MEMORANDUM

To: **City of Santa Monica**

From: **Nelson\Nygaard**

Date: **February 27, 2025**

Subject: **Santa Monica Boulevard Safety and Transit Analysis FINAL DRAFT**

This memo provides an analysis of crashes and transit operations along Santa Monica Boulevard between Ocean Avenue and Centinela Avenue as part of the Santa Monica Boulevard Safety Enhancement Study. The corridor was identified as part of the city's priority network to improve roadway safety due to high number of crashes, including crashes involved with active modes and crashes that occur after dark. This analysis focuses on vehicle speeds, transit operations, reported crash history and activity. It builds on the information documented in the walk audit conducted with participants from various city departments on November 21, 2024.

EXECUTIVE SUMMARY

This section illuminates some of the notable findings of the analyses and offers some key challenges and opportunities for improvement along the Santa Monica Boulevard corridor.[1]

Key Findings

- Prioritize safety improvements at locations with the highest crash severity. The top three locations with the highest crash severity are listed below. Table 10 lists the top 15 intersections.
  - Santa Monica Boulevard and 14th Street
  - Santa Monica Boulevard and 16th Street
  - Santa Monica Boulevard and Lincoln Boulevard
- 83% of all crashes occur at intersections, with the remaining 17% occurring midblock. Midblock crashes have a higher share of Property Damage Only (PDO) crashes (22%). Safety improvements should focus on reducing crashes and crash severity at intersections.

[1] For this analysis, a crash was classified as intersection-related if its recorded location (latitude and longitude) was within 50 feet of the intersection of two crossing street centerlines. Crashes occurring beyond 50 feet from any of these intersections were categorized as midblock crashes.

- Bicycle and scooter crashes are overrepresented in serious injury crashes (55%) compared to all crashes (20%), and therefore safety improvements should support these users, including educational efforts to address high risk scooter and bike behaviors.
- Injury crashes occur more at unsignalized and signalized intersections compared to midblock locations. Safety improvements approaching intersections should be prioritized over midblock corridor changes.
- Failure to yield and speeding are the top two primary collision factors that result in injury crashes at intersections. Speeding and improper turning are the top collision factors at midblock locations. Improvements shall address these crash factors.
- Many pedestrian crashes occur when a pedestrian is crossing at an intersection while a motor vehicle is making a left turn, at both signalized and unsignalized intersections. Consider ways to reduce conflicting movements. Examples include restricting left turns at intersections where this diversion would result in limited out of direction travel, elimination of permissive left turn signal phases at signalized intersections, or slowing turning speeds via centerline hardening or other methods.
- Excessive distance between intersections with marked crosswalks can cause significant out of direction or crossings at locations without them. Consider increasing the frequency of marked crosswalks, with the appropriate supplements, along Santa Monica Boulevard.
- Seniors aged 66-75 and 76+ make up 23% of all pedestrians involved in injury crashes, a higher proportion than the 19% these two age groups represent in Santa Monica total population. Interventions can be focused where older adults live, and result in slower speeds, to reduce the severity of crashes when they do happen.
- Crashes occur most frequently at signalized intersections, and injury severity is highest at unsignalized intersections; therefore, interventions at unsignalized intersections should be a priority.
- Consider increasing the frequency of tree maintenance to improve visibility of traffic control devices and efficacy of safety lighting at crosswalks.
- Pedestrian-involved injury crashes occurring at night (including those under street lighting) account for 22% of all pedestrian-related injury crashes. Consider increasing pedestrian scale and street safety lighting for better night-time visibility and safety.

In addition to the safety findings, there may also be opportunities to improve the transit experience along the corridor based on the following observations:

- Buses travel at low speeds, averaging between 10 to 15 mph during morning (7 am to 10 am) and afternoon (4 pm to 7 pm) peak periods likely due to congestion during

peak commute times. Improvements to the Santa Monica Boulevard corridor could consider measures that improve bus speed and reliability.

- The bus stop pairs at intersections with the highest ridership —each averaging over 200 daily boardings and alightings—are listed below. These stops are primarily served by Santa Monica Big Blue Bus Route 1 and LA Metro Route 4. Improvements should consider the pedestrian experience of riders, especially at high activity stops where transfers require crossing Santa Monica Boulevard, and ample waiting space for riders is needed.
  - 3rd Street Promenade
  - 4th Street
  - 6th Street
  - Lincoln Boulevard
  - 20th Street
  - 26th Street

ORGANIZATION OF THIS MEMO

This memo summarizes the following:

1. **Document Review** of relevant planning studies preceding this work
2. Description of the **Roadway Characteristics** along the corridor
3. **Transit Operations** – Analysis of transit speeds, service delays, and ridership for routes running along the corridor
4. **Crash analysis** – When, where, and why are crashes occurring
5. **Synthesis** of key findings from the analysis
6. Top 15 **Ranked Intersections** by weighted severity of reported crashes

1 DOCUMENT REVIEW

Santa Monica Boulevard is a key corridor with a demonstrated history of crashes. The City of Santa Monica is focused on improving safety, accessibility, and the overall travel experience for community members. This section provides a high-level summary of past planning efforts related to Santa Monica Boulevard.

Local Safety Roadway Plan (2022)

Overview

The *Local Safety Roadway Plan (LSRP)* analyzed citywide crash data from 2015 to 2019 to identify corridors and intersections with the highest number of crashes. The LSRP builds on the Vision Zero Program to eliminate serious injuries and fatalities.

Santa Monica Boulevard was identified as part of the priority network which is defined as streets that experience the top 50% of crashes. Key intersections along Santa Monica Boulevard with notable crash histories that were identified in the LRSP include:

- Intersections with the most crashes
  - 6th Street
  - 15th Street
  - 16th Street
  - 18th Street
- Intersections with the most crashes involving active modes (i.e., people walking, people on bikes, and people on scooters):
  - 6th Street
  - 15th Street
  - 18th Street
  - 20th Street
  - 26th Street
- Intersections with the most crashes occurring after dark:
  - 6th Street
  - 16th Street

Recommendations

The *LSRP* recommended four emphasis areas with a set of strategies to address high crash volumes, including crashes with active modes and crashes occurring after dark. These emphasis areas are applicable to Santa Monica Boulevard.

- Emphasis Area #1: Pedestrians crossing at intersections
  - Implement traffic calming measures in and around high pedestrian crash intersections.
  - Enhance lighting in and around intersections.
- Emphasis Area #2: Crashes involving people bicycling and scootering
  - Complete the planned five-year protected bicycle network on Santa Monica Boulevard as defined in the City's Bike Action Plan Amendment (2020). Implement intersection treatments at 2nd Street, 6th Street, 11th Street, 14th Street, 20th Street, 26th Street, and Yale Street.
  - Implement safety measures to address crashes that involve people who bike and scooter.
  - Implement safety strategies that manage vehicular speeds in and around intersections.
  - Add protected left turn signals at intersections with persistent left-turn-related bicycle and shared mobility involved crashes.
- Emphasis Area #3: Priority Network
  - Accelerate ongoing traffic safety projects within the priority network.
  - Work with City departments, including Police and Fire, to address safety issues on the Priority Network through education and emergency response efforts.
  - Seek funding to conduct comprehensive safety evaluations on roadway segments identified as part of the priority network.
- Emphasis Area #4: Speed Management
  - Develop a toolkit of safety countermeasures that reduce vehicular speeds.
  - Ensure speed limits are set appropriately and consistent with recent legislation (Assembly Bill No. 43).

Vision Zero Plan (2017)

Overview

The *Vision Zero Plan* identified near-term efforts to reduce fatal and severe injury crashes to zero by 2026. An analysis of the 11-year crash history from 2006 to 2016 identified high priority locations with high concentrations of crashes, including the Santa Monica Boulevard at Cloverfield Boulevard intersection.

Recommendations

The following five key areas along with a set of programs were identified as efforts to reduce fatal and serious injuries. These areas should be considered in recommending countermeasures to increase safety on Santa Monica Boulevard.

- **Data-driven decision-making:** Develop a precise, data-drive decision-making system to identify locations of highest need and evaluate collision reports to assess the most effective safety countermeasures.
  - Programs include obtaining all crash data, evaluating emergency response times, and mitigating speeds.
- **Safer streets for all ages and abilities:** Design and enforce street operations so that drivers travel at appropriate speeds where people are walking and biking. Build a network of neighborhood greenways, low-stress routes that parallel busier corridors, and connect to parks, schools, jobs, and services. Conduct regular enforcement operations targeting speeding and distracted driving.
  - Programs include establishing a rapid deployment team, mitigating speeds, building the biking and pedestrian networks, identifying locations for street lighting, and implementing safe routes for schools, senior centers, hospitals, parks, and libraries.
- **An engaged and alert community:** Engage with community members to promote awareness about roadway safety.
  - Programs include implementing Safe Routes for Seniors and Safe Routes for Schools and developing Vision Zero campaigns.
- **Supporting policies:** Ensure roadway safety is a prioritized metric in the City's budget process, create policy to minimize construction impacts to road users, and advocate for safety.
  - Programs include creating rules and procedures to minimize sidewalks and bike facility closures during construction and expanding neighborhood greenways.
- **Safer vehicles:** Improve the safety of city fleet vehicles and their operators. Educate drivers about cyclists and the maneuvers they make to improve predictability and safety.
  - Programs include implementing a bicycle friendly driver program for bus operators.

Pedestrian Action Plan (2016)

Overview

The Pedestrian Action Plan identified priority projects and programs to enhance safety and comfort for people walking. In this plan, the Santa Monica Boulevard corridor was identified

as a place that is difficult to walk across and along because of high vehicle speeds and multiple travel lanes, despite experiencing a high level of pedestrian activity due to commercial areas and schools.

Recommendations

The following projects were recommended for the Santa Monica Boulevard corridor.

- Add left turn protected signal phases on Santa Monica Boulevard at Yale Street and Berkeley Street.
- Implement a streetscape project which includes curb extensions, crosswalks, advance stop bars, directional ramps, and pedestrian-oriented lighting on Santa Monica Boulevard between Lincoln Boulevard and 20th Street.
- Implement leading pedestrian intervals (LPIs) at all signalized intersection along Santa Monica Boulevard.
- Implement a streetscape project which includes seven median islands, 32 curb extensions, two crosswalks, two advance stop bars, directional ramps, and pedestrian-oriented lighting on Santa Monica Boulevard between 20th Street and Centinela Avenue.

2 ROADWAY CHARACTERISTICS

Santa Monica Boulevard is classified as a principal arterial roadway that runs in the general east-west direction between Ocean Avenue in Santa Monica and Sunset Boulevard in Hollywood. The study area, from Ocean Avenue to Centinela Avenue, is 2.4 miles long and has 20 signalized intersections (19 signalized intersections in City of Santa Monica and one signalized intersection in City of Los Angeles), 13 two-way stop control intersections, and 21 alleys.

Santa Monica Boulevard has four travel lanes, two in each direction, with intermittent turn lanes and on-street metered parking. Lane widths are narrower near Ocean Avenue and downtown Santa Monica (10-11') and gradually widen toward Centinela Avenue (12-14'). Block spacing along the corridor averages about 320 feet between intersections. Concrete sidewalks are provided on both sides of the street throughout the study area. The speed limit between Ocean Avenue and Lincoln Boulevard is 25 mph and between Lincoln Avenue and Centinela Avenue it is 30 mph. However, many drivers do not abide by speed limits and travel at higher speeds as shown in Table 1.

Table 1 Speed Limits vs. 85th Percentile Speeds

Santa Monica Blvd Segments	Speed Limits	85th Percentile Speeds
Ocean Ave to Lincoln Blvd	25 mph	25 mph – 29 mph

Santa Monica Blvd Segments	Speed Limits	85th Percentile Speeds
Lincoln Blvd to Cloverfield Blvd	30 mph	30 mph – 34 mph
Cloverfield Blvd to Centinela Ave	30 mph	35 mph – 49 mph

Source: Engineering and Traffic Survey Results and Speed Limit Update, City of Santa Monica, July 29, 2024

Land uses along the corridor primarily consist of commercial and office spaces and public facilities such as libraries, hospitals, and schools. The corridor is served by the Big Blue Bus and LA Metro. While there are no bicycle facilities on Santa Monica Boulevard, the following bicycle routes intersect the corridor:

- Ocean Avenue –Protected bike lane on west side and northbound Class II bike lane on east side
- 2nd Street – Northbound and southbound buffered bike lanes
- 6th Street - Northbound and southbound buffered bike lanes
- 7th Street - Northbound and southbound buffered bike lanes, no bike lane at intersection
- Lincoln Boulevard – Northbound and southbound bike route
- 11th Street - Northbound and southbound buffered bike lanes
- 14th Street - Northbound and southbound buffered bike lanes, no bike lane entering intersection
- 17th Street - Northbound and southbound buffered bike lanes with green bike crossing pavement markings across the intersection
- Yale Street – Northbound and southbound bike route

3 TRANSIT OPERATIONS

Santa Monica Boulevard is served by several Big Blue Bus routes (primarily Route 1) and one LA Metro route that runs along the boulevard. Bus services run along intersecting streets as described below in Table 2.

