types to ensure the mode category for each collision was correct and consistent. One record was reassigned

into a pedestrian-involved collision despite having a null value in the primary attribute. Another collision was verified to be between a bicyclist and pedestrian. This collision was assigned to both categories where collisions by mode are analyzed. This results in mode-specific totals adding to one collision greater than the 1,960 total.

**Table 2.1** summarizes the frequencies of the three mode categories of collisions. As shown, vehicular-only collisions were over eight times more common than pedestrian-involved collisions. Pedestrian-involved collisions were twice as common as bicyclist-involved collisions.

**Table 2.1 - Collisions by Mode Categories**

Mode Category	Total
Vehicular-only	1,670 (85%)
Pedestrian-Involved	192 (10%)
Bicyclist-Involved	99 (5%)
<b>Total</b>	<b>1,960*</b>

\*Includes one pedestrian-bicyclist-involved collision, counted in each mode category

### Defining the Location of Collisions

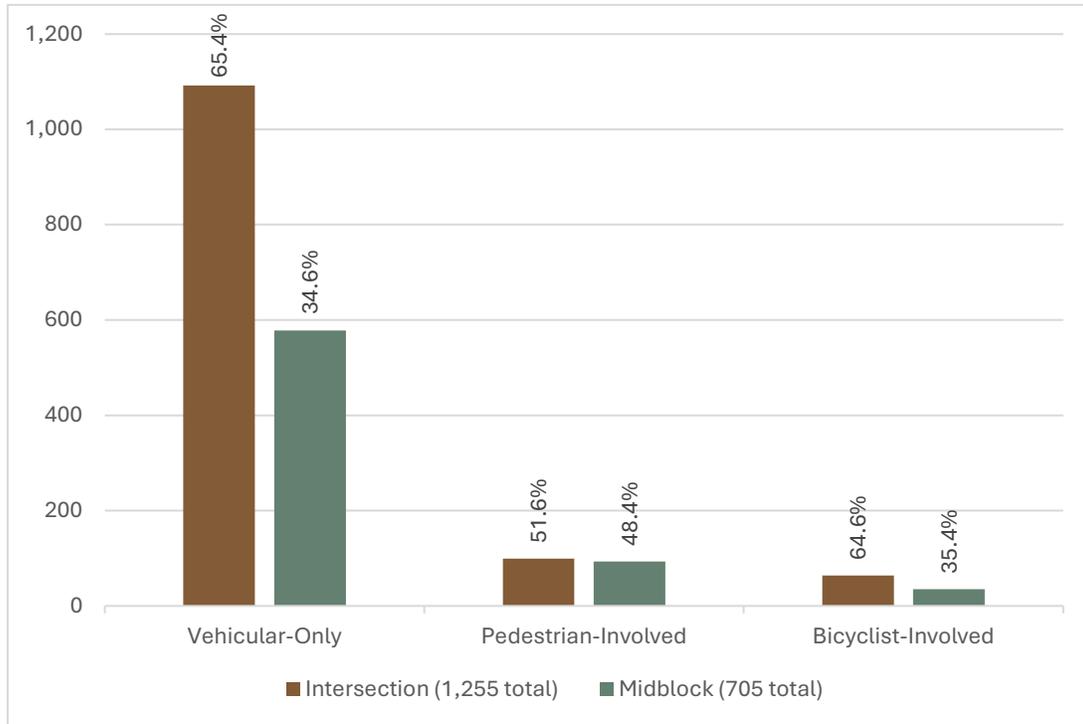
All collision records were assigned to one of two location categories: intersection or midblock. Location assignments were based on the intersection offset distance indicated in each record's attributes. Collision point data within 50 feet of a GIS intersection node was categorized as an intersection collision. All remaining collisions were categorized as midblock collisions, unless their location was physically within 50 feet of an intersection by aerial imagery. The 50-foot offset distance is within the threshold identified by Caltrans' Highway Safety Improvement Program (HSIP), which permits collisions up to 250-feet from an intersection to be used in the determination of Benefit/Cost ratios for intersection countermeasures.

Driveway locations with intersection-like characteristics (typically not well captured or identified by GIS data) were also defined as intersections. The judgment used to flag driveway locations as intersections included if the driveway was attached to an intersection footprint (in contrast to a driveway that is from a curb cut), if the driveway had traffic control features (traffic signals, stop signs and/or stop bars) and/or if there were features such as dedicated turn pockets to facilitate turns into or out of the driveway. Absent of those conditions, if there were clusters of collisions occurring in one driveway location (provisionally defined as midblock), a case-by-case judgment was made.

All collisions in locations which did not meet the above criteria were defined as midblock collisions. This would include collision locations occurring at some minor driveways.

Figure 2.1 summarizes the locational split of collisions in each mode category.

Figure 2.1 - Collisions by Mode Categories and Location

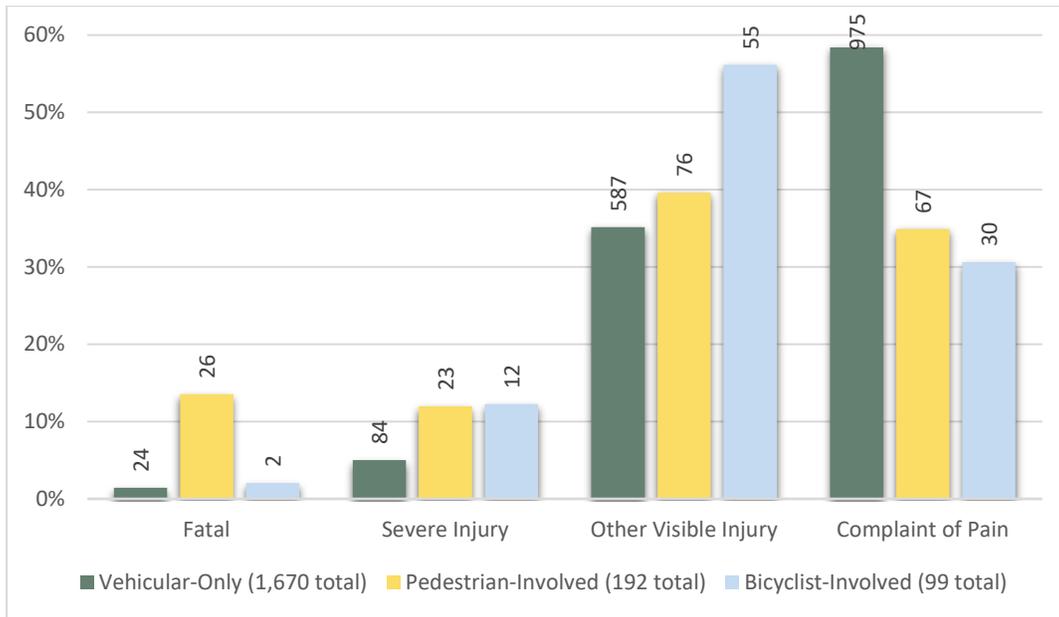


Intersections are where most collisions occur (1,255 of the 1,960 total collisions, or almost two-thirds). For motorists and bicyclists, intersections are where they are engaged in most conflicts with other traffic. Interactions with cross-street traffic, performing turns and maneuvering in positions to make turns mostly occur at intersections (these latter activities sometimes coincide with loss of attention to surroundings or impulsive decision making). This is borne out in the locational split of vehicular-only collisions, where 65% occurred at intersections, and for bicyclist-involved collisions, where the ratio was nearly identical.

Pedestrian-involved collisions, however, are less skewed toward intersections. Of the 192 pedestrian-involved collisions, only 52% occurred in this environment. This somewhat even split is indicative of pedestrians being less reliant on intersections for navigation. Pedestrians commonly cross streets in midblock locations (for example, when intersections are spaced far apart or when in low traffic environments). The midblock environment would also identify pedestrian-involved collisions occurring when motorists are entering sidewalk space (for example, turning into or out of minor driveways, or roadway departure), these are occasional vulnerabilities that exist for pedestrians without their even setting foot in the road.

### 2.3 Collision Injury Severity

Figure 2.2 shows the frequency of collisions by worst-case injury severity involving each mode. The total instances are labeled, while the percentage share of each severity category by mode is represented in the y-axis (the height of the bars in the bar graph).

**Figure 2.2 - Collisions by Injury Severity**


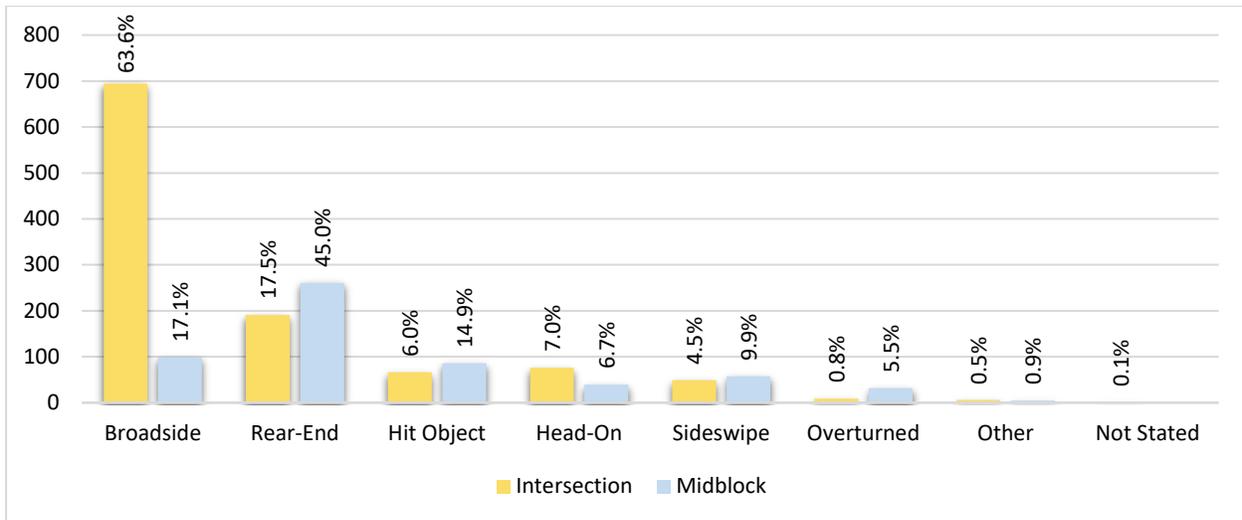
While there are more fatal and severe vehicular-only collisions in absolute total (108) than those that are pedestrian-involved (49) and bicyclist-involved (14), fatal and severe injuries are far more likely to result when pedestrians and bicyclists are parties involved in collisions. Twenty-five percent (25%) of pedestrian-involved collisions and 15% of bicyclist-involved collisions result in fatal or severe outcomes, while only 6% of vehicular-only collisions reach that level of severity. When counting fatalities only, there are more pedestrian-involved collisions (26) resulting in fatality than vehicular-only (24), despite the latter mode's much larger total frequency of collisions. Fatalities are ten times more likely to occur in pedestrian-involved collisions than vehicular-only collisions (about 14% to 1.4%).