Table 2 Bus Services that run along Intersecting Streets of Santa Monica Boulevard

Street Name	Bus Routes
Ocean Avenue	▪ Big Blue Bus Route 8 ▪ Big Blue Route 9 ▪ LA Metro Route 134
2nd Street	▪ Big Blue Bus Route 5 ▪ LA Metro Route 33

Street Name	Bus Routes
4th Street (Terminus for some bus routes)	▪ Big Blue Bus Route 1 ▪ Big Blue Bus Route 2 ▪ Big Blue Bus Route 3 ▪ Big Blue Bus Rapid 3 ▪ Big Blue Bus Rapid 7 ▪ Big Blue Bus Route 8 ▪ Big Blue Bus Route 9 ▪ Big Blue Bus Rapid 10 ▪ Big Blue Bus Route 18 ▪ LA Metro Route 4 ▪ LA Metro Route 20 ▪ LA Metro Route 134 ▪ LA Metro Route 720
6th Street (Terminus for some bus routes)	▪ Big Blue Bus Route 1 ▪ Big Blue Bus Route 3 ▪ Big Blue Bus Route 5 ▪ Big Blue Bus Route 7 ▪ Big Blue Bus Rapid 7 ▪ Big Blue Bus Route 8 ▪ Big Blue Bus Rapid 10 ▪ Big Blue Bus Route 18 ▪ LA Metro Route 4
7th Street	▪ Big Blue Bus Route 5 ▪ Big Blue Bus Route 7 ▪ Big Blue Bus Route 8
Lincoln Boulevard	▪ Big Blue Bus Route 18 ▪ LA Metro Route 4
14th Street	▪ Big Blue Bus Route 41 ▪ LA Metro Route 4
20th Street	▪ Big Blue Bus Route 41 ▪ LA Metro Route 4
26th Street	▪ Big Blue Bus Route 43 ▪ LA Metro Route 4
Centinela Avenue	▪ Big Blue Bus Route 16

Transit Delay

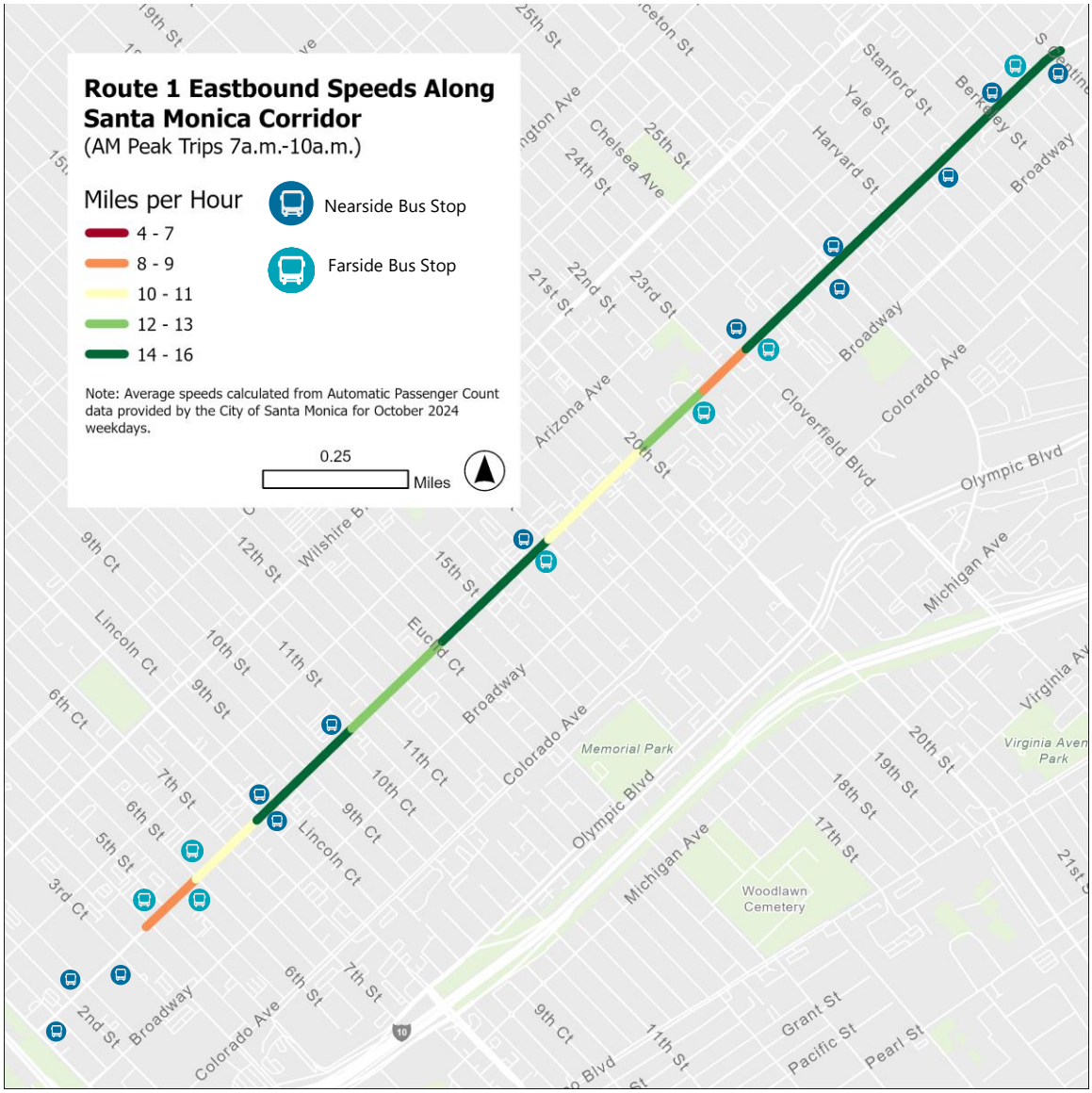
Bus operations and transit rider connections help us understand where street safety improvements might overlap for the benefit of more reliable transit travel times. Transit travel times are also a proxy for vehicle congestion, which is what often causes transit delay.

The transit delay analysis calculates stop-to-stop average speed for Big Blue Bus Route 1 along the study corridor, using weekday trips collected in October 2024. To account for variations in stop distances, travel times were normalized by distance.

Morning Peak - Eastbound

Figure 1 Big Blue Bus Route 1 Eastbound Speeds Along Santa Monica Boulevard, AM PeakFigure 1 shows the average travel speeds for eastbound trips during the morning peak period (7 a.m. to 10 a.m.). Most segments have travel speeds between 12 and 16 mph. However, some segments experience significantly lower speeds, including the stretches between 22nd Street and Cloverfield Street, and 4th Street and 6th Street, where speeds drop below 9 mph. Other slower segments include 17th Street to 20th Street, and 6th Street to Lincoln Boulevard, with average travel speeds of 10–11 mph.

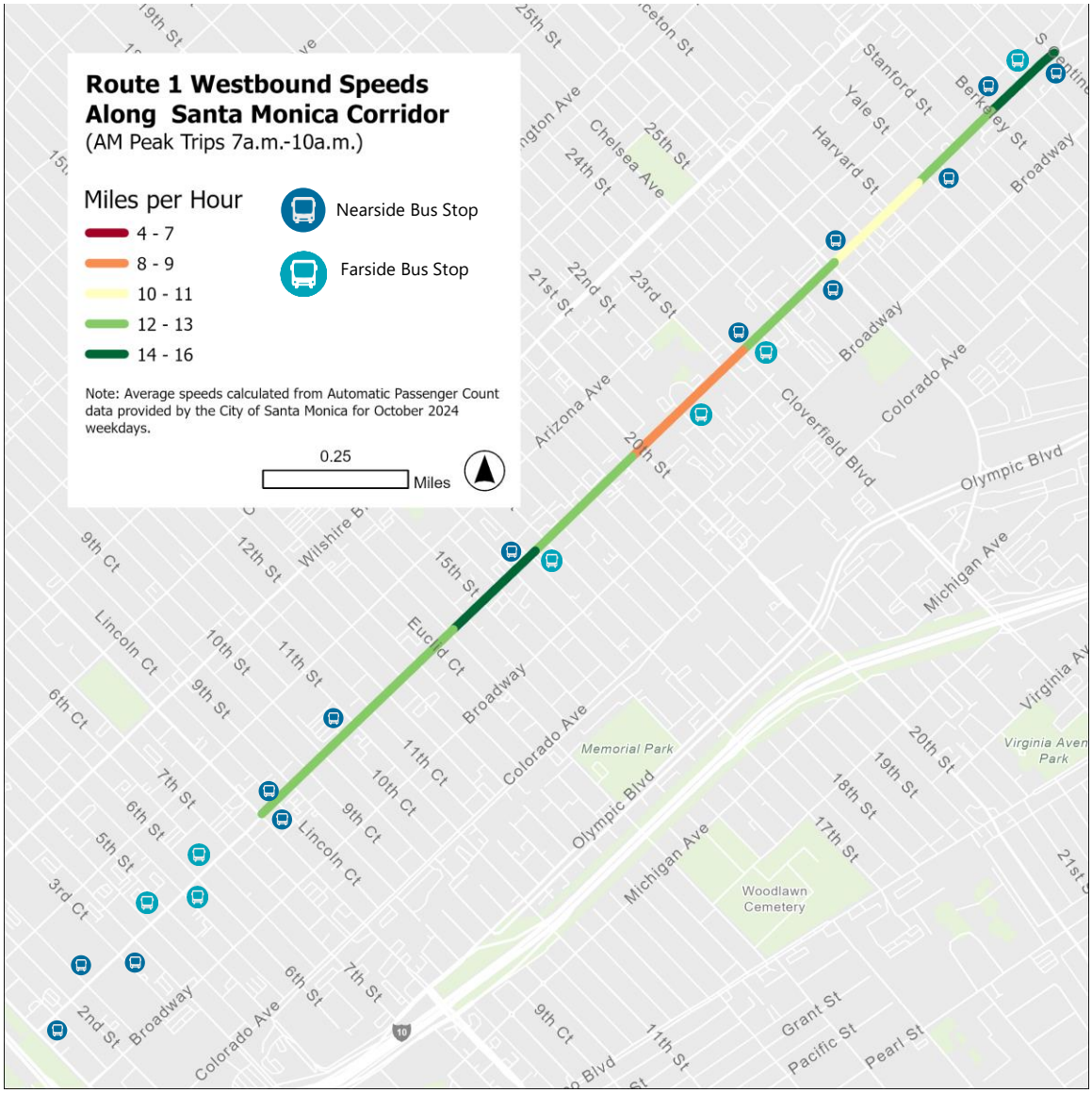
Figure 1 Big Blue Bus Route 1 Eastbound Speeds Along Santa Monica Boulevard, AM Peak



Morning Peak – Westbound

In the westbound direction during the morning peak, Figure 2 shows that the slowest stretch is between Cloverfield Boulevard and 20th Street, followed by the segment between Yale Street and 26th Street. The remainder of the corridor in the morning westbound direction maintains speeds above 12 mph.

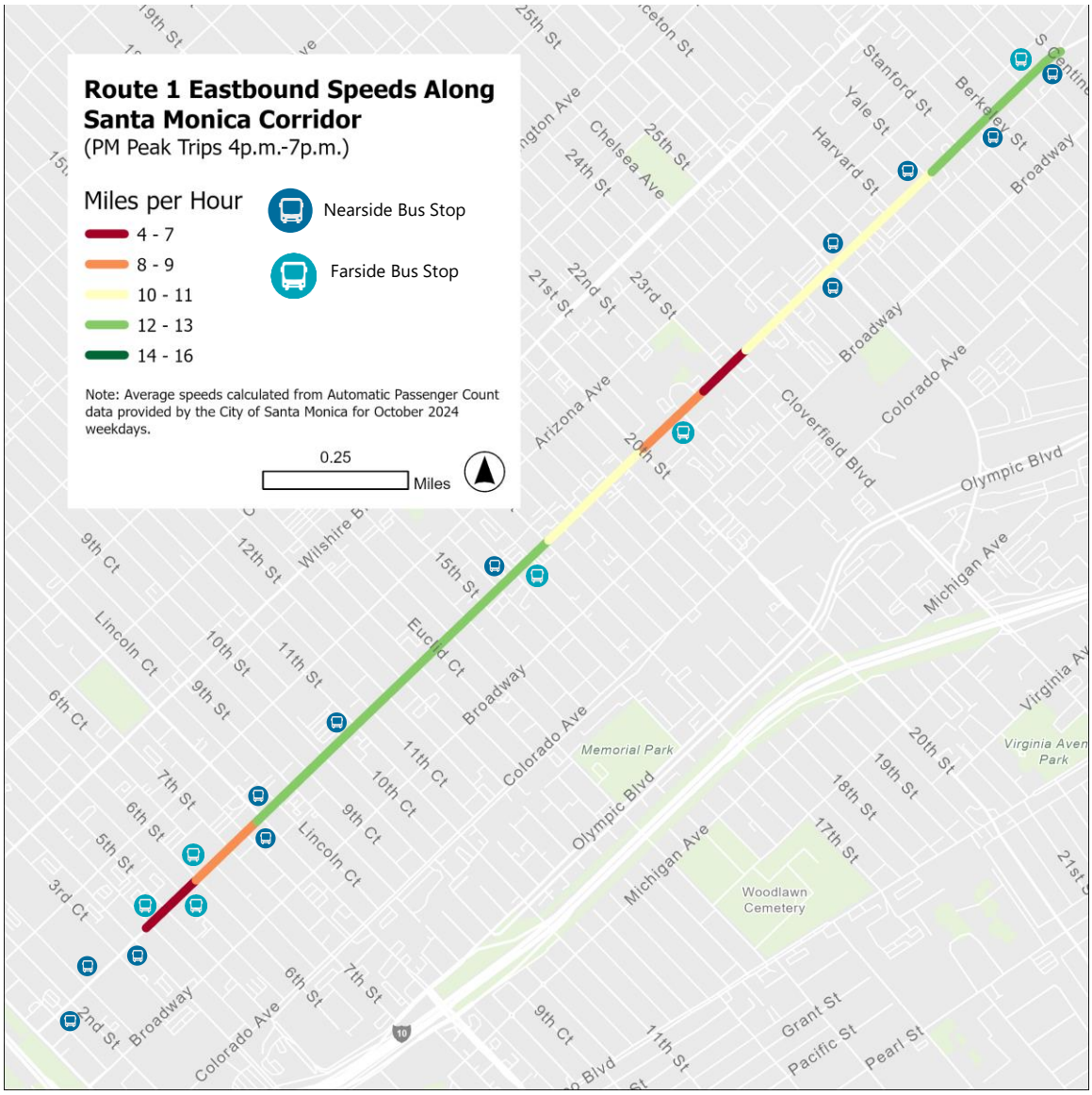
Figure 2 Big Blue Bus Route 1 Westbound Speeds Along Santa Monica Boulevard, AM Peak



Afternoon Peak - Eastbound

The afternoon peak includes all trips scheduled between 4 p.m. and 7 p.m. Figure 3 shows that Route 1 buses traveling eastbound during this time experience slow speeds across much of the corridor. The segments from 22nd Street to Cloverfield Boulevard and 4th Street to 6th Street are the slowest, with travel speeds dropping below 7 mph and reaching as low as 4 mph. The segments from 20th Street to 22nd Street and 6th Street to Lincoln Boulevard have average speeds of 8–9 mph. Additionally, the segments from Cloverfield Boulevard to Yale Street and 17th Street to 20th Street do not exceed speeds of 11 mph during this period.

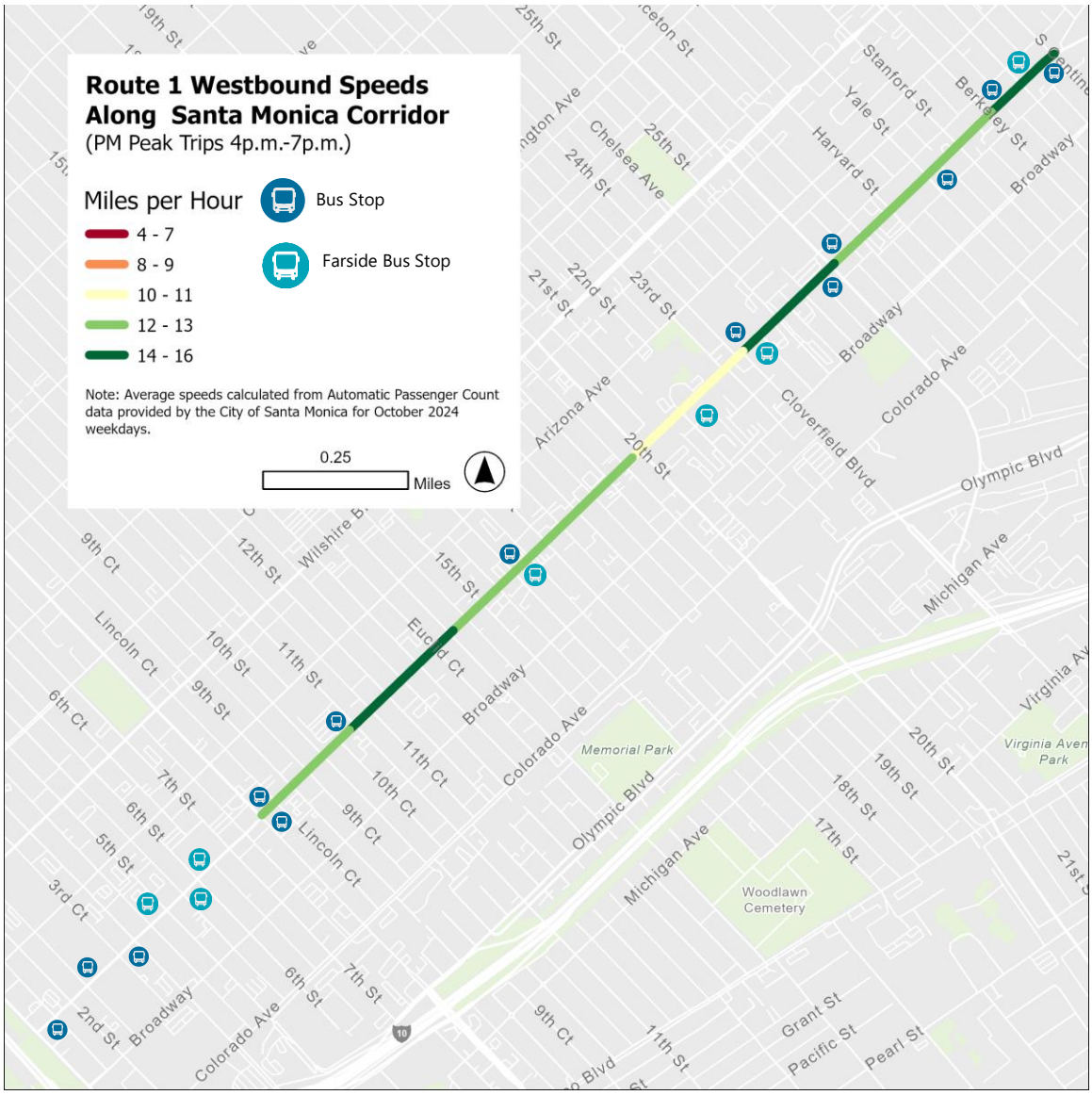
Figure 3 Big Blue Bus Route 1 Eastbound Speeds Along Santa Monica Boulevard, PM Peak



Afternoon Peak – Westbound

In contrast, buses traveling into Santa Monica during the afternoon peak period maintain steady speeds, with most of the corridor averaging above 12 mph. **Error! Reference source not found.**Figure 4 shows that even the slowest segment in the westbound direction, between Cloverfield Boulevard and 20th Street, has speeds of 10–11 mph.

Figure 4 Big Blue Bus Route 1 Westbound Speeds Along Santa Monica Boulevard, PM Peak

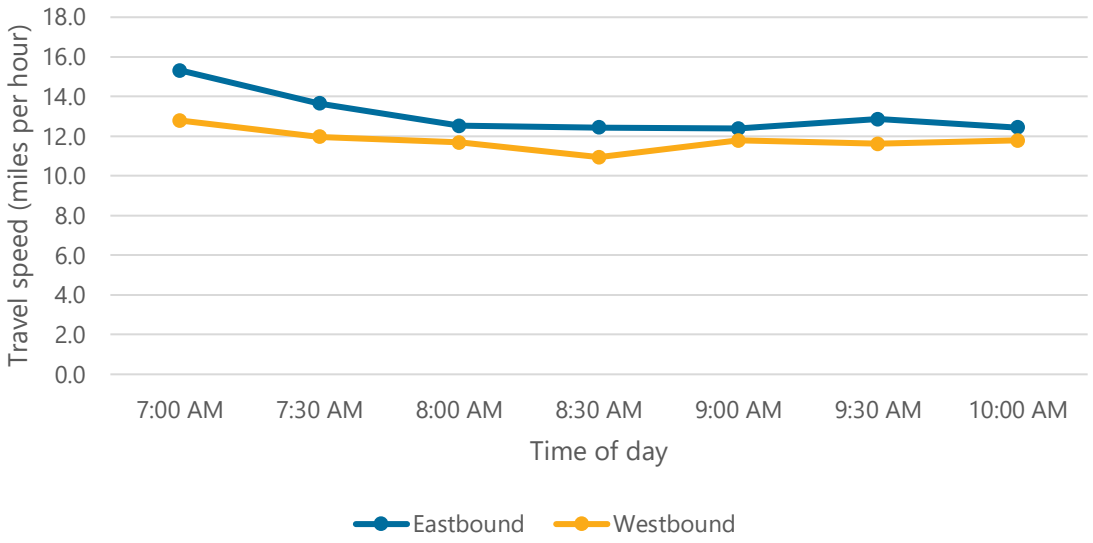


Los Angeles Metro Bus Route 4 also travels along the study corridor. This route connects Santa Monica to Downtown Los Angeles via Santa Monica Boulevard and serves five stops within the study corridor at 4th Street, Lincoln Boulevard, 14th Street, 20th Street, and 26th Street. Notably, Route 4 has fewer stops along the study corridor than Big Blue Bus Route 1.

Travel speed data for Route 4 was available for the study corridor by time of day and direction of travel, but not at the stop level. Figure 5 presents the average travel speed during the morning peak period for Route 4 buses traveling in both directions. As observed, buses travel slightly faster in the eastbound direction (13.1 mph on average) compared to the

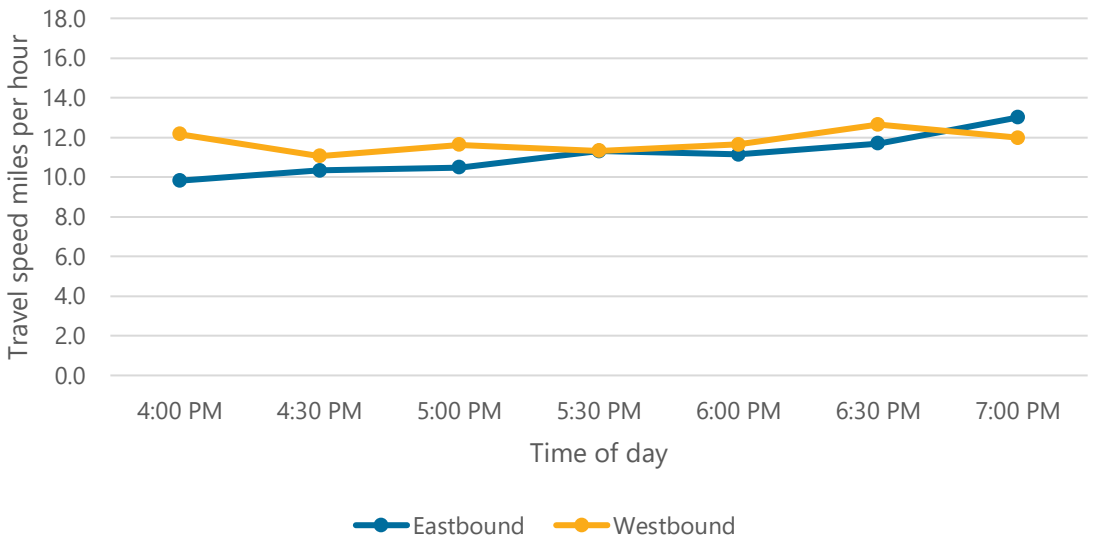
westbound direction (11.8 mph on average). This travel speed pattern aligns with the observed speeds for Big Blue Bus Route 1, where eastbound segments generally exhibited higher speeds, particularly in the 14-16 mph range, compared to westbound segments.

Figure 5 Los Angeles Metro Route 4 Speeds Along Santa Monica Corridor, AM Peak



In the afternoon peak, Figure 6 shows that overall speeds are lower than in the morning period, especially in the eastbound direction. Specifically, in the early afternoon, eastbound speeds along Santa Monica Boulevard are slightly below 10 mph but gradually improve to around 13 mph later in the afternoon. In contrast, westbound speeds remain more consistent throughout the afternoon, ranging from 11 to 12 mph. These trends for Route 4 also align with observations from Big Blue Bus Route 1, where long stretches of the corridor in the eastbound direction recorded speeds between 8-11 mph, making it the slowest direction and time period.

Figure 6 Los Angeles Metro Route 4 Speeds Along Santa Monica Corridor, PM Peak



Transit Ridership

Table 3 and Note that Route 8 only serves Santa Monica Blvd on its westbound trip (UCLA to Downtown Santa Monica) however, the route travels eastbound so the stops on Santa Monica will correspond to those on the eastbound direction.

In contrast, transit activity in the westbound direction is generally lower, particularly at the far west stops (4th Street and 3rd Street). This is because Routes 1 and 10 turn right onto 6th Street before getting to 4th Street as they do in the eastbound direction. However, the stop at 6th Street and Santa Monica has a transit activity of 255, the highest in the corridor. Similarly to the eastbound direction, the stop at 26th Street also sees high transit activity, with 126 boardings and alightings, making it the second busiest stop in the westbound direction.

Table 4 illustrate transit activity (boardings and alightings) by stop for the eastbound and westbound directions for Big Blue Bus routes, respectively, with stops averaging 100 or more daily activities highlighted.

In the eastbound direction, the stops with the highest transit activity are located at the beginning of the corridor, specifically at 4th Street and 6th Street, with activity levels of 366 and 174 boardings and alightings, respectively. Other stops with significant transit activity include those at 20th Street and 26th Street.