Vehicular parties are less susceptible to serious injuries because the interior of automobiles can withstand impact force that the human body is incapable of and vehicles are equipped with safety features. This is evident as minor injuries being the worst outcome (complaint of pain) constitute almost 60% of all vehicular-only collisions, a far higher percentage than pedestrian-involved and bicyclist-involved collisions.

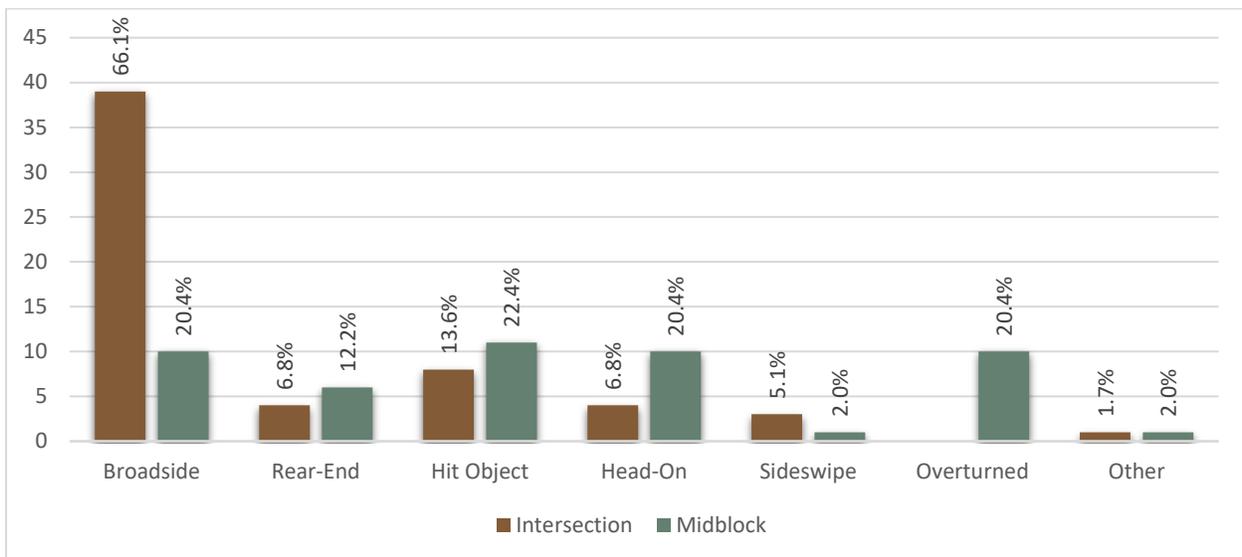
## 2.4 Collision by Type of Impact

**Figure 2.3** summarizes vehicular-only collisions by the type of impact and includes the overall share of those collision types by the two locational environments, intersection and midblock. **Figure 2.4** provides the same information but only for severe and fatal vehicular-only collisions.

**Figure 2.3 - Vehicular-Only Collisions by Type of Impact**



**Figure 2.4 - Vehicular-Only Collisions by Type of Impact - Severe and Fatal Outcomes**



As shown, broadside impacts are the most frequent collision type at intersections (and the second most at midblock), unsurprising given the variety of conflicts possible when cross-street traffic interfaces at-grade. This collision type maintains similar proportions when only examining collisions with severe and fatal outcomes, underscoring the heightened injury risk associated with perpendicular impacts.

Rear-ends are most common when collisions occur at midblock locations (and the second most common type at intersections) but, in contrast to broadsides, are less likely to result in severe injury and fatality. Rear-ends, while 45% of all midblock collisions, decline to 12% of all midblock severe and fatal collisions (a similar decrease is evident for rear-ends at intersections). Instead, hit object, head-on and overturn collisions have disproportionately higher severe and fatal outcomes relative to the overall frequency of those collision types. The latter categories produce more impact force than rear-ends (often parties in rear-end collisions are simultaneously traveling in the same direction, which reduces the force of impact).

Figure 2.5 shows bicyclist-involved collisions by type of impact and includes the share of those collision types by intersection and midblock. Figure 2.6 provides the same information but only for severe and fatal bicyclist-involved collisions.

Figure 2.5 - Bicycle-Involved Collisions by Type of Impact

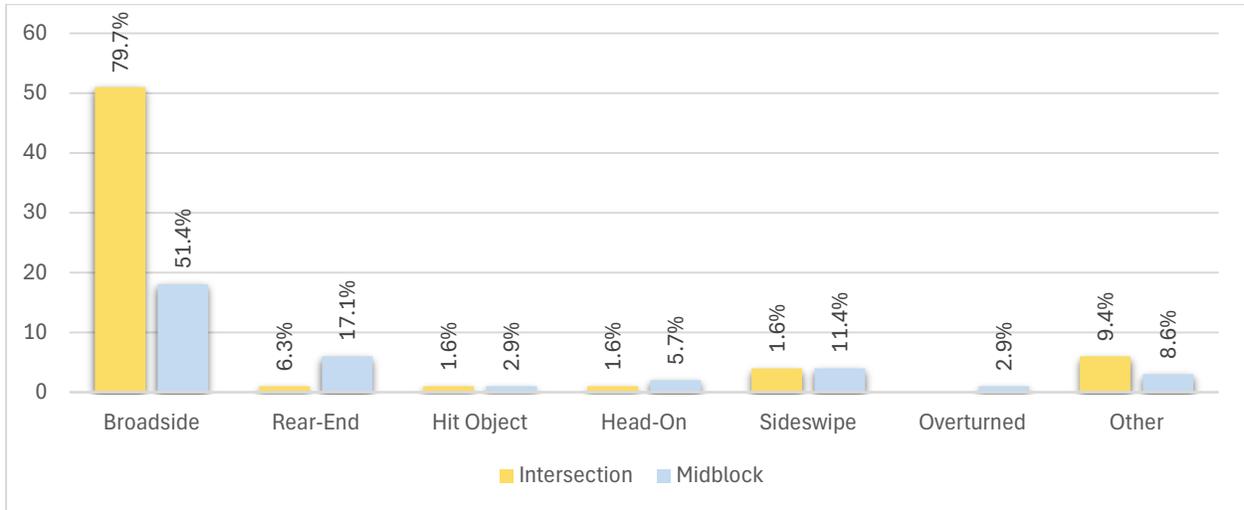
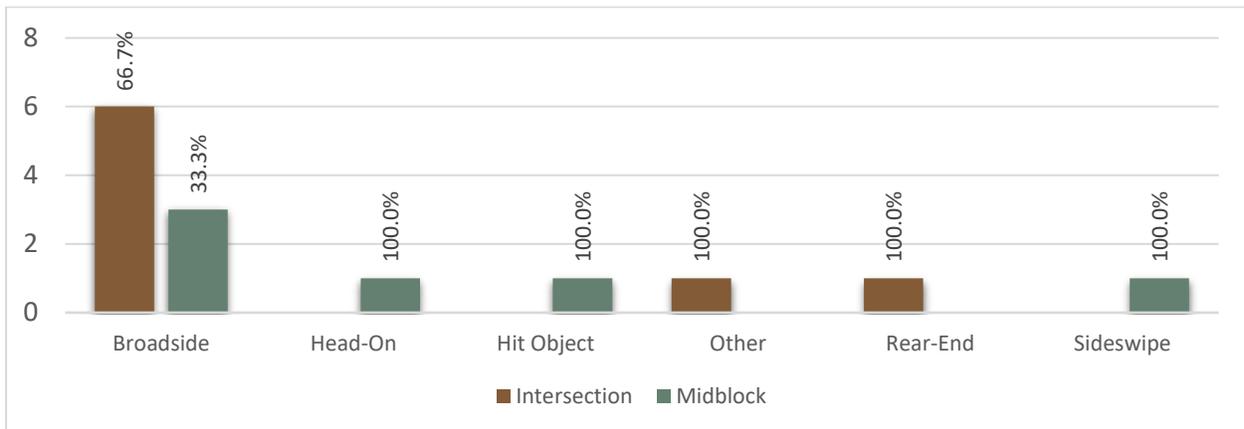


Figure 2.6 - Bicycle-Involved Collisions by Type of Impact – Severe and Fatal Outcomes



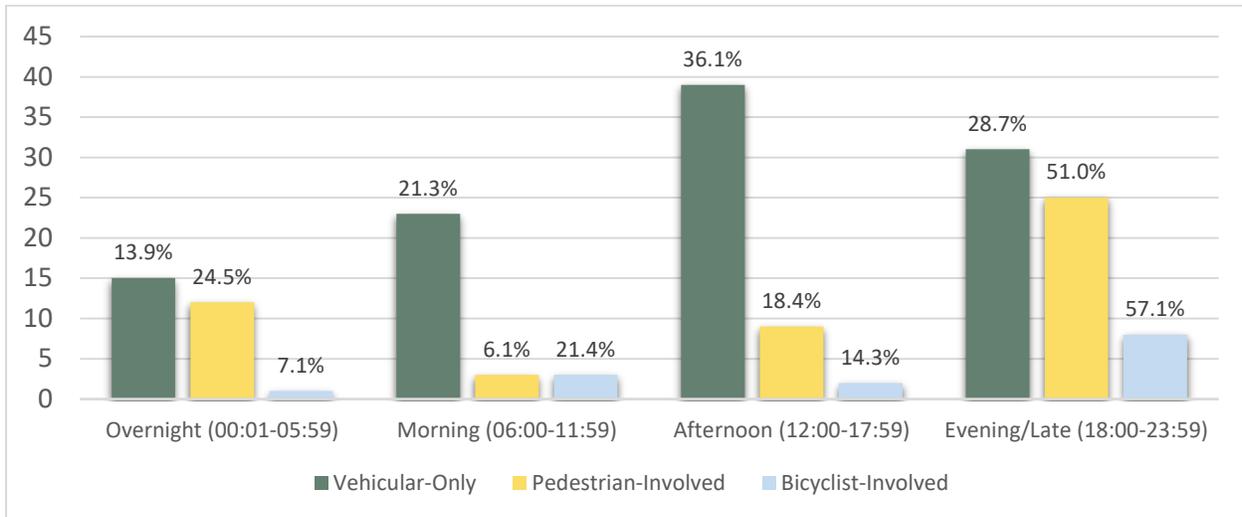
For bicyclist-involved collisions, broadsides are the most common type of collision by a wide margin at both intersections and midblock. Broadsides were also the most frequent type of collision for the 14 severe and fatal bicyclist-involved collisions. In total, there were nine broadside severe and fatal collisions (accounting for 75% severe and fatal collisions at intersections, and half of severe and fatal collisions at midblock). Because bicyclists are physically vulnerable in a way vehicular parties are not, there are no similar patterns to vehicular-only collisions with regard to “less severe” collision types.

Pedestrian-involved collisions are not analyzed in this section because collisions involving pedestrians are not assigned a type of impact category in the data other than “vehicle-pedestrian”.

## 2.5 Collisions by Time of Day

Figure 2.7 summarizes the time of day (in six-hour periods) when severe or fatal collisions occur most often by mode of collisions.

Figure 2.7 - Severe and Fatal Collisions by Time of Day



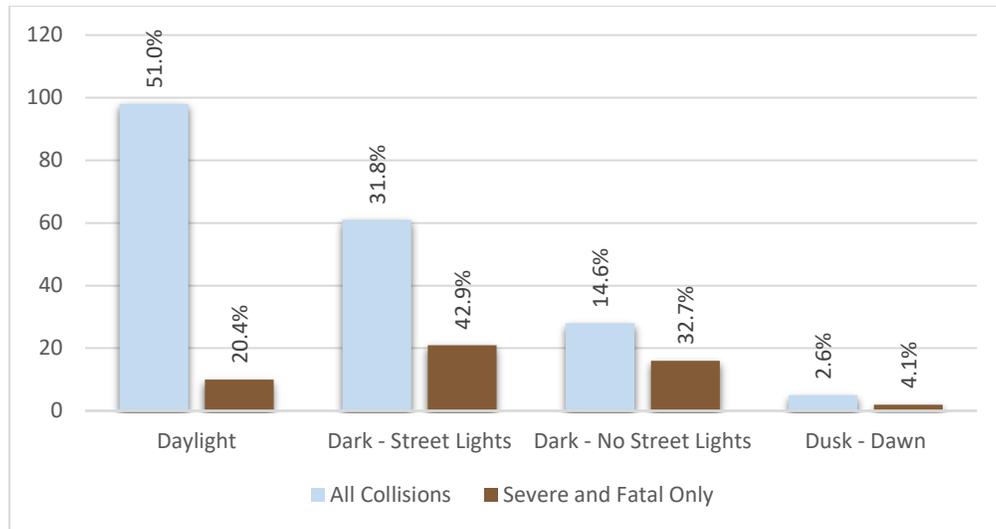
Over half of the pedestrian-involved (51%) and bicyclist-involved collisions (57%) resulting in severe or fatal injuries occur in the evening/late period (from 6:00pm to midnight). When combining the overnight period with evening, the share of severe and fatal collisions increases to over three-quarters (76%) for pedestrian-involved collisions and nearly two-thirds for bicyclist-involved collisions (64%). These two periods, though briefly overlapping with parts of the commute peak periods, are primarily off-peak for travel demand and generally coincide with when ambient conditions are dark. This finding underscores the vulnerability of pedestrian and bicyclist travel during periods of darkness, when their visibility to motorists is poor.

Vehicular-only collisions are most prevalent during the afternoon period, which includes much of the PM commute peak period – typically, the most active travel period on weekdays. Vehicles are equipped with superior illumination which improves sight distance judgement and their visibility to other motorists, which may partially explain why severe and fatal vehicular-only collisions do not have the same evening and overnight proportions as pedestrian-involved and bicyclist-involved collisions.

## 2.6 Collisions by Lighting Conditions

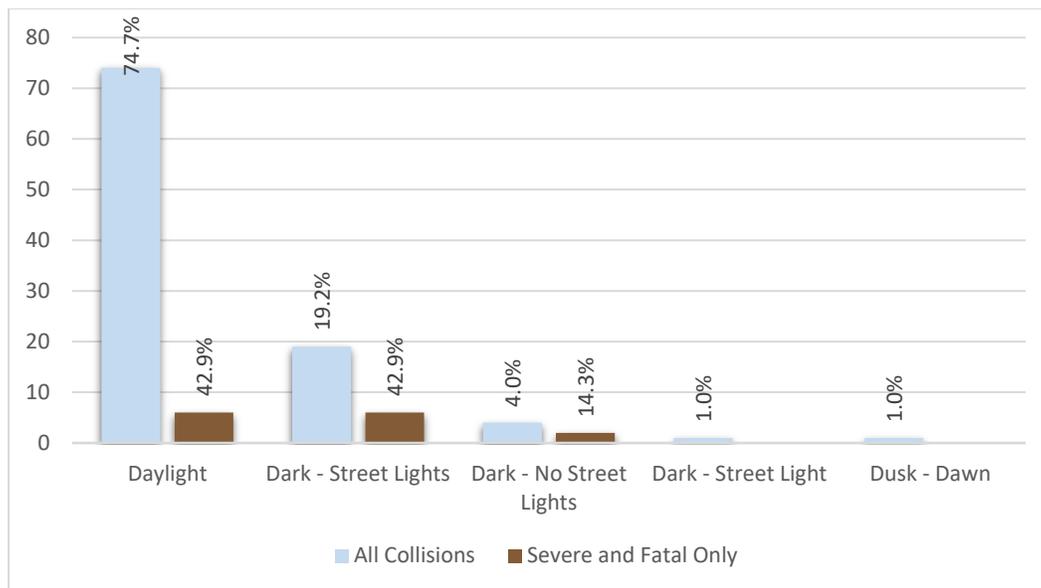
The following tables show lighting conditions and pedestrian and bicyclist-involved collisions. Lighting conditions can be due to weather conditions and time of day. As was evident in the previous section, pedestrian and bicyclist-involved severe and fatal collisions disproportionately occur in the evening and overnight periods.

Figure 2.8 examines pedestrian-involved collision occurring across different lighting conditions.

**Figure 2.8 - Pedestrian-Involved Collisions by Lighting Conditions**


As shown, severe and fatal outcomes in pedestrian-involved collisions disproportionately occur when it is dark. Nearly 80% of severe and fatal pedestrian-involved collisions happened outside of daylight conditions, despite daylight conditions being slightly more common for pedestrian-involved collisions overall (51%). About one-third of all severe and fatal pedestrian-involved collisions happened in locations without street lighting during darkness, which suggests there are limitations for improving pedestrian visibility with typical vehicular-oriented street lighting.

Figure 2.9 summarizes bicyclist-involved collisions during different lighting conditions.

**Figure 2.9 - Bicyclist-Involved Collisions by Lighting Conditions**


Like pedestrian-involved collisions, bicyclist-involved collisions with severe and fatal outcomes also occur disproportionately at dark times. About three-quarters of all bicyclist-involved collisions are during daylight conditions, but only 43% of collisions with severe and fatal outcomes happen during daylight.

## 3.0 Intersection and Segment Collision Frequency

This section details the highest collision frequency intersections and segments in Hemet by transportation mode for collisions occurring between January 2020 and December 2024. Collision frequencies and severities were then used to develop High Injury Networks (HIN), which are presented in Section 3.4.

### 3.1 Vehicular-Only Collisions

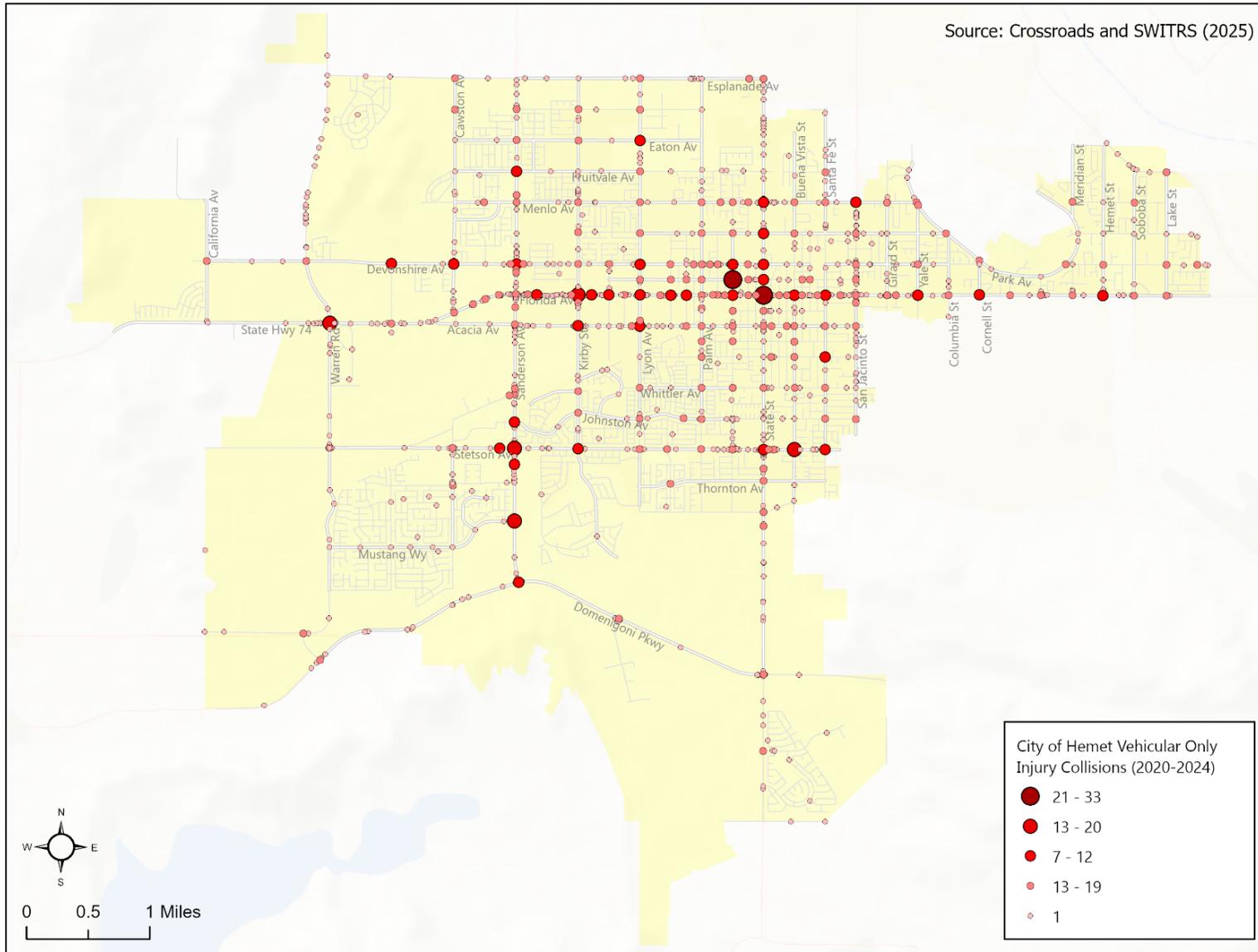
**Table 3.1** ranks the intersections in the City with the most vehicular-only collisions during the studied five-year period.

**Table 3.1 - Most Common Vehicular-Only Collisions Intersection Locations**

Rank	Location	Total Collisions	Severe and Fatal Collisions	Traffic Control	Intersection Size
1	N. Gilbert St & W. Latham Ave	33	0	Side-Street Stop	2x2
2	State St & Florida Ave	21	0	Signal	4x3
t3	Warren Rd & W. Florida Ave	19	2	Signal	4x4
t3	S. Buena Vista St & Stetson Ave	19	0	Signal	2x2
5	Kirby St & W. Florida Ave	15	0	Signal	4x4
6	S. Sanderson Ave & Mustang Wy	14	3	Signal	4x2
7	S. Sanderson Ave & W. Stetson Ave	13	0	Signal	4x4
8	N. Cornell St & E. Florida Ave	12	0	Side-Street Stop	4x2
9	Myers St & W. Devonshire Ave	11	2	Side-Street Stop	2x2
t10	Cawston Ave N & W. Devonshire Ave	11	2	Signal	3x2
t10	S. Hamilton Ave & W. Florida Ave	11	0	Side-Street Stop	4x2
t10	S. Sanderson Ave & Domenigoni Pkwy	11	0	Signal	4x4

All vehicular-only collisions in the City are mapped and symbolized by frequency in **Figure 3.1**.