Table 3 BBB Transit Activity on Eastbound Stops in Corridor

Stop Name (from west to east)	Average daily boardings + alightings	Routes included in data
OCEAN NB/SANTA MONICA NS	10	8
SANTA MONICA EB/3RD FS	17	5, 8
SANTA MONICA EB/4TH FS	366	1, 5, 10, 18, 8
SANTA MONICA EB/6TH NS	174	1, 5, 10, 18, 8
SANTA MONICA EB/LINCOLN NS / LINCOLN NB/SANTA MONICA FS	84	1, 5, 10
SANTA MONICA EB/11TH NS	62	1, 10
SANTA MONICA EB/14TH NS	83	1, 10
SANTA MONICA EB & 17TH FS	72	1, 10
SANTA MONICA EB/20TH FS	99	1, 10
SANTA MONICA EB/22ND FS	34	1
SANTA MONICA EB/CLOVERFIELD FS	44	1, 10
SANTA MONICA EB/26TH NS	120	1, 10
SANTA MONICA EB/YALE FS	62	1, 10
SANTA MONICA EB/BERKELEY NS	61	1
SANTA MONICA EB/CENTINELA FS	64	1, 10

Note that Route 8 only serves Santa Monica Blvd on its westbound trip (UCLA to Downtown Santa Monica) however, the route travels eastbound so the stops on Santa Monica will correspond to those on the eastbound direction.

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Table 4 BBB Transit Activity on Westbound Stops in Corridor

Stop Name (From east to west)	Average daily boardings + alightings	Routes included in data
SANTA MONICA WB/CENTINELA FS	58	1, 10
SANTA MONICA WB/BERKELEY NS	57	1
SANTA MONICA WB/YALE FS	59	1, 10
SANTA MONICA WB/26TH NS	106	1, 10
SANTA MONICA WB/CLOVERFIELD NS	49	1, 10
SANTA MONICA WB/22ND NS	49	1
SANTA MONICA WB/20TH FS	90	1, 10

Stop Name (From east to west)	Average daily boardings + alightings	Routes included in data
SANTA MONICA WB/17TH FS	72	1, 10
SANTA MONICA WB/14TH NS	81	1, 10
SANTA MONICA WB/11TH FS	62	1, 10
SANTA MONICA WB/LINCOLN NS/ LINCOLN SB/SANTA MONICA NS	77	1, 10, 18
6TH SB & SANTA MONICA FS	255	1, 10, 18

LA Metro Route 4 is a frequent service line connecting Santa Monica with Downtown Los Angeles. Compared to Big Blue Bus routes, Route 4 has wider stop spacing, resulting in fewer stops along Santa Monica Boulevard. Table 5 presents the transit activity (boardings and alightings) at stops located on Santa Monica Boulevard, grouped by stop pair. The busiest stop is at Santa Monica Boulevard and 4th Street, serving over 600 passengers daily. The remaining stops show relatively consistent activity, ranging from 186 to 253 passengers per day.

Table 5 LA Metro Route 4 Transit Activity by Stop

Stop Name	Average daily boardings + alightings
SANTA MONICA / 3RD ST PROMENADE	231
SANTA MONICA / 4TH	638
6TH / SANTA MONICA	206
SANTA MONICA / LINCOLN	235
SANTA MONICA / 14TH	186
SANTA MONICA / 20TH	220
SANTA MONICA / 26TH	253

Safety improvements throughout the corridor should consider the crossing experience of inbound and outbound riders. Particular attention should be paid to high activity stops and where transfers require crossing Santa Monica Boulevard.

4 CRASH ANALYSIS

This section presents the results of the crash analysis along Santa Monica Boulevard from Ocean Avenue to Centinela Avenue. The goal of this analysis is to identify where, when, and why crashes occur, with a specific focus on patterns related to fatal and serious injury crashes.

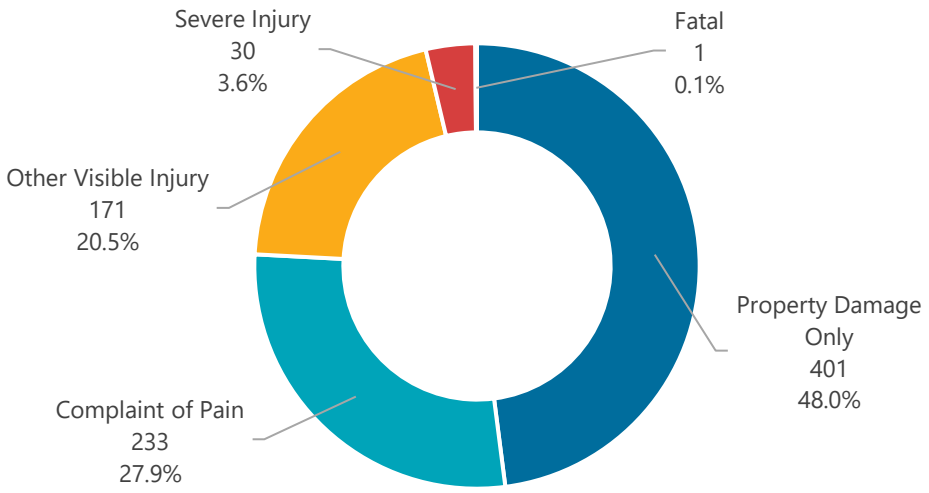
The analysis is based on data from CrossRoads provided by the City of Santa Monica, and include crashes that took place between Jan 1, 2015 and Dec 31, 2024. Of note:

- The data includes all Injury and Property Damage Only (PDO) crashes. In the analysis PDO crashes are included in the Crash Trends and Intersection maps but are excluded from the analysis aiming at identifying specific patterns of injury crashes because a Chi-squared analysis of crash patterns and crash types demonstrated that there is a significant difference between PDO and injury crash attributes.
- Crashes included in the analysis occurred **within 100 feet** of the Santa Monica Boulevard centerline. Additionally, CrossRoads data already assigned all crashes within 30 feet of the intersecting street centerlines as an intersection-related crash. This analysis expanded that threshold to 50 feet to ensure an intersection-related crash footprint includes the crosswalks around the intersection.
- For the purpose of assigning the preceding movements to a specific street, the analysis assumes that parties moving east or west are traveling along Santa Monica Boulevard and parties traveling north or south are approaching Santa Monica from an intersecting street.
- While one or more parties can be involved in crashes as drivers, pedestrians, bicyclists, passengers, or in other roles, CrossRoads data only includes information for two parties. Therefore, it is not possible to determine if more than two parties were involved.

Crash Trends

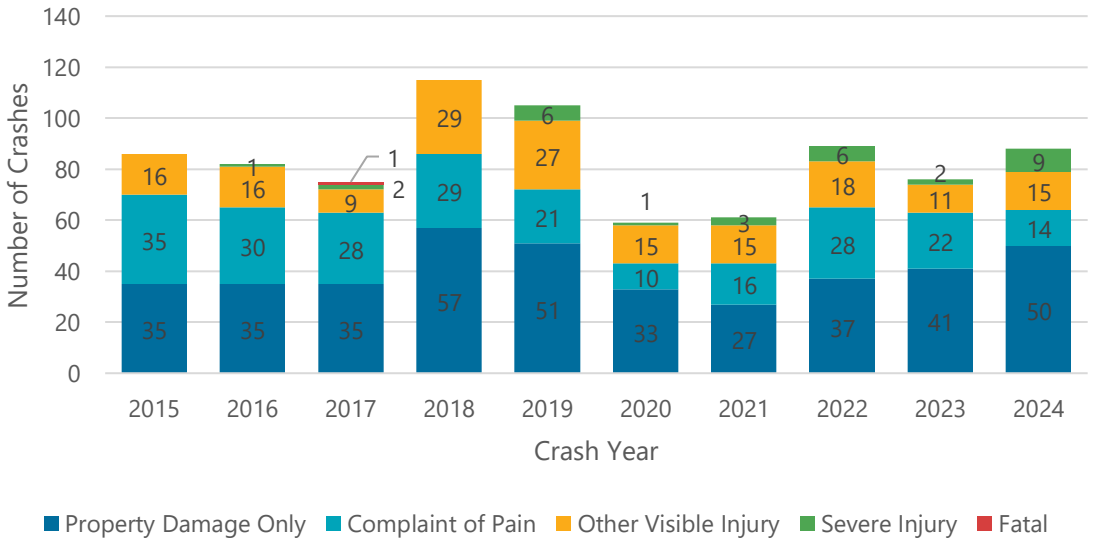
During 2015-2024, 435 injury crashes and 401 Property Damage Only crashes were recorded along the study corridor. Figure 7 illustrates the number of crashes and their distribution by injury severity. Notably, about half of the crashes were reported as property damage only. Visible injuries and complaints of pain account for 48% of the total, while serious injuries and fatalities account for the remaining 3%.

Figure 7 Total crashes by injury level, 2015-2024



Total crashes per year reached a high point in 2018. Crashes significantly decreased during the COVID-19 pandemic beginning in early 2020, but gradually increased again after 2022. The increase has been more pronounced for serious crashes, with 17 serious crashes from 2022- 2024. During the 10-year period analyzed one fatal crash occurred in 2017.

Figure 8 Annual crashes by injury level, 2015-2024

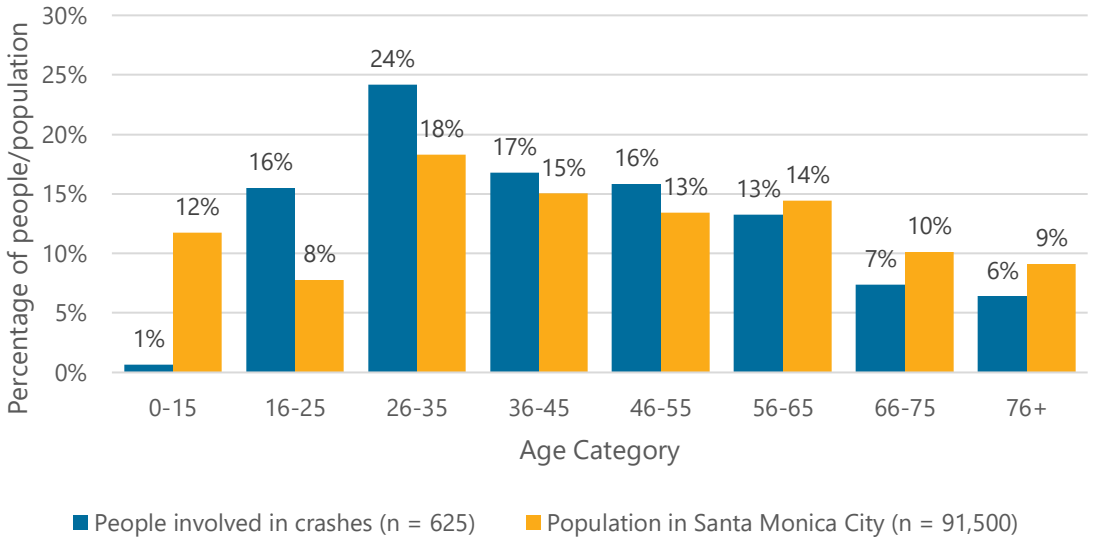


Who is involved in crashes?

Between 2015 and 2024, there was age information for approximately 600 people involved in the 435 injury crashes.

Figure 9 highlights that the two most common age groups for people involved in crashes are between 26–35 and 36–45, accounting for 24% and 17% of those involved, respectively. The yellow bars in the chart compare the age distribution of Santa Monica residents. Notably, the 16–25 age group is significantly overrepresented in crashes, making up 16% of those involved, despite only comprising 8% of the city's population. Similarly, the 26–35 age group is overrepresented by 6 percentage points. Children aged 0–15 years represent only 4 individuals (0.6%) of those involved. As explained in the following section, most crashes involve at least one person who is driving a vehicle or motorcycle.[2]

Figure 9 Age distribution of people involved in injury crashes, 2015-2024



Santa Monica population estimates according to American Community Survey 2019-2023.

Of the 625 people involved in injury crashes, 520 (83%) are driving motor vehicles (including motorcycles), 61 (10%) are pedestrians, and 40 (6%) are bicyclists. It is important to note that these figures represent the roles of individuals in a crash, not the crash mode, which is

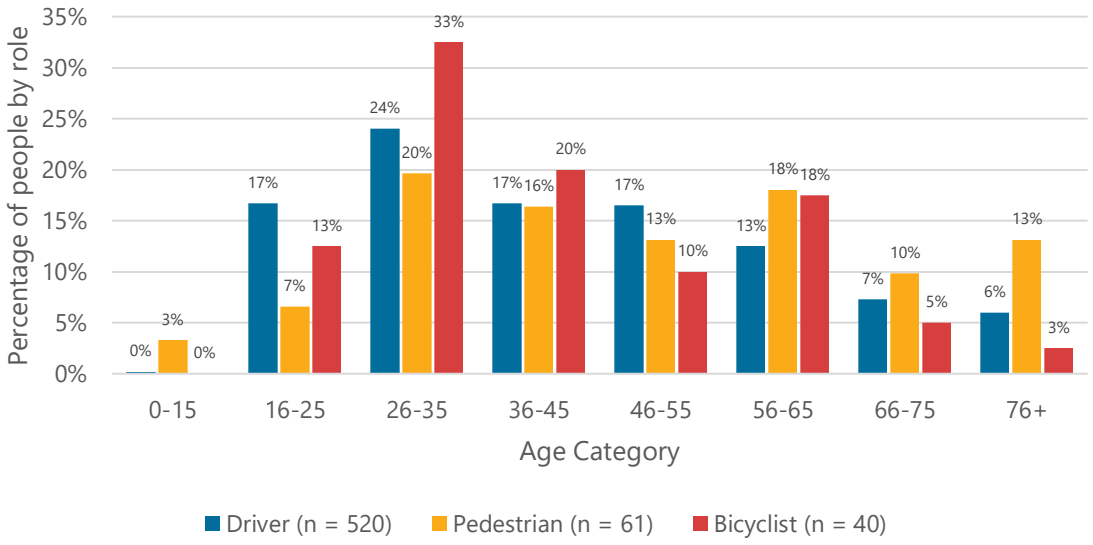
[2] The age distribution analysis is divided into 10-year intervals, except for the first and last categories. The first category includes all children who are not legally permitted to drive without supervision in the State of California. For individuals aged 75 and older, the number of people involved in crashes decreases significantly. Grouping them into a single category does not risk obscuring any specific trends related to this age group.

discussed later in the analysis. For example, in a crash involving a car hitting a pedestrian, the two parties involved are the driver and the pedestrian. However, this crash would be classified as a pedestrian crash.