**Figure 3.1 - City of Hemet Vehicular-Only Injury Collisions (2020-2024)**



The intersection of N. Gilbert Street and W. Latham Avenue had 33 collisions, by far the most citywide. The intersection is two-lane by two-lane, with side-street stop control placed on Gilbert Street. This is an unusual environment for it to be the intersection with most vehicular-only collisions in a city, when there are numerous larger, higher speed, higher traffic volume intersections in Hemet. This location as an outlier can be attributed to it being not ideal for side-street stop control. Latham Avenue is an east-west collector street with no traffic control for a half mile between Palm Avenue and State Street (a quarter mile in either direction from Gilbert Street). Conditions like these encourage faster speeds on Latham Avenue than its posted 30-mph speed limit. Gilbert Street, though not officially a collector, continuously traverses Hemet north to south in a manner like a collector street would (it is even signalized at Florida Avenue, one block to the south). There are no other nearby parallel streets providing this degree of connectivity. To motorists on Gilbert Street, it is not intuitive that Latham Avenue would also not stop at this intersection approach (the likely reason there is supplemental Cross Traffic Does Not Stop signage). Another major contributing issue is the poor sight distance of the cross-street traffic (at faster speeds and which do not stop) when approaching the stop from either direction on Gilbert Street. Providing validity to sight distance being a problem is that all but two of the collisions occurred during the day, when headlights would not normally be in use.

South Sanderson Avenue & Mustang Way had three severe and fatal collisions, more than any other intersection in Hemet. This signalized intersection is protected-permissive, meaning it allows permissive left-turns from all approaches during certain signal phases. Permissive left-turns enable left turns to be made outside of the exclusive left-turn phase, if the opposite direction is clear. This conflicting movement is allowed in certain environments to increase vehicular throughput where demand is high. When traffic speeds are faster this maneuver is more difficult to execute, as it is more likely a motorist can misjudge their window of opportunity with opposing traffic. Collision impacts and injuries are more severe when the speeds of the vehicles involved are faster. On Sanderson Avenue, posted speed limit is 45 mph and the 85<sup>th</sup> percentile speeds are 51 mph, which are very high for environments allowing permissive left-turn movements.

## 3.2 Pedestrian-Involved Collisions

**Table 3.2** (following page) lists the intersections in Hemet with the most pedestrian-involved collisions between 2020 and 2024. Lyon Avenue and W. Florida Avenue had five pedestrian-involved collisions, more than any intersection in Hemet. South Sanderson Avenue and W. Stetson Avenue had four collisions, and no other location had more than two. The top two locations are signal-controlled and adjacent to retail shopping centers, which experience a combination of high traffic and frequent pedestrian activity. Also noteworthy are that many shopping center driveways themselves ranked among the intersections in the City with multiple pedestrian-involved collisions.

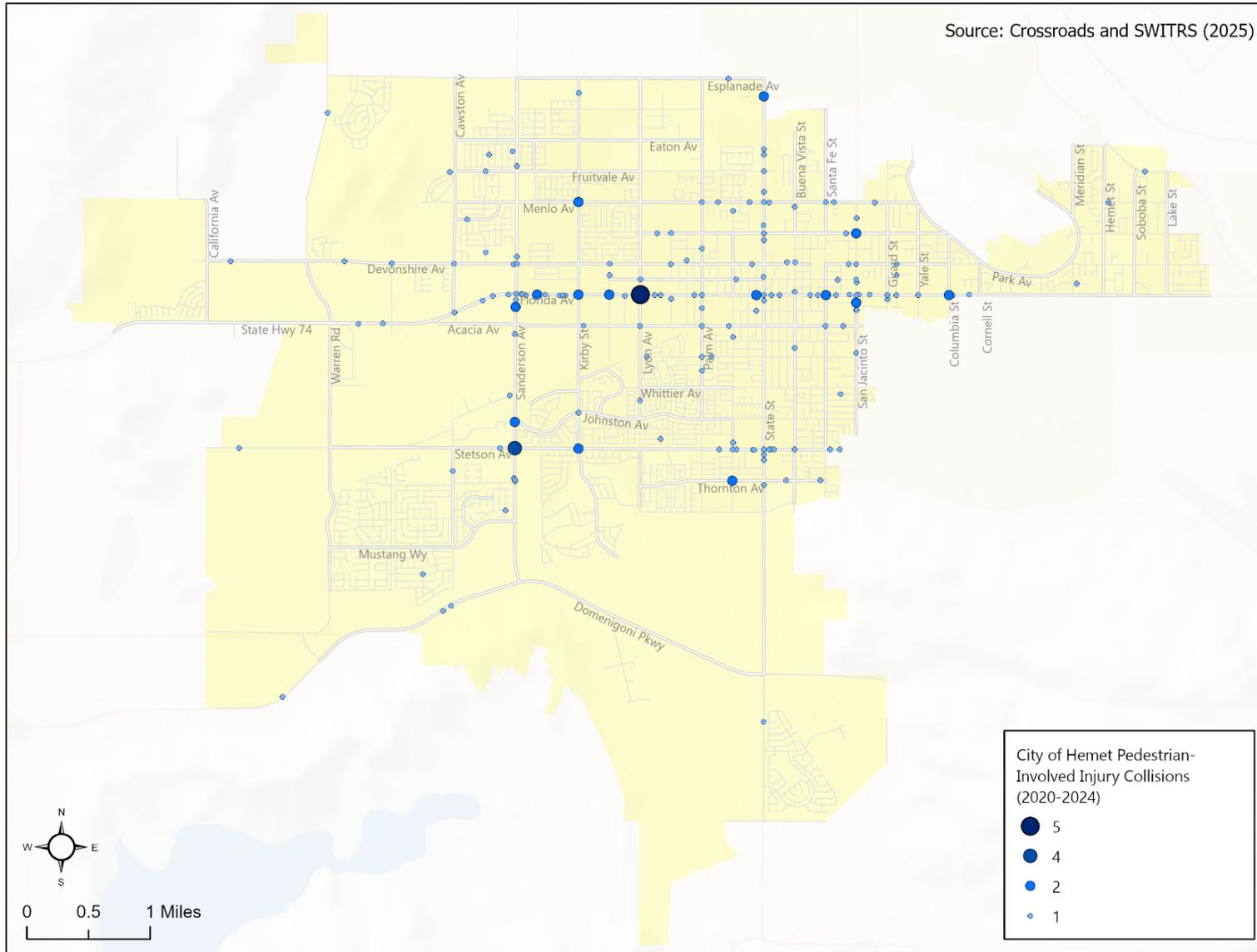
Multiple pedestrian-involved collisions at Lyon Avenue and W. Florida Avenue were motorist at-fault, with the driver attempting to turn right on a red light while violating the pedestrian's right-of-way during the crossing phase. Right-turn-on-red maneuvers are a significant hazard in places with a lot of pedestrian activity because the driver's attention is diverted from pedestrians during the crossing phase toward traffic on the cross-street as they are attempting to find gaps in traffic to complete their turn.

**Table 3.2 - Most Common Pedestrian-Involved Collision Intersection Locations**

Rank	Location	Total Collisions	Severe and Fatal Collisions	Traffic Control	Intersection Size
1	Lyon Ave & W. Florida Ave	5	0	Signal	4x2
2	S. Sanderson Ave & W. Stetson Ave	4	2	Signal	4x4
t3	900' east of Sanderson Ave & W. Florida Ave (Driveway)	2	0	Side-Street Stop	4x2
t3	Kirby St & W. Menlo Ave	2	0	All-Way Stop	4x2
t3	Kirby St & W. Florida Ave	2	2	Signal	4x4
t3	S. Gilbert St & W. Thornton Ave	2	0	Signal	4x4
t3	Inez St & W. Florida Ave	2	1	Side-Street Stop	4x2
t3	S. Santa Fe St & E. Florida Ave	2	0	Signal	4x2
t3	N. San Jacinto St & E. Oakland Ave	2	1	Signal	4x2
t3	S. San Jacinto St & E. Morton Pl	2	0	Side-Street Stop	2x2
t3	Columbia St & E. Florida Ave	2	1	Signal	4x2
t3	S. Sanderson Ave & Tanya Ave/W. Johnston Ave	2	0	Signal	4x2
t3	S. Kirby St/Seven Hills Dr & W. Stetson Ave	2	2	Signal	4x4
t3	Gilmore St & W. Florida Ave	2	0	Signal	4x2
t3	770' south of W. Esplanade Ave & S. State St (Driveway)	2	2	Signal	4x4
t3	S. Sanderson Ave & 540' south of W. Florida Ave (Driveway)	2	2	Side-Street Stop	4 x2

All pedestrian-involved collisions in Hemet are mapped and symbolized by frequency in **Figure 3.2**.

**Figure 3.2 - City of Hemet Pedestrian-Involved Injury Collisions (2020-2024)**



### 3.3 Bicyclist-Involved Collisions

**Table 3.3** lists the intersections in Hemet which had multiple bicyclist-involved collisions between 2020 and 2024.

**Table 3.3 - Most Common Bicyclist-Involved Collision Intersection Locations**

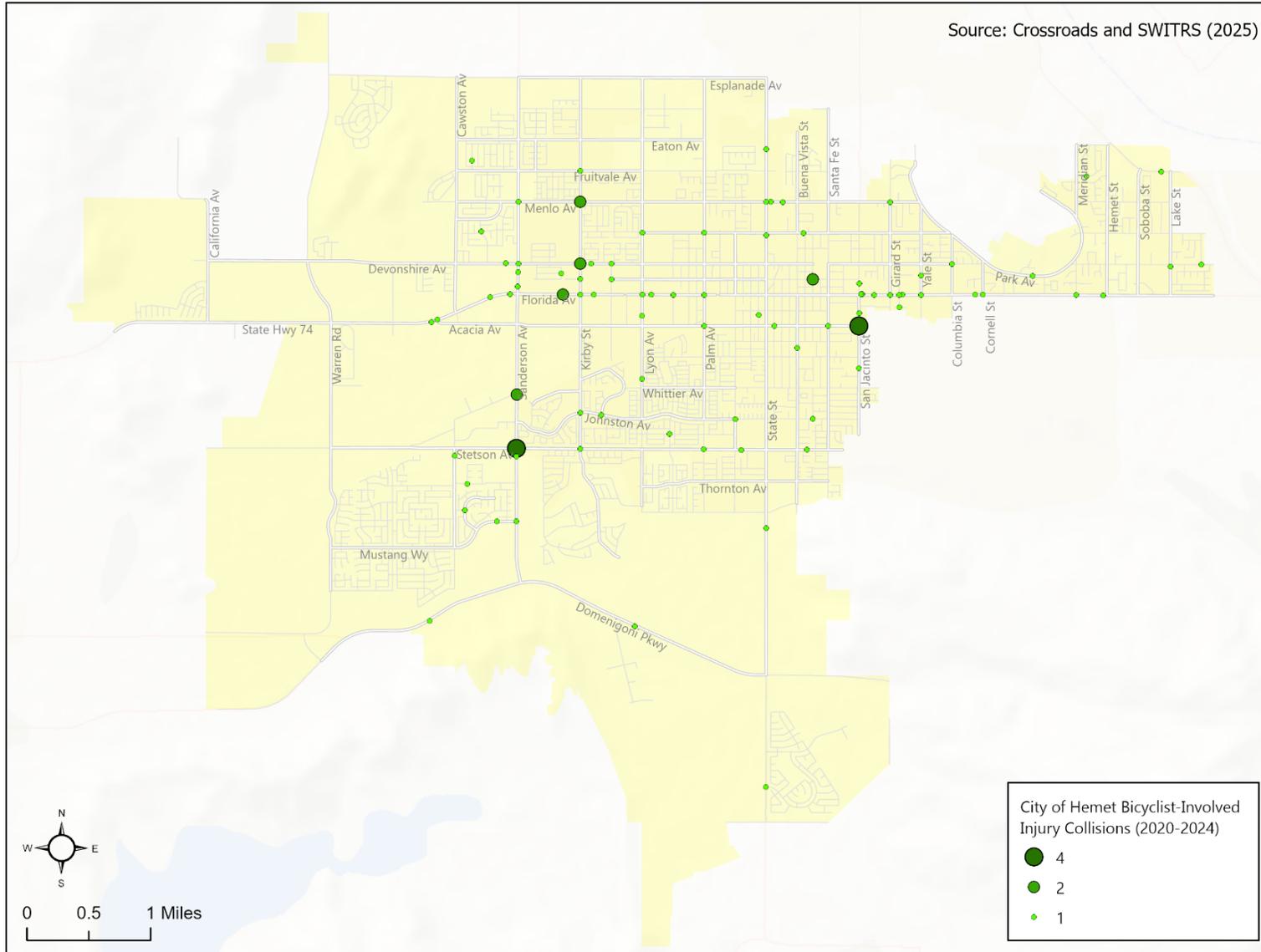
Rank	Location	Total Collisions	Severe and Fatal Collisions	Traffic Control	Intersection Size
t1	S. San Jacinto St & Acacia E. Ave	4	1	All-Way Stop	2x2
t1	S. Sanderson Ave & W. Stetson Ave	4	1	Signal	4x4
t3	760' west of Kirby St & W. Florida Ave (Driveway)	2	0	Side-Street Stop	4x2
t3	Kirby St & W. Menlo Ave	2	0	All-Way Stop	4x2
t3	Kirby St & W. Devonshire Ave	2	1	Side-Street Stop	4x2
t3	N. Thompson St & E. Latham Ave	2	0	Side-Street Stop	2x2
t3	S. Sanderson Ave & Wentworth Dr	2	1	Signal	4x2

There are two intersections which had four bicyclist-involved collisions during this period: S. San Jacinto Street & Acacia E. Avenue, and S. Sanderson Avenue & W Stetson Avenue. No other location had more than two bicyclist-involved collisions

Two of the four collisions at San Jacinto Street & Acacia Avenue were driver at-fault collisions, where the motorist did not yield to the bicyclist who had the right-of-way at an all-way stop intersection. At Sanderson Avenue and Stetson Avenue, bicyclists were at fault in all collisions, including two collisions which were instances of riding on the wrong side of the street.

**Figure 3.3** shows all bicyclist-involved collisions in Hemet between 2020 and 2024.

**Figure 3.3 - City of Hemet Bicyclist-Involved Injury Collisions (2020-2024)**



### 3.4 High Injury Network

Mode specific HINs were developed based on this study’s data replicating the one mile “sliding window” methodology popularized by Safe Streets Research, LLC. This technical approach has been applied by many other agencies in systemic safety studies for the development of their respective HINs.

#### High Injury Network Methodology

Separate, mode-specific HINs were developed with vehicular-only collisions, pedestrian-involved collisions, and bicycling-involved collisions. These three networks were then overlaid to make a Composite HIN.

This methodology weighs severe injury or fatal collision of any mode three points each. Collisions of the “other visible injury” severity (one category in magnitude lower than “severe injury”) were weighted a single point per instance only in the development of the pedestrian and bicycle-specific HINs. Other visible injury vehicular-only collisions were omitted from scoring for the vehicular HIN because of their high saturation (there were 587 vehicular-only collisions of this severity).

Roadway corridors were divided into 0.1-mile increments and sliding window measures of one-mile in length (represented by the “window” in the graphic diagram) along the corridor were generated to quantify the collisions captured within, with those points then attributed to the central increment within the window. This approach measured both intersection and midblock collisions.

To prevent measurement bias against increment locations near the City boundary, collision data up to one mile outside of the City was obtained from TIMS (one of the two original sources of collision data used in this study) for the exact same five-year period and, if the mode and severity met the points criteria, were included in the calculations.

A minimum point value was selected to identify HIN segments to identify the highest injury roadways. The network included additional segments which did not meet the minimum point values to refine the appearance of the networks where it made intuitive sense.

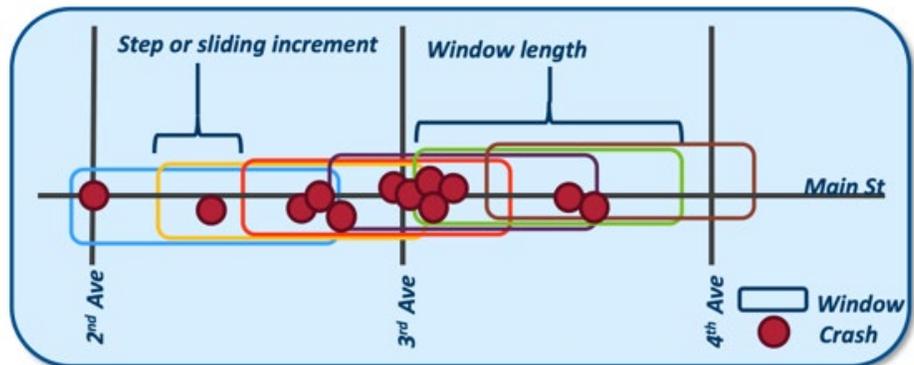


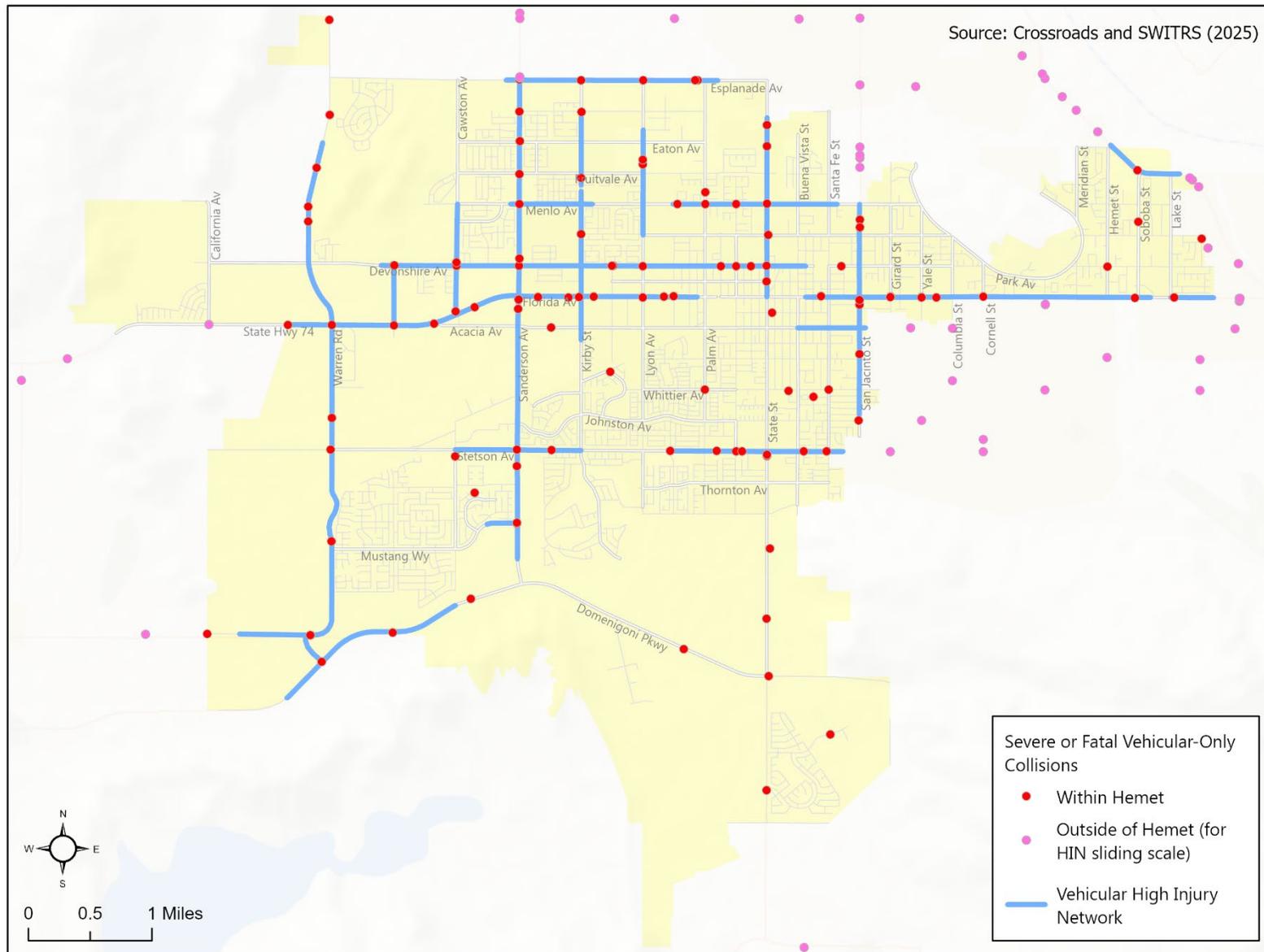
Diagram of sliding increment/window methodology used in development of the HIN.  
Source: Safe Streets Research and Consulting