Figure 10 shows the age distribution of individuals involved in crashes, broken down by their role in the crash. Each column color adds up to 100%. The chart highlights which age groups make up a larger proportion of individuals in each role and compares these distributions across roles. Key takeaways include:

- People between the ages of 26-35 are more likely to be involved in crashes across all modes compared to people in other age groups.
- Drivers aged 26-35 have the highest share (24%) of those involved in injury crashes, followed by the 16-25, 36-45, and 46-55 age groups. Adults between the ages of 26 and 55 account for more than half of the drivers involved in injury crashes.
- Adults between the ages of 56-65 make up 18% of all pedestrians involved in injury crashes, 5% higher than drivers in this age group.
- Seniors aged 66-75 and 76+ make up 23% of all pedestrians involved in injury crashes, a significantly higher proportion than the 13% of drivers in these two age groups.
- Nearly 3% of all pedestrians involved in injury crashes are children under 16.
- People between the ages of 26 and 45 make up for more than 50% of all bicyclists involved in injury crashes, a higher proportion compared to drivers and pedestrians.

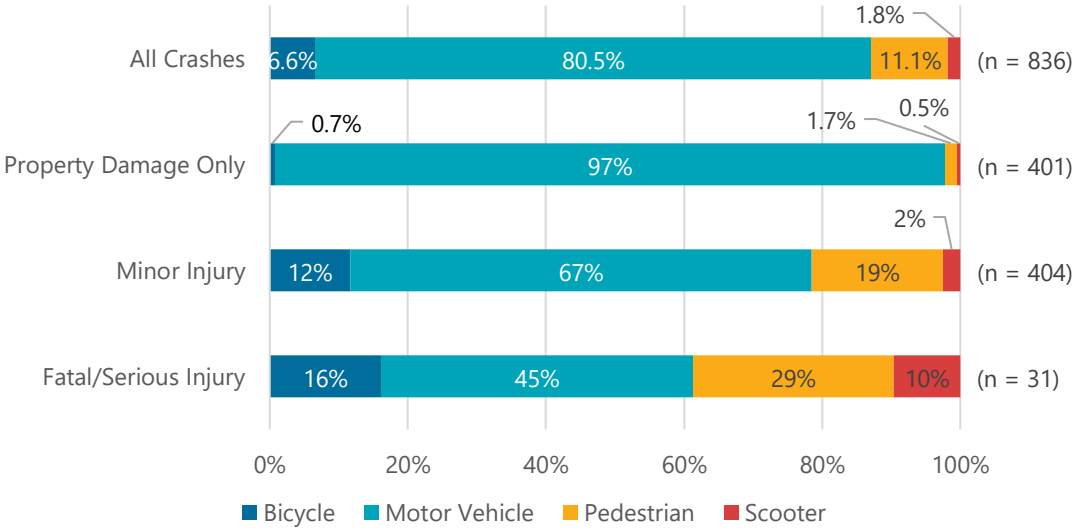
Figure 10 Age distribution of people by their role in the injury crash, 2015-2024



What types of crashes are occurring?

The crash mode is categorized based on the non-motor vehicle party involved. For example, a motor vehicle crash involves only automobiles, a pedestrian crash involves a pedestrian and a motor vehicle, and a bicycle crash involves a bicyclist and a motor vehicle. The data also includes two crashes involving only a bicyclist and a pedestrian; these were categorized under the pedestrian mode to streamline the analysis. Figure 11 shows the distribution of crash modes by injury level (Fatal/Serious Injury include one fatality during the period of analysis). Nearly 81% of all crashes involve only motor vehicles. However, when examining fatal and serious injury crashes, motor vehicle crashes account for 45%, nearly half their share in all crashes. Conversely, pedestrians are overrepresented in serious injury crashes, making up 29% of such incidents compared to 11% in all crashes. Bicycle and scooter crashes are also overrepresented in serious injury crashes (55%) compared to all crashes (20%).

Figure 11 Share of crash mode in all crashes and serious injury crashes, 2015-2024

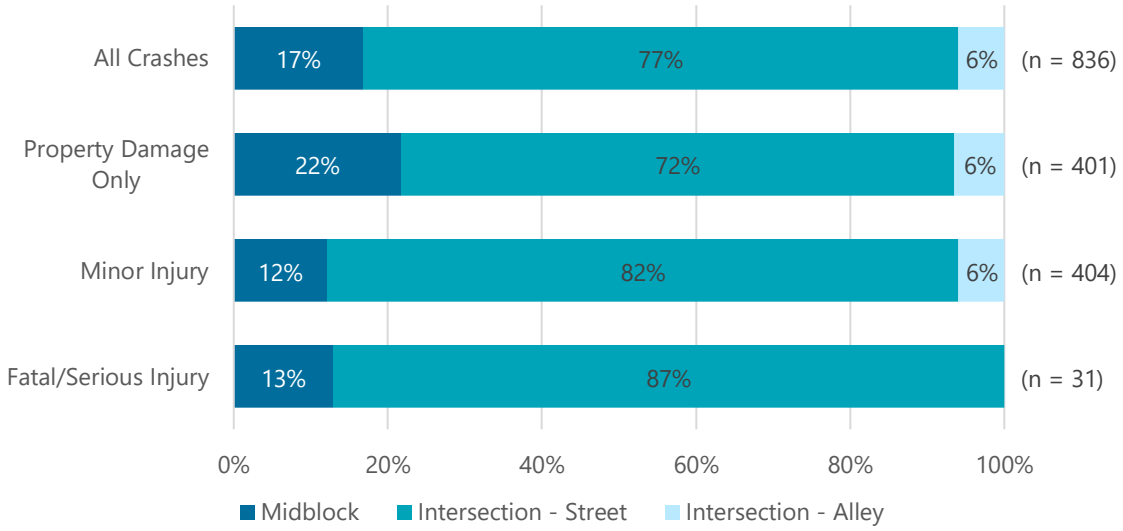


Note: "Minor Injury" category includes Other Visible Injury and Complaint of Pain

Injury severity and crash type can also vary depending on whether the crash occurred at an intersection or a midblock location. Figure 12 compares the proportion of crashes at intersections and midblock, by injury severity. Most crashes along Santa Monica Boulevard occur at intersections with other streets (77%), while only 6% take place at intersections with alleys. In addition, no fatal or serious injury crashes were recorded at alley intersections.

Since alley crashes make up a small proportion of total crashes and do not contribute to fatal or serious injuries, the remainder of this report consolidates alley and street intersection crashes into a single intersection category.

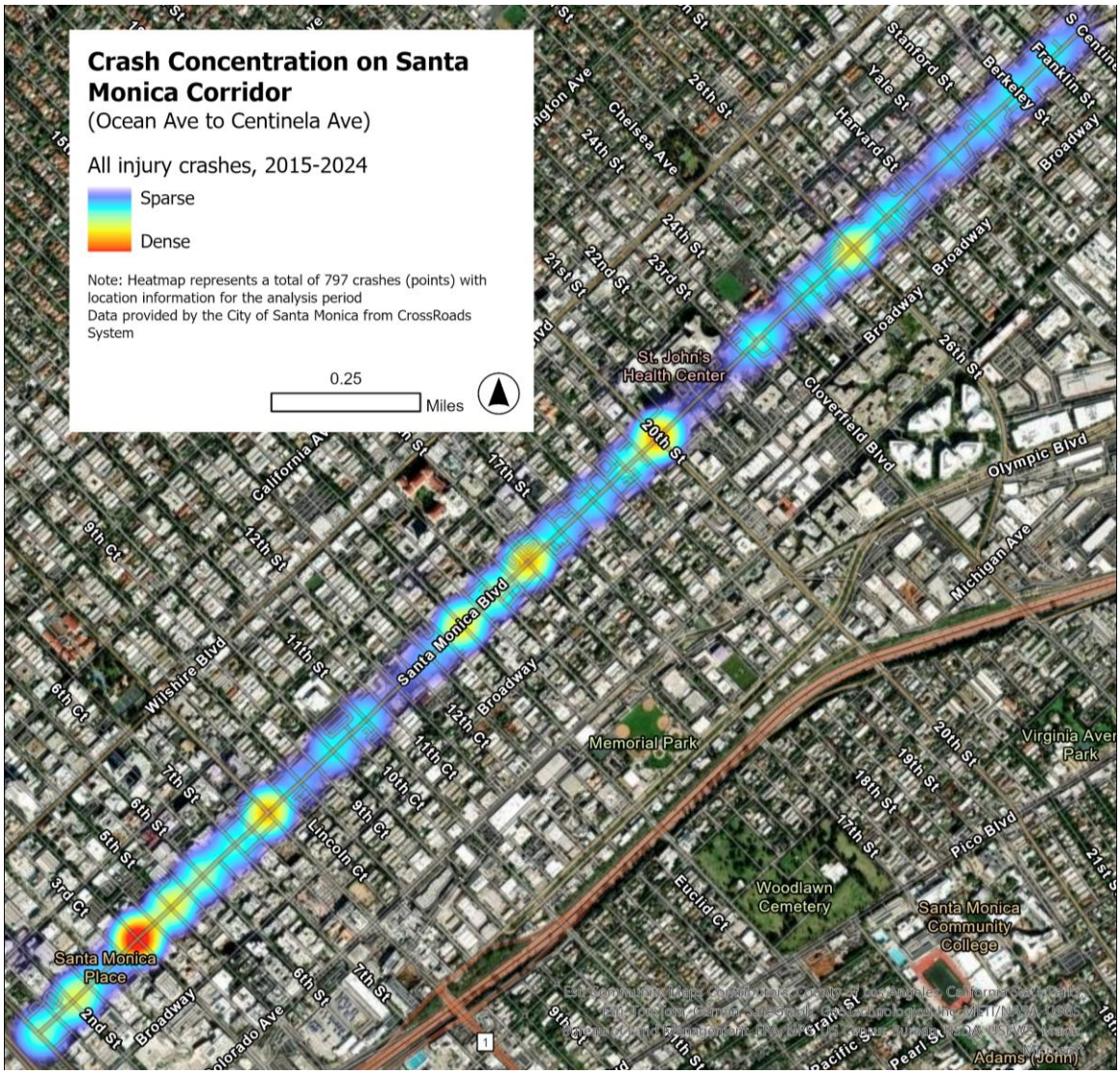
Figure 12 Intersection and midblock crashes by injury level



Where are crashes occurring?

Figure 13 illustrates the concentration of crashes (PDO and Injury) along the study corridor using a heatmap that clusters the 797 geocoded crashes based on proximity. This number is slightly lower than the 836 total crashes presented in previous sections, as some crashes lacked sufficient data for geocoding and were therefore excluded from the spatial analysis. The hotspots highlight areas with a higher density of crashes near each other. This visualization is intended to provide an overview and identify areas with high crash history for further investigation.

Figure 13 Crash Concentration on Santa Monica Corridor



The heatmap above identifies the following locations with high crash history frequency:

- At the intersection with 4th Street.
- At the intersection with Lincoln Boulevard.
- Between 14th and 16th Streets.
- At the intersection with 20th Street.
- At the intersection with 26th Street.

To provide more detailed insights into crash history along the corridor, Figure 14, Figure 15, Figure 16, and Figure 17 show the number of crashes at each intersection. Since 83% of all crashes and 87% of injury crashes occur at intersections, the maps below focus on

intersection-related crashes to make it easier to identify high-crash areas and compare crash locations when weighted by severity. For better visualization, Santa Monica Boulevard is divided into four segments.

The first map on the upper half of each page for each segment show the total number of crashes, illustrated with red circles, while the lower maps display crashes weighted by severity, illustrated with blue circles. In the weighted maps, each serious injury crash (including one fatal crash) is multiplied by 20, other injury crashes ("other visible injury" and "complaint of pain" crashes) are multiplied by 5, and PDO crashes are multiplied by 1. This weighting is based on guidance from the State of California Local Roadway Safety Manual[3], intended to account for the social, economic, and relationship impacts of lost life and serious injury by elevating locations where the crash frequency might be lower, but the severity is higher. Note, the scale of the circles should not be compared across maps. Table 6 compares three groups of intersections: the top ten intersections with the highest number of total crashes (20 or more), the top ten with the highest number of injury crashes (14 or more), and the 17 intersections where at least one serious injury crash occurred between 2015 and 2024. As highlighted in bold, eight intersections appear in all three categories—those with the highest total crashes, highest injury crashes, and at least one serious injury crash..