### **High Injury Network Results**

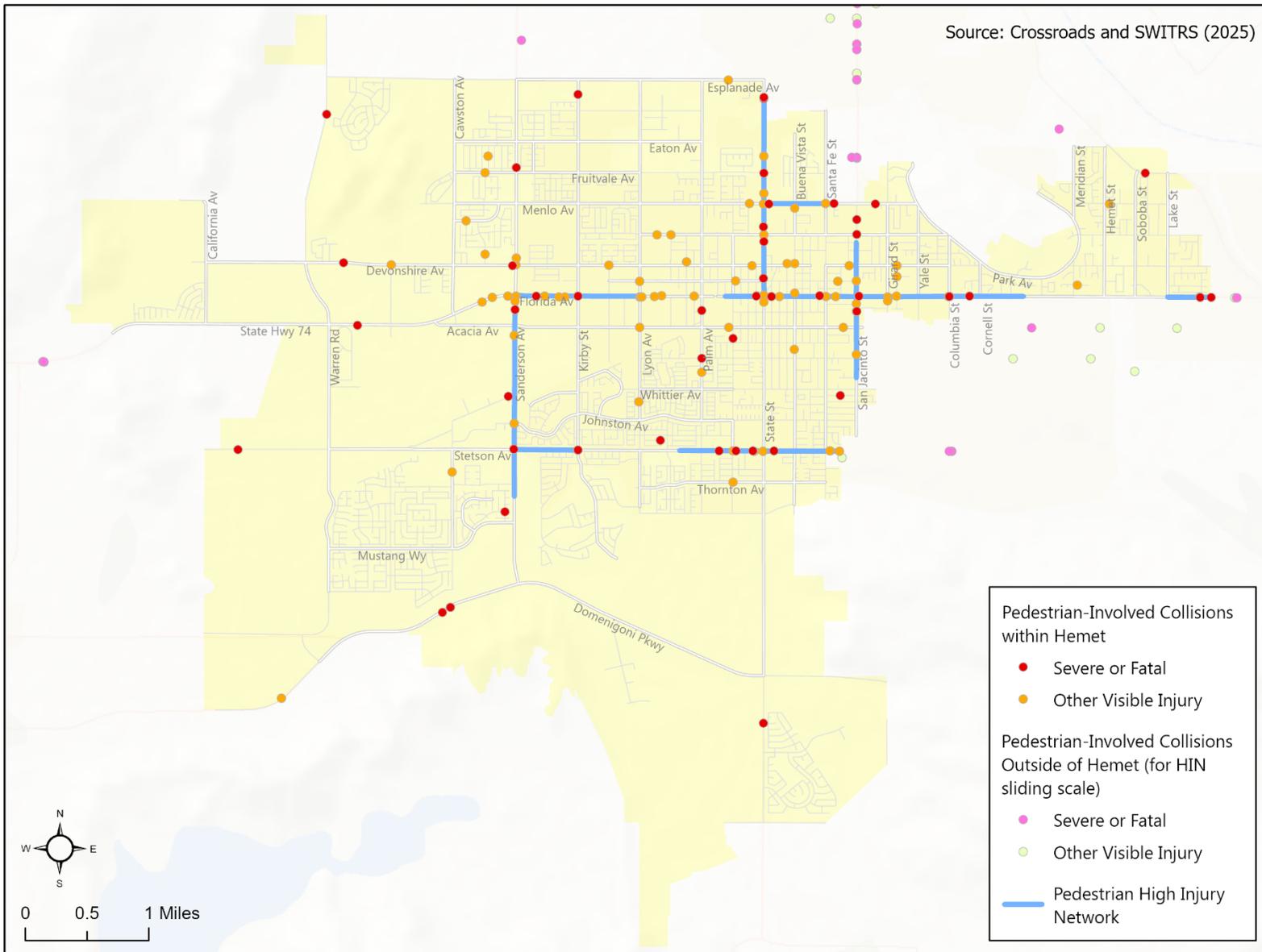
The HIN roads identified based on the criteria for vehicular-only collisions are shown in **Figure 3-4**. The minimum point value for this network was established at 9 points (the equivalent of three severe or fatal collisions within a one mile sliding window). This vehicular HIN consists of about 10% of the Hemet's approximately 280-plus miles of public roadways by centerline and encompasses almost three-quarters (73%) of the City's severe and fatal vehicular-only collisions.

The HIN roads identified based on the criteria for pedestrian-involved collisions are shown in **Figure 3-5**. The minimum point value for this network was established at 7 points (the equivalent of two severe or fatal collisions plus one visible injury collision within a one mile sliding window). Without a severe or fatal collision, reaching the identification threshold would take a minimum of seven visible injury collisions within a one mile sliding window. This network consists of about 4% of City roads and captures about 63% of the City's fatal and severe pedestrian-involved collisions.

**Figure 3.4 - Vehicular-Only Collisions High Injury Network**



**Figure 3.5 - Pedestrian-Involved Collisions High Injury Network**



The HIN roads identified based on the criteria for bicycling-involved collisions are shown in **Figure 3-6**. The minimum point value for this network was established at 4 points (the equivalent of one severe or fatal collision and one visible injury collision within a one mile sliding window). Without a severe or fatal collision, reaching the identification threshold would take four visible injury collisions within a one mile sliding window. This network consists of about 5% of City roads and captures 79% of the City’s fatal or severe bicycling-involved collisions.

The Composite HIN, which is a refined overlay of the three mode-specific HINs is shown in **Figure 3-7**. The mileage of the HINs and percent of severe and fatal collisions by mode category covered by mode-specific HINs and the Composite HIN is summarized in **Table 3.4**.

**Table 3.4 - High Injury Network Mileage and Severe/Fatal Collision Coverage**

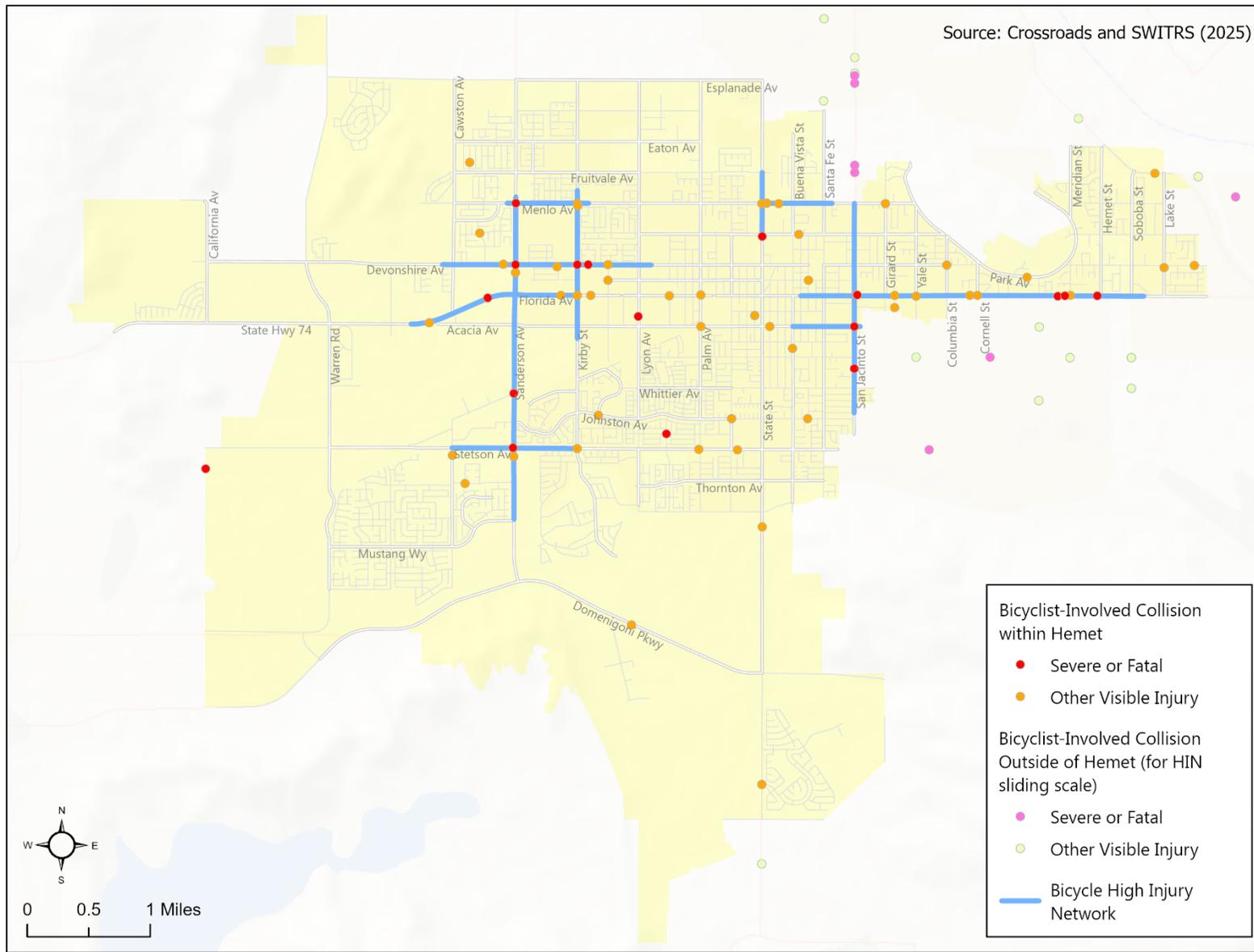
High Injury Network	Miles (%) of City Roadways	Percent of Severe and Fatal Collisions by Mode Captured	
		Mode-specific HIN	Composite HIN
Vehicular-Only	28.0 (10%)	73%	78%
Pedestrian-Involved	12.2 (4%)	63%	82%
Bicyclist-Involved	15.3 (5%)	79%	86%
Composite (All Modes)	38.1* (13%)	n/a	80%

*\*Mode-specific HINs overlap, so total mileage is not sum*

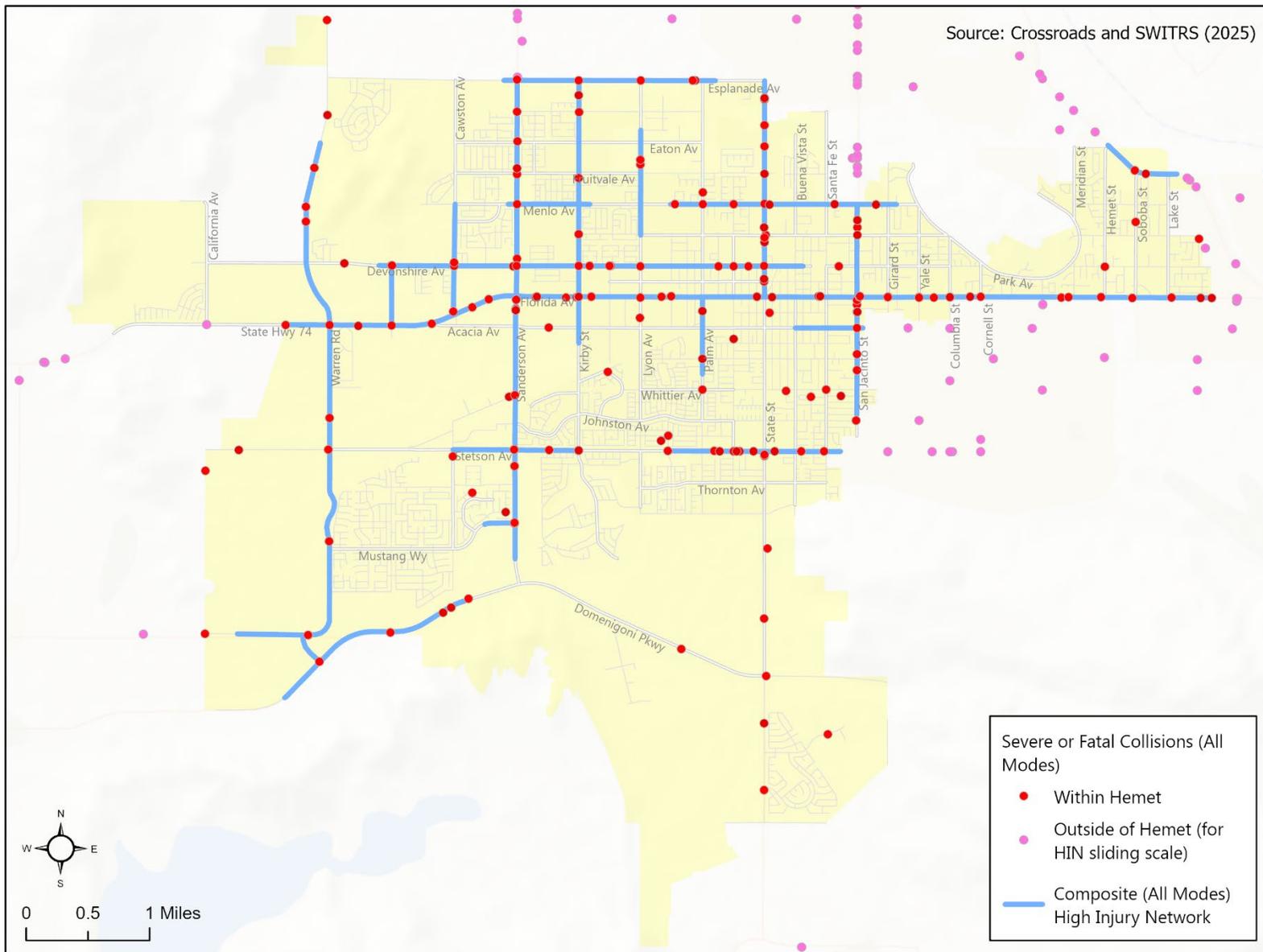
The size of the Composite HIN overall is about 38-miles, covering about 13% of all public roadways in the City. The three mode-specific HINs overlap in many locations, so the total HIN mileage does not equal the sum of the three constituent networks.

The Composite HIN covers 80% of fatal and severe collisions involving any of the three modes. The Composite HIN (which includes more than the vehicular-only HIN) increases the percent coverage of vehicular-only severe and fatal collisions to 78% (from 73% originally). It also increases the percentage of pedestrian-involved severe and fatal collisions covered from 63% to 82%, and bicyclist-involved severe and fatal collisions from 79% to 86%. This Composite HIN sufficiently identified locations around the Hemet with a well-documented injury collision history.

**Figure 3.6 - Bicyclist-Involved Collisions High Injury Network**



**Figure 3.7 - Composite (All Modes) High Injury Network**



## 4.0 Systemic/High Risk Road Environment Features

To assess what types of collisions and features of the roadway occur disproportionately in Hemet, collision types, violation causes, and roadway environments were examined systemically using multiple variables and pivot tables. This approach was used to identify potential risk locations where no collision had occurred during the 5-year analysis period but nevertheless present an elevated likelihood of injury due to their characteristics. This proactive analytical approach can be used in later stages of the CSAP to identify recommendations to help prevent future collisions. It complements the previous section's HIN's methodology, which reactively identifies the need for countermeasures in locations with significant recent collision history.

### **Systemic/High Risk Road Environmental Methodology**

Infrastructure characteristics were collected along the City's publicly maintained roadways and at intersections interfacing with at least one publicly maintained roadway. To identify environments with disproportionately high risk, infrastructure characteristics were gathered Citywide, including on roads and intersections with no recent collision history.

The characteristics used to classify intersections included the type of traffic control and intersection size. Possible types of traffic control at intersections included signals, all-way stops, side street stops, roundabouts, and unsigned/uncontrolled locations. Intersection size was operationalized by the number of through travel lanes (combined directions for each cross street) as roadways approach toward the intersection footprint. If a new travel lane emerged at the departure point of the intersection, it was not counted in the categorization of the intersection's size. Left-turn and right-turn lanes were also not included in this categorization. Numerous categories can often dilute the density of data points, so it is generally preferred to have fewer consolidated, yet sensible permutations to ensure each is adequately represented with collision data. To account for locations where roadway modifications have taken place in the preceding five years, collision records were attributed to accurately reflect intersection size and traffic control at the time of the collisions by referencing historical aerial images.

For roadway segments, the characteristics gathered included "through" travel lanes (does not include two-way center-left turn lanes or sections with turn pockets) and posted speed limits. This data was supplied from the City's Local Roadway Safety Plan and verified for accuracy prior to analysis. To account for locations where roadway modifications have taken place in the preceding five years, collision records were attributed to accurately reflect roadway size and posted speed limit at the time of the collisions by referencing historical aerial and street view images.

After collecting the characteristics, pivot tables were generated to cross-analyze the three most common vehicular-only collision types, along with all pedestrian-involved and bicycling-involved collisions. The collision frequencies are depicted, broken down by the three most common California Vehicle Code violation categories attributable to those collisions and the two infrastructure variables.

## 4.1 High Injury Risk Environments for Intersection Collisions

Figure 4.1 presents the systemic characteristics matrix for collisions at intersections. The three most common types of vehicular-only collisions (broadside, rear-ends, and head-ons), and pedestrian-involved collisions and bicyclist-involved collisions are shown by their most common violation causes. The frequencies of these collision types and violation causes are distributed by intersection environment, using traffic control and intersection size as the classification variables.

There were 1,255 collisions by any mode occurring at intersection defined locations. The estimated total of Hemet intersections with at least one publicly maintained roadway is 1,729. The bottom rows in the matrix indicate the number of intersections in the City of each environment, and a rate per intersection calculated when the total collision frequency is divided by the number of intersections.

Figure 4.1 - Systemic Characteristics Matrix for Intersection Collisions

Traffic Control Type	Signal					All-Way Stop					Side-Street Stop					Unsigned / Unmarked			Roundabout	Total
	2x2	3x2	4x2	4x3	4x4	2x2	3x2	4x2	4x3	4x4	2x2	3x2	3x3	4x2	5x2	2x2	3x2	4x2		
<b>Geometric Size (Number of Lanes x Number of Lanes)</b>																				
<b>Broadside</b>																				
21453(a) - Failure to Stop at Red Light	17	1	75	12	34	1								3						143
21802(a) - Failure to Stop at Stop Sign			1			10					106	3		18						138
21801(a) - Failure to Yield When Making Left-Turn or U-Turn	7	3	22	2	3	1					22	1		42		2		2		107
Other	3	4	27	4	14	84	1	11			78	1	1	35		4		3		270
Not Stated	2	2	12	1	5	4		1			5			4						36
<b>Rear-End</b>																				
22350 - Unsafe Speed	8		54	5	15	11					24	1		17	1		1	4		143
21703 - Following Too Closely	1	1	8	1		4					2									17
22107 - Unsafe Turn			2		1	1					2			1		1		1		9
Other	2		7	1	1	2					2			5		1				21
Not Stated														1						1
<b>Vehicle - Pedestrian</b>																				
21950(a) - Failure to Yield to Pedestrian in Crosswalk	1	1	17	1		7		3			8			3		1				42
21954(a) - Pedestrian Failure to Yield to Motorist	1		1	1	2						8			7				2		22
21461 - Driver Failure to Obey Signal or Sign	1		3		3															7
Other			6	1	4	1					7			1		1		1		22
Not Stated			1		1						2			2						6
<b>Head-On</b>																				
21801(a) - Failure to Yield When Making Left-Turn or U-Turn	2	3	5	4	3						3	1		9						30
22107 - Unsafe Turn	1		3		1	1					4			1						11
21453(a) - Failure to Stop at Signal	1		3		2															6
Other		1	4	1	1	5					8			4						24
Not Stated			2		1									1		1				5
<b>Vehicle - Bicycle</b>																				
21650.1 - Bicyclist Riding on Wrong Side of Road			3		2	1		1			2			5				2		16
22107 - Unsafe Turn					1						5			2						8
22450 - Failure to Stop at Limit Line						4					1			1						6
Other			8		3	5	1	3			6			2		1				29
Not Stated					1	2					1			1						5
<b>Hit Object</b>																				
Other		1	14	1	2	4					25	2		8		6		3		66
<b>Sideswipe</b>																				
Other	3		12	1	4	2					12			10		2	1	1	1	49
<b>Overturned</b>																				
Other			2		1						4			2						9
<b>Other</b>																				
Other		1							1	2				2						6
<b>Unknown</b>																				
Other						1														1
<b>Total Collisions</b>																				
	50	18	292	36	105	151	2	21	0	1	339	9	1	187	1	20	2	19	1	1,255
<b>Number of Intersections in City</b>																				
	13	4	46	6	10	80	1	9	1	1	1,125	13	1	105	1	285	4	21	3	1,729
<b>Collisions per Intersection by Type</b>																				
	3.8	4.5	6.3	6.0	10.5	1.9	-	2.3	-	-	0.3	0.7	-	1.8	-	0.1	0.5	0.9	0.3	0.7

Source: CR Associates

As reported in Section 2, broadside crashes were by far the most frequent collision type. Broadside collisions occurred most often because of red-light signal (CA Vehicle Code 21453(a)) and stop sign (CA Vehicle Code 21802(a)) violations.

Two-by-two side-street stop intersections were the most frequent environment for broadside collisions (106 total). However, when normalizing the collision frequency by the number of intersections of that environment in the City, there were more collisions per location at other environments (signals of any size, and four-by-side stop intersections – both all-way and side-street stop locations of that size). Rear-end collisions, the second most common collision type, was primarily attributed to speeding violations (CA Vehicle Code 22350). Rear-ends were notably common at four-by-two signalized intersections.

Vehicle-pedestrian collisions were most common at signalized intersections, especially four-by-two intersections. There were about twice as many instances of a motorists’ failure to yield to the pedestrian crossing in the crosswalk with the right of way (CA Vehicle Code 21950(a)), then the inverse of a pedestrian’s failure to yield to a motorist with the right of way (CA Vehicle 21954(a)).

The intersection environments with the most collisions by rate are summarized in **Table 4.1**. As shown, signalized intersections of any size all have rates well above the Citywide average. Collisions at all-way-stop four-by-two intersections, the unsignalized environment with the highest rate, occur at a rate three times higher than the Citywide average.

**Table 4.1 - Rate of Intersection Collisions by Intersection Type**

Intersection Environment	Collisions	Number of Intersections	Collisions per Intersection
4x4 (Signalized)	105	10	10.5
4x2 (Signalized)	292	46	6.3
4x3 (Signalized)	36	6	6.0
3x2 (Signalized)	18	4	4.5
2x2 (Signalized)	50	13	3.8
4x2 (All-Way Stop)	21	9	2.3
All other types	733	1,641	0.4
Citywide	1,255	1,729	0.7

## 4.2 High Injury Risk Environments for Midblock Collisions

**Figure 4.2** presents the systemic characteristics matrix for collisions at midblock locations. The three most common types of vehicular-only collisions (rear-end, broadside and hit object), plus pedestrian-involved collisions and bicyclist-involved collisions are shown by their most common violation causes. The frequencies of these collision types and violation causes are distributed by roadway size and speed, using number of through lanes and posted speed limit as the classification variables.