[3] https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2024/lrsm2024-v2.pdf

Table 6 Intersections with highest number of total crashes, intersections with highest number of injury crashes and intersections with at least one serious injury

Intersections along Santa Monica Blvd with the highest number of *total* crashes	Intersections along Santa Monica Blvd with the highest number of *injury* crashes	Intersections along Santa Monica Blvd that have at least one serious injury
▪ **4th Street** ▪ **Lincoln Boulevard** ▪ **16th Street** ▪ **20th Street** ▪ **14th Street** ▪ **26th Street** ▪ **5th Street** ▪ 2nd Street ▪ **15th Street** ▪ 6th Street	▪ **16th Street** ▪ **20th Street** ▪ **14th Street** ▪ **Lincoln Boulevard** ▪ **26th Street** ▪ **4th Street** ▪ **15th Street** ▪ **5th Street** ▪ 18th Street ▪ 19th Street	▪ 10th Street ▪ 6th Street ▪ **14th Street** ▪ **Lincoln Boulevard** ▪ **26th Street** ▪ **15th Street** ▪ 18th Street ▪ 11th Street ▪ Princeton Street ▪ **16th Street** ▪ **20th Street** ▪ **4th Street** ▪ **5th Street** ▪ Franklin Street ▪ Chelsea Avenue ▪ Yale Street ▪ 9th Street

Figure 14 Number of total crashes and weighted crashes from Ocean Avenue to 9th Court, 2015-2024

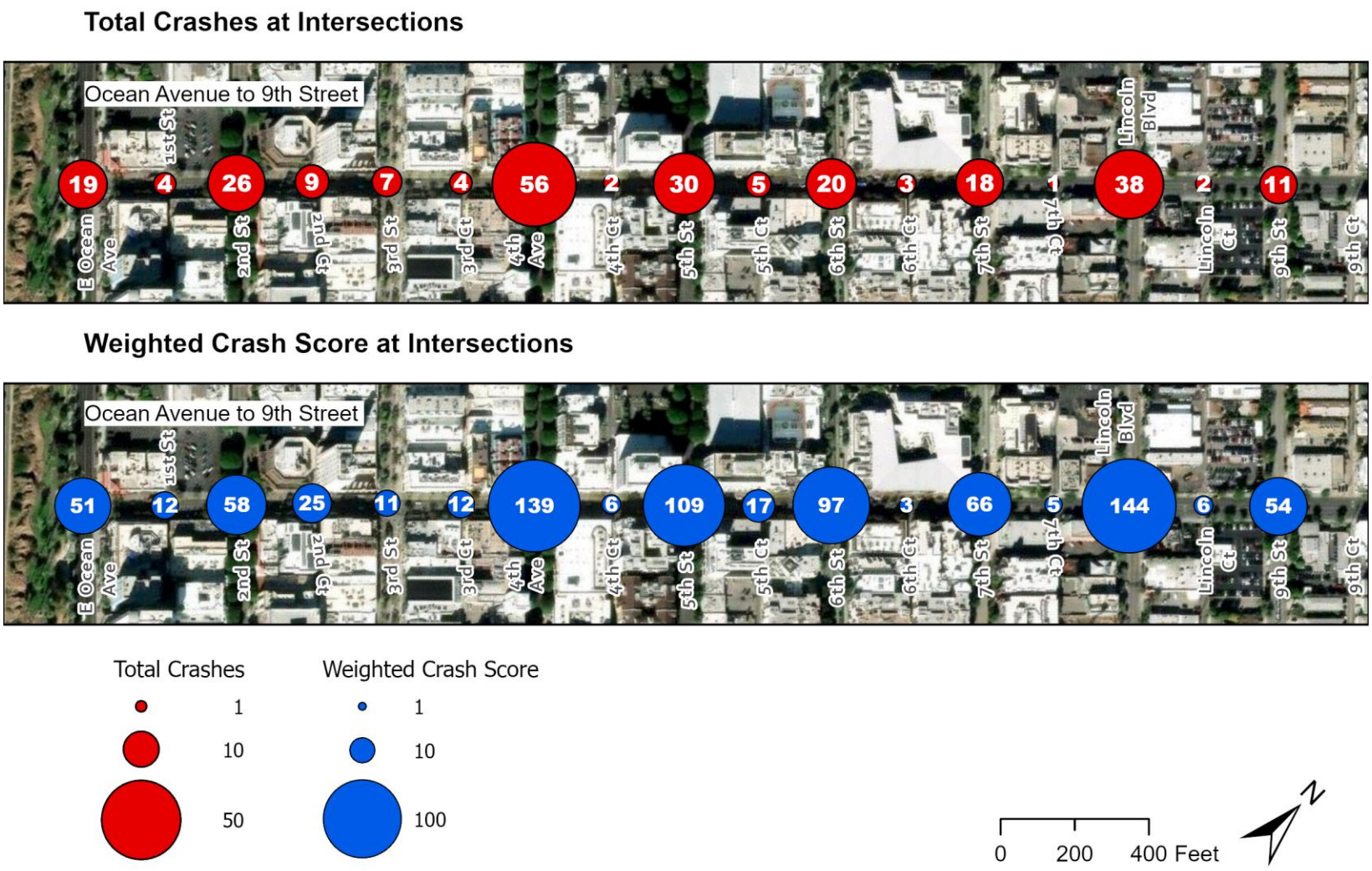


Figure 15 Number of total crashes and weighted crashes from 10th Street to 18th Court, 2015-2024

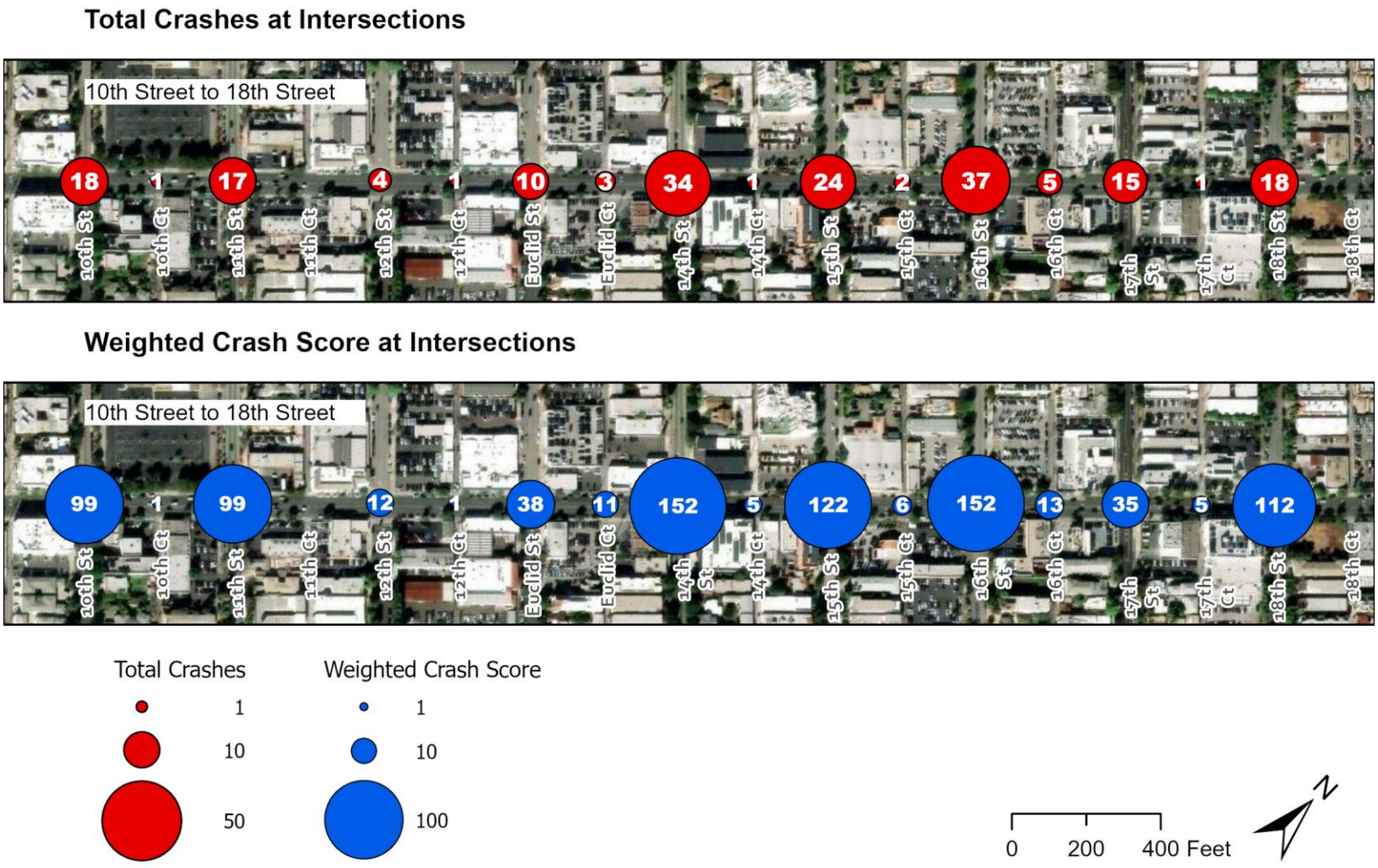


Figure 16 Number of total crashes and weighted crashes from 18th Street to 26th Court, 2015-2024

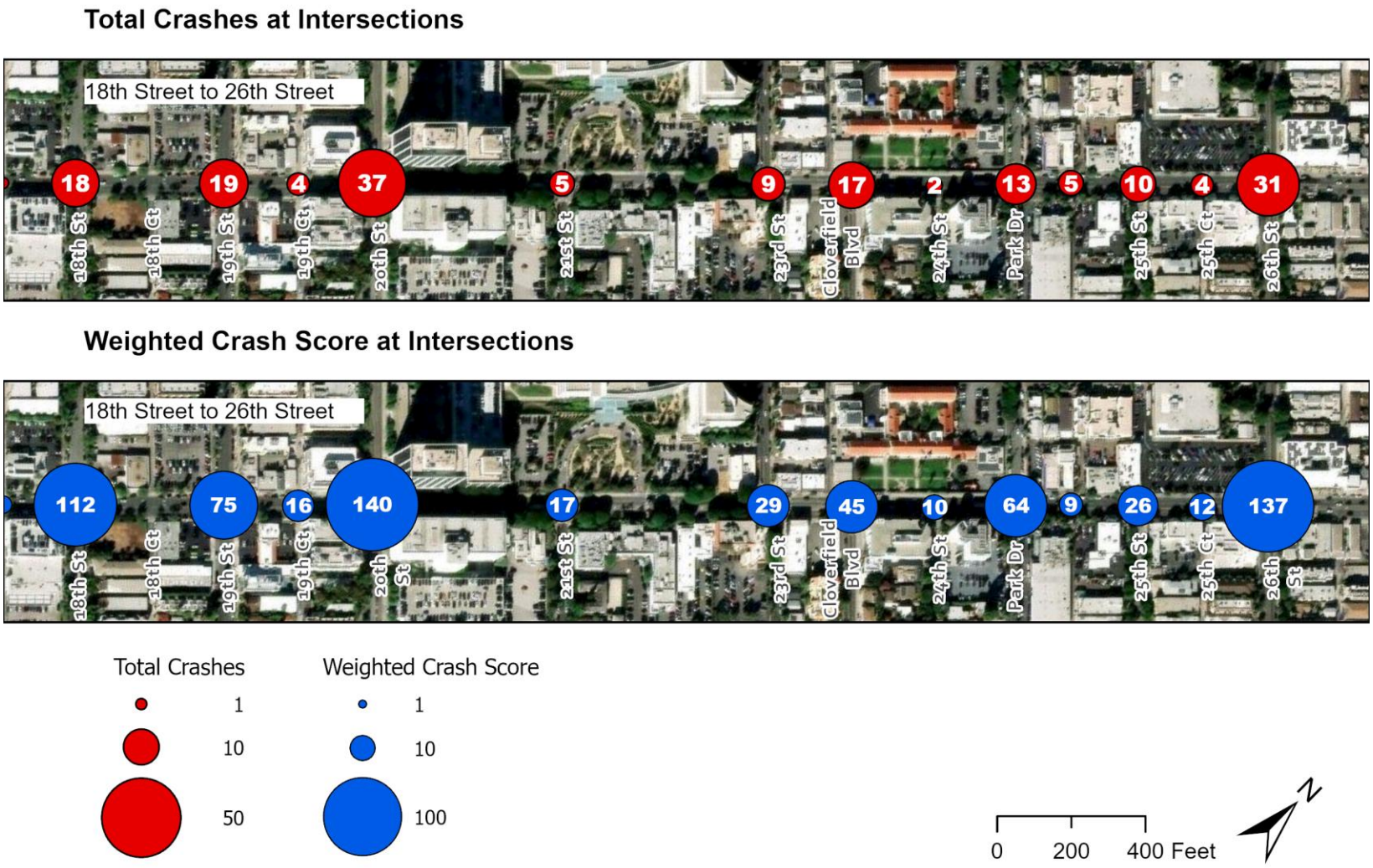
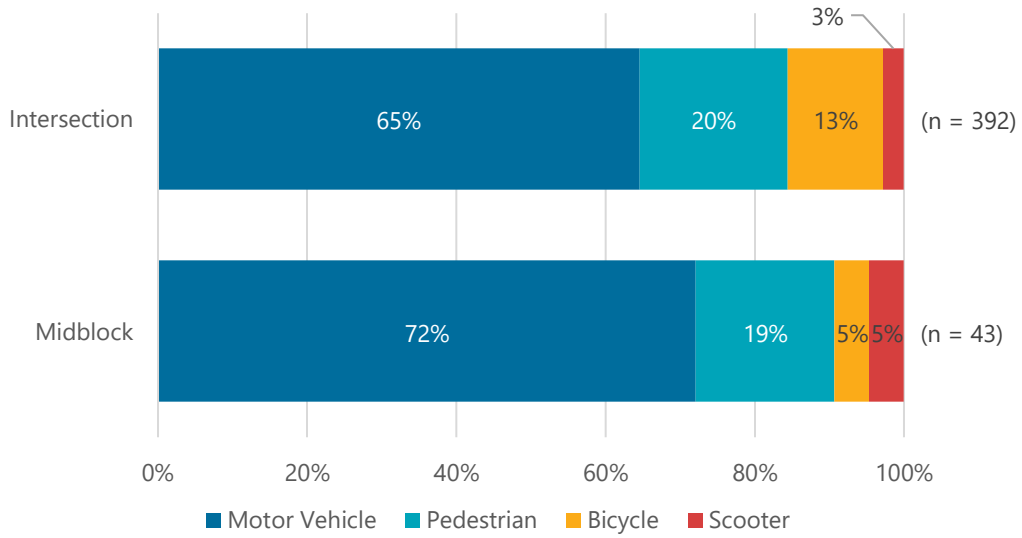


Figure 17 Number of total crashes and weighted crashes from 26th Street to Centinela Avenue, 2015-2024 (Note that because the intersection with Centinela Avenue falls partially outside the City of Santa Monica boundary, crash data here may be incomplete)

Figure 18 shows the distribution of injury crash modes at intersections and midblock. Motor vehicles crashes make up the majority at both location types, nonetheless the share of motor vehicle crashes at intersections (65%) is less than at midblock (72%).

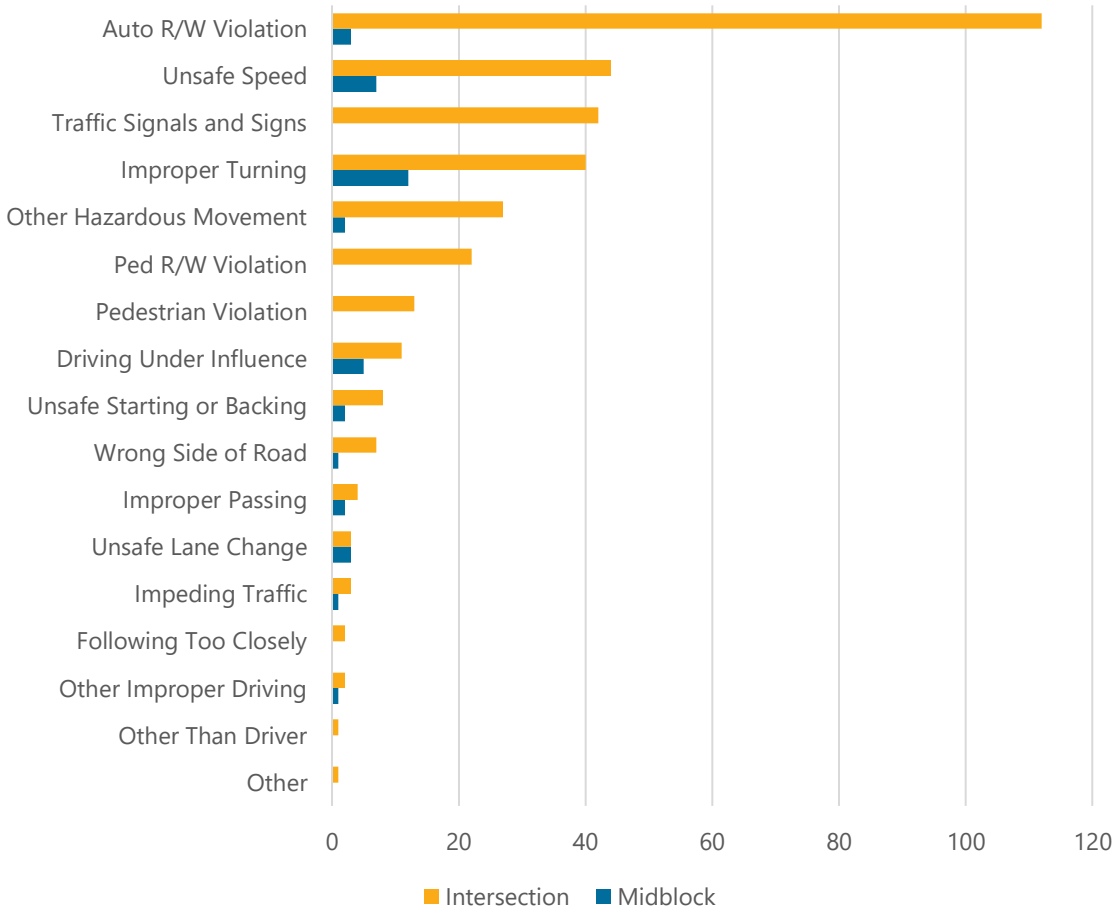
Figure 18 Intersection and midblock injury crashes by crash mode



At intersections, the most significant primary collision factor for injury crashes is failure to yield to an automobile's right of way. The next most significant primary collision factor at intersections is unsafe speed.

For injury crashes occurring at midblock, improper turning and unsafe speeds are the most common primary collision factors. The complete list of collision factors for both intersection and midblock crashes is presented in Figure 19.

Figure 19 Primary Collision Factors in Injury Crashes



Note: The above figured does not include the 54 injury crashes where contributing circumstances was coded as "Unknown", "Not Stated" or "Missing". Definitions for each primary collision factor are in the appendix and complied from the California Highway Patrol Collision Investigation Manual.

Figure 20 shows the distribution of injury crashes that involve pedestrians and bicyclists at different location types. Many of these crashes (56-59%) occur at signalized intersections. Bicyclist crashes (37%) and pedestrian crashes (34%) occur at about the same rate at unsignalized intersections. Conversely, pedestrian crashes (10%) are more common at midblock than bicyclist crashes (4%).

Figure 20 Pedestrian and bicyclists injury crashes by location type

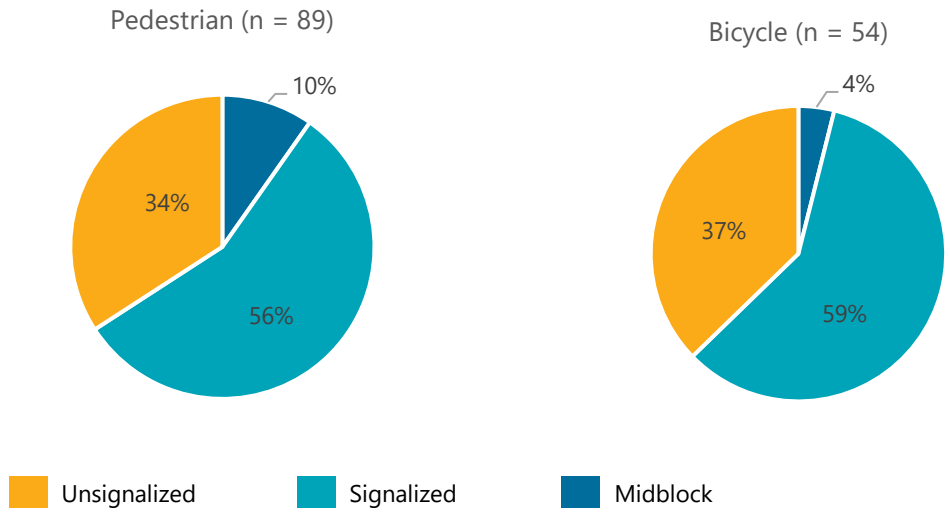
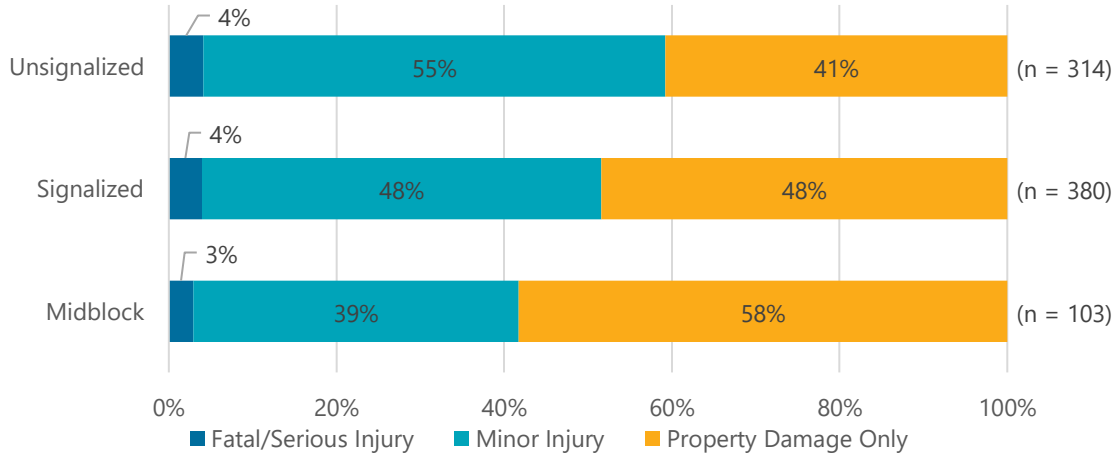


Figure 21 shows the distribution of crash types across different location types. Crashes occur most frequently at signalized intersections, and injury severity is highest at unsignalized intersections.

Figure 21 Crash injury level by location type, 2015-2024



When are crashes occurring?

This section examines seasonality of crashes and lighting. Figure 22 shows the total number of crashes each month over the ten-year period, by month. No discernable patterns emerge.

Figure 22 Frequency of Crashes by Month by Severity, 2015-2024

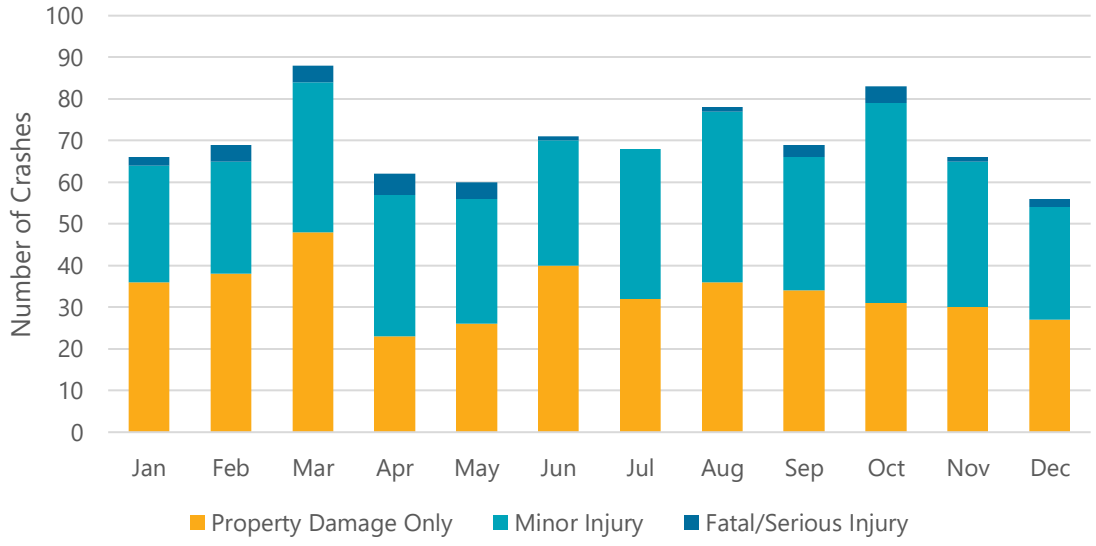


Figure 23 illustrates how the number of crashes increases throughout the day, peaking between 5 pm and 6 pm.

Figure 23 Crashes by Time of Day by Severity, 2015-2024

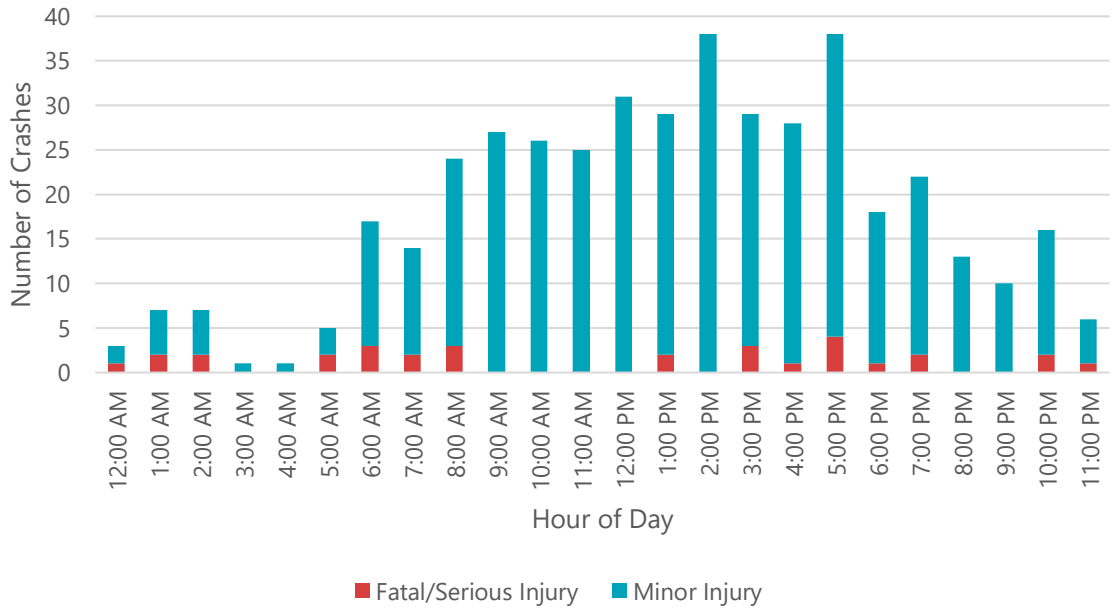


Figure 24 and Figure 25 illustrate the direction of travel for parties involved in injury crashes during the analysis period. For travel along Santa Monica Boulevard, the distribution between eastbound and westbound is generally similar, though the westbound direction has a slightly higher share during most hours of the day. Similarly, for northbound and southbound travel on cross streets, both directions have nearly equal shares, with no discernible trend.