There were 705 collisions by any mode occurring at midblock defined locations occurring along 280 miles of publicly maintained roadway. The bottom rows in the matrix indicate the mileage of each environment in the City and a collision per mile rate per environment.

**Figure 4.2 - Systemic Characteristics Matrix for Midblock Collisions**

Number of Through Lanes	2-Lane						3-Lane						4-Lane						s/Lane	Total	
	≤25	30	35	40	45	≥50	≤25	30	35	40	45	≥50	≤25	30	35	40	45	≥50			45
<b>Rear-End</b>																					
22350 - Unsafe Speed	6	15	13	8		13		1		2			1	11	45	18	35	19			
22107 - Unsafe Turn	6	10	3	2		1								1	2	1	4	2			
21703 - Following Too Closely	2	1	1			1			1		1				3	1		1			
Other	5	2	2									1		1	6	1	4	1			
Not Stated	1														5						
<b>Broadside</b>																					
21804(a) - Did not Yield When Entering Roadway	3	6	4	1										3	12	7	3				
22107 - Unsafe Turn	2	6	2	2		1		1				1		1	2			1			
21801(a) - Failure to Yield When Making Left-Turn or U-Turn	1	3	3											2	2	3	3				
Other	3	2	2			1								3	1	2	3				
Not Stated	1		1											4		1					
<b>Vehicle/Pedestrian</b>																					
21954(a) - Pedestrian Failure to Yield to Motorist	7	10	7	2	2	1		1						2	12	9	2	2			
21955 - Pedestrian Not Crossing at Intersection														1	1	1		1			
22107 - Unsafe Turn	1		1												1	1					
Other	3	3	1			1								2	2	1					
Not Stated	2	1	1											1	3	1	6				
<b>Hit Object</b>																					
22107 - Unsafe Turn	6	6	4	5		3		1			1			8	5	7	3				
22350 - Unsafe Speed	3		1	2		1			1				1		2	1	1	1			
23152(a) - Driving Under the Influence	2													1							
Other	1			1											1		1				
Not Stated	1	3		2										8	2						
<b>Vehicle/Bicyclist</b>																					
21650.1 - Bicyclist Riding on Wrong Side of Road		1	1											1	4	2					
21804(a) - Did not Yield When Entering Roadway	2	2	1												1						
22107 - Unsafe Turn		1	1	1	1										1			1			
Other	1		2												1	2	1	2			
Not Stated														2			2				
<b>Sideswipe</b>	7	5	5	1	1	4						1		3	10	3	8	8	1		
<b>Head-On</b>	5	7	9	4		4		1							2	2	2	3			
<b>Overtaken</b>	5		1	4		8									4		3	7			
<b>Other</b>		1	1			1												2			
<b>Total Collisions</b>	76	85	67	35	4	40	0	5	0	4	1	4	2	28	146	63	87	57	1	705	
<b>Mileage of Roadway in City</b>	183.8	19.0	17.9	11.0	4.9	7.7	0.2	0.4	0.7	1.0	0.6	0.5	2.9	1.0	7.9	4.4	6.4	9.8	0.2	280.3	
<b>Collisions per Mile</b>	0.4	4.5	3.7	3.2	0.8	5.2	-	-	0.0	4.0	1.7	-	0.7	28.0	18.5	14.3	13.6	5.8	-	2.5	

Source: CR Associates

As shown, the most common midblock collision type is rear-end collisions. Rear-ends occurred mostly along four-lane, higher posted speed limit roadways (35 mph and 45 mph being the most frequent environment). Most were attributed to the at-fault motorist driving at unsafe speeds (CA Vehicle Code 22350). Where speed surveys have been previously conducted within Hemet along 35 to 45 mph roadways, 85<sup>th</sup> percentile observed speeds were typically higher than posted speed limits by about 5 to 10 miles per hour.

Broadside collisions are the second most common collision type, and the most common violation resulting in these collisions was a result of the at-fault motorist who did not yield when entering roadways (CA Violation Code 21804(a)). This violation occurred most often on four-lane roadways with posted speeds at 30 mph and above.

Pedestrian failure to yield to the motorist with right-of-way was the most frequent violation (CA Vehicle Code 21954(a)) in pedestrian-involved collisions at midblock locations. This violation led to collisions most often on roadways with posted speed limits 30 mph or greater, with about half the instances occurring on four-lane roadways and half occurring on two-lane roadways.

The most common roadway types and citywide average for collisions are summarized in **Table 4.2**. As shown, the highest collision rates occur along roadway environments that are at least 30 mph and have four or more lanes. The only two-lane environment with above average collision rates is two-lane roadways with a posted speed limit of 50 mph or more.

**Table 4.2 - Rate (per Mile) of Midblcock Collisions by Roadway Type**

Roadway Environment	Collisions	Roadway Mileage	Collisions per Mile
4-lane/30 mph	28	1.0	28.0
4-lane/35 mph	146	7.9	18.5
4-lane/40 mph	63	4.4	14.3
4-lane/45 mph	87	6.4	13.6
4-lane/≥50 mph	57	9.8	5.8
2-lane/≥50 mph	40	7.7	5.2
All other types	284	243.1	1.2
Citywide	705	280.3	2.5

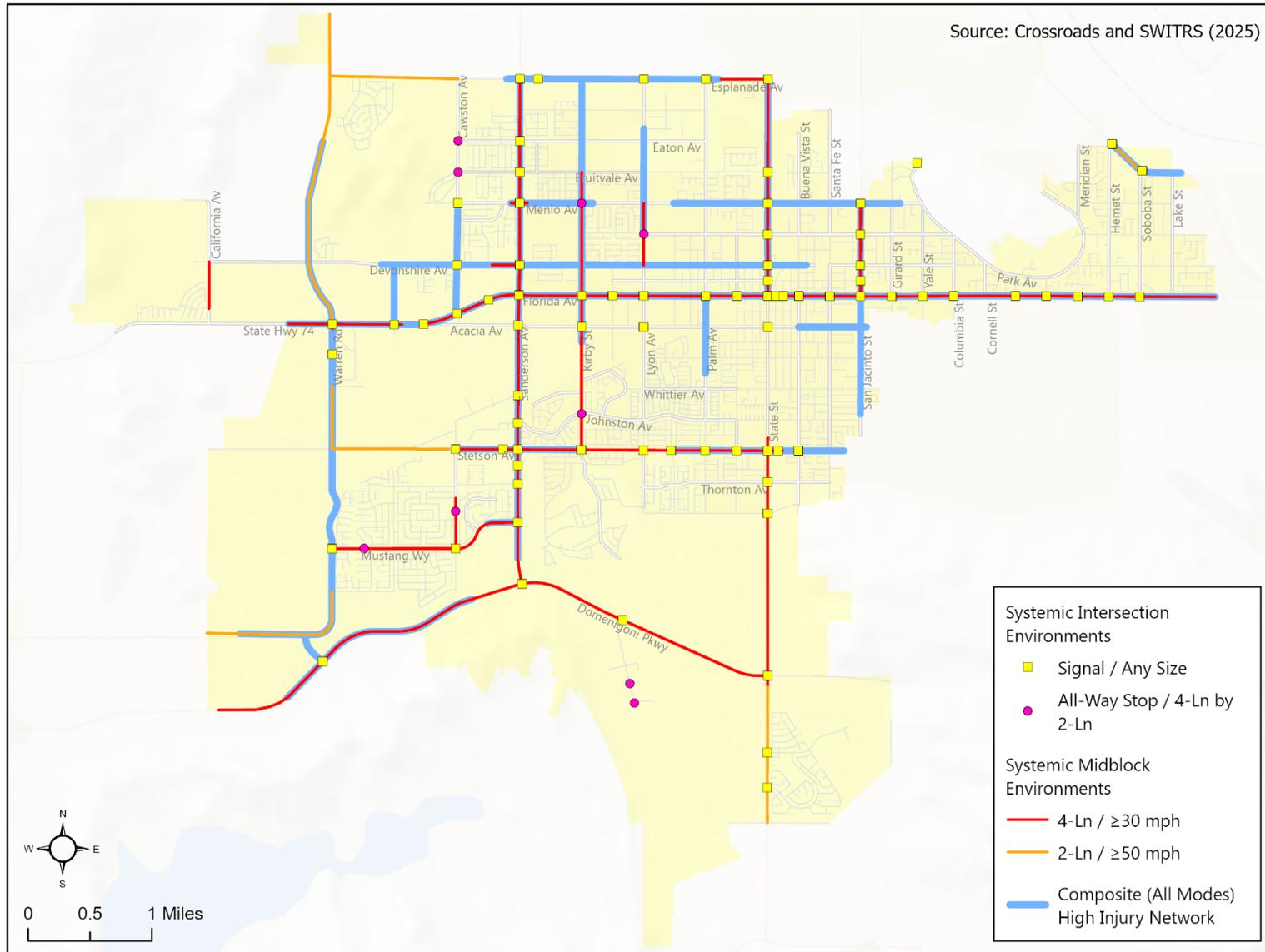
### 4.3 High Injury Risk Environments and the High Injury Network

**Figure 4.3** shows the intersection and midblock infrastructure hotspot environments overlaid on the Composite HIN. The former are associated with high safety risk based on a systemic analysis, while the latter is based on injury collision history. In tandem, these two coverages represent a Safe System Approach that simultaneously identifies where countermeasures are needed to treat the causes of past collision history and where to anticipate potential causes of future collisions.

The high-risk environments include four lane roadways with posted speed limits 30 mph or greater, and two-lane roadways with posted speed limits 50 mph or greater. High risk intersection environments include signalized intersections of any size and four-lane by two-lane all-way stop controlled intersections.

As shown, the Composite HIN and the high injury risk roadway environments mostly overlap. The main differences captured in the latter are evident in the rural parts of Hemet – along State Street south of Thornton Avenue, Esplanade Avenue (west of Cawston Avenue) and Domenigoni Parkway. These roadways have characteristics associated with high safety risk, though they did not have same concentrated degree of injury collision history as the segments identified HIN.

**Figure 4.3 - High Risk Environments and the High Injury Network**



## 5.0 Next Steps

The results of this report, which include the collision descriptive statistics, intersection and segment collision frequency, systemic/high risk road environments, and the High Injury Network will be presented for feedback to a Safety Task Force selected to participate in this project and at the first public workshop being held in the City.

Findings from the Safety Analysis Report, which include the HINs discussed in Section 3.0 and the systemic/high road environment features discussed in Section 4.0 will inform countermeasure identification and eventually prioritization of projects.

Other components of the CSAP, evaluation of Equity Considerations and assessment of the City's current transportation policies are occurring in parallel to this frame. The findings and data from this report will serve as the baseline for crash reduction "goal setting" and eventual progress monitoring.