Figure 24 Injury Crashes by Time of Day by Direction of Travel East-Westbound, 2015-2024

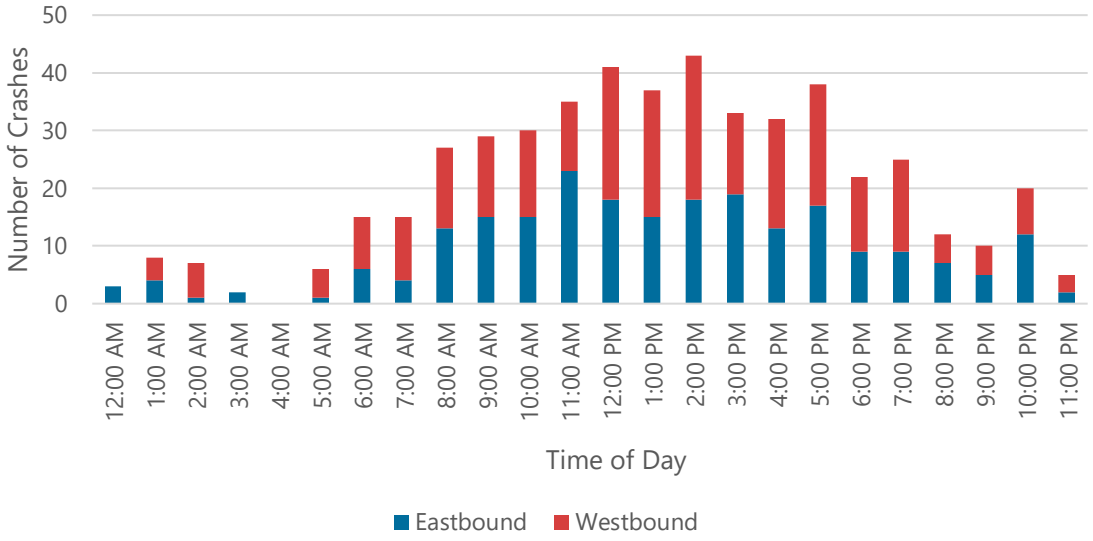
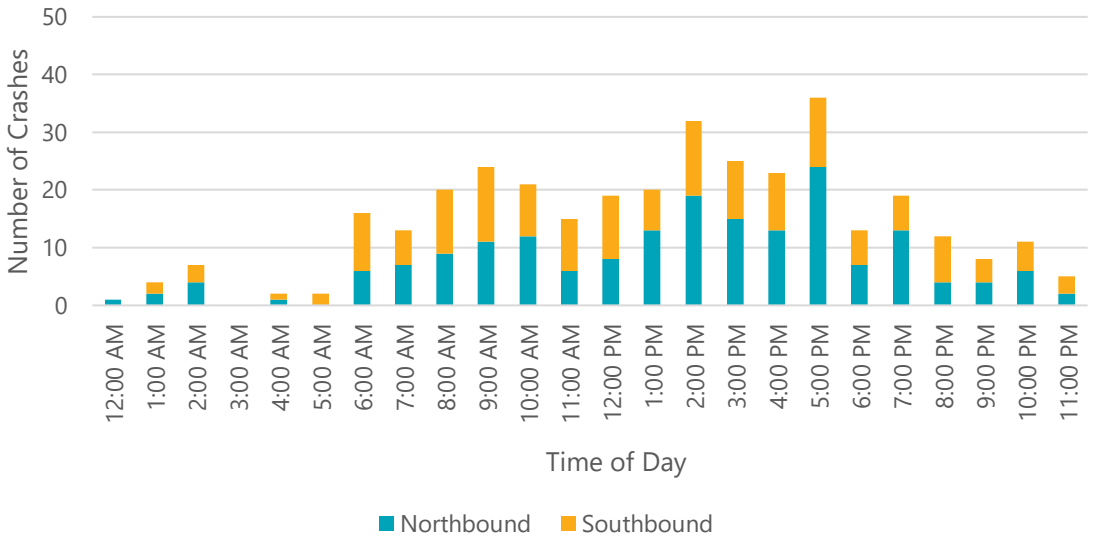


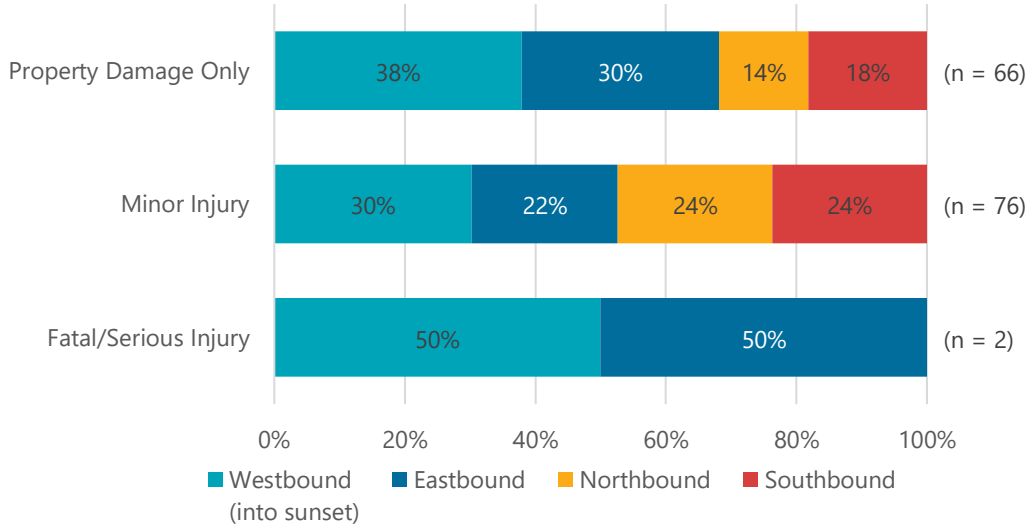
Figure 25 Injury Crashes by Time of Day by Direction of Travel North-Southbound, 2015-2024



Seasonal changes affect lighting conditions, with daylight hours being shorter in the winter. Lighting availability is especially important for pedestrian and bicycle visibility, when streetlights may be their only source of lighting.

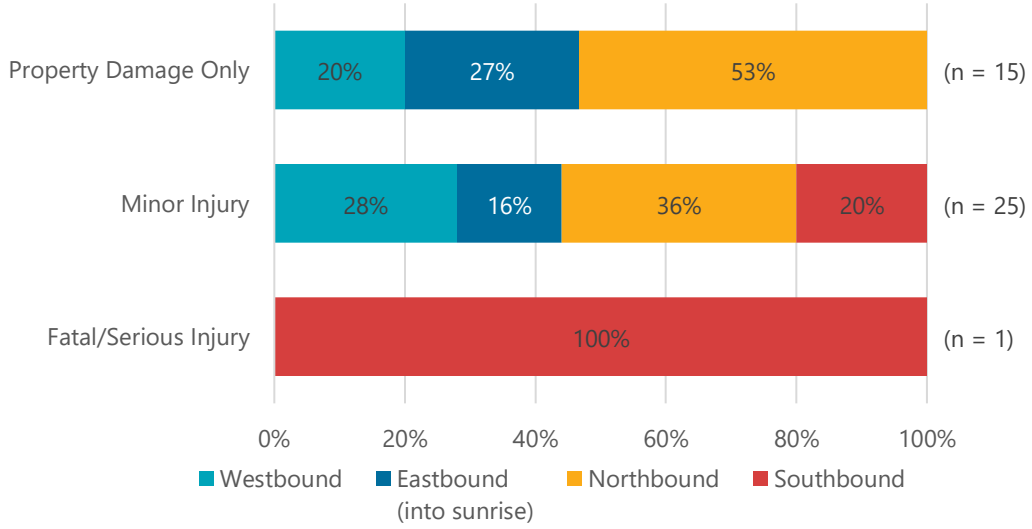
Crashes in Figure 26Figure 26 include all incidents occurring between November and March from 3 to 5 PM (winter sunset) and all crashes occurring between May and September from 5 to 7 PM (summer sunset). The direction of travel refers to the movement of drivers involved in a given crash. In this chart, westbound travel indicates that the driver was driving into the sunset.

Figure 26 Crashes at Sunset by Driver's Direction of Travel



Crashes in Figure 27Figure 27 include all incidents occurring between November and March from 6 to 8 AM (winter sunrise) and all crashes occurring between May and September from 5 to 7 AM (summer sunrise). The direction of travel refers to the movement of drivers involved in a given crash. In this chart, eastbound travel indicates that the driver was driving into the sunrise.

Figure 27 Crashes at Sunrise by Driver's Direction of Travel



Sun glare is a topic of emerging study (Study on the influence of sun glare on driving safety - ScienceDirect). While a detailed analysis of this phenomenon could only be accomplished by reviewing the narrative of the crash reports, slower speeds can reduce the risk of serious injury should a driver be temporarily unable to see because of the low hanging sun.

Figure 28 shows the distribution of lighting conditions in crashes across different injury levels. Most property damage only (PDO) and minor injury crashes occur during daylight, with only a small proportion happening at dusk or dawn. However, nearly one-quarter of PDO crashes and one-fifth of minor injury crashes occur in the dark, under the presence of street lighting. The proportion of fatal and serious injury crashes occurring in the dark with street lighting is significantly higher, accounting for 45% of these crashes under such lighting conditions. The share of crashes occurring at dusk or dawn is also higher for fatal and serious injuries compared to the other two categories. This suggests that the lack of natural daylight may be an underlying cause of fatal and serious injuries crashes.

Figure 28 Crashes by Injury Level and Lighting Conditions

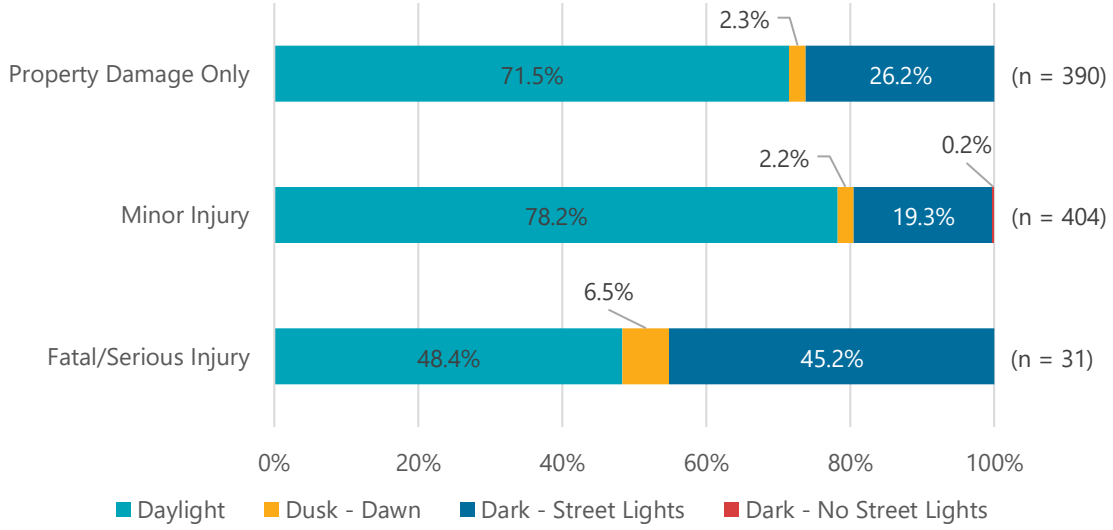


Figure 29 examines the relationship between the number of pedestrian crashes throughout the year and the lighting conditions at the time of each injury crash. October recorded the highest number of pedestrian crashes overall in the study period. November had a comparable number of pedestrian crashes, with more occurring in darkness. May and June had the lowest number of pedestrians crashes.

This analysis suggests that lighting conditions are unlikely to be a major factor in pedestrian crashes, as most incidents occur either in daylight or areas with streetlights. However, the data does suggest that winter months do have more incidence of pedestrian crashes, likely due to precipitation and/or reduced overall visibility (cloudy days, fewer daylight hours). An important caveat to this result is that data only indicates the presence of streetlights, but it does not capture if the lightning conditions were adequate.

Figure 29 Lighting Conditions in Pedestrian Injury Crashes by Month, 2015-2024

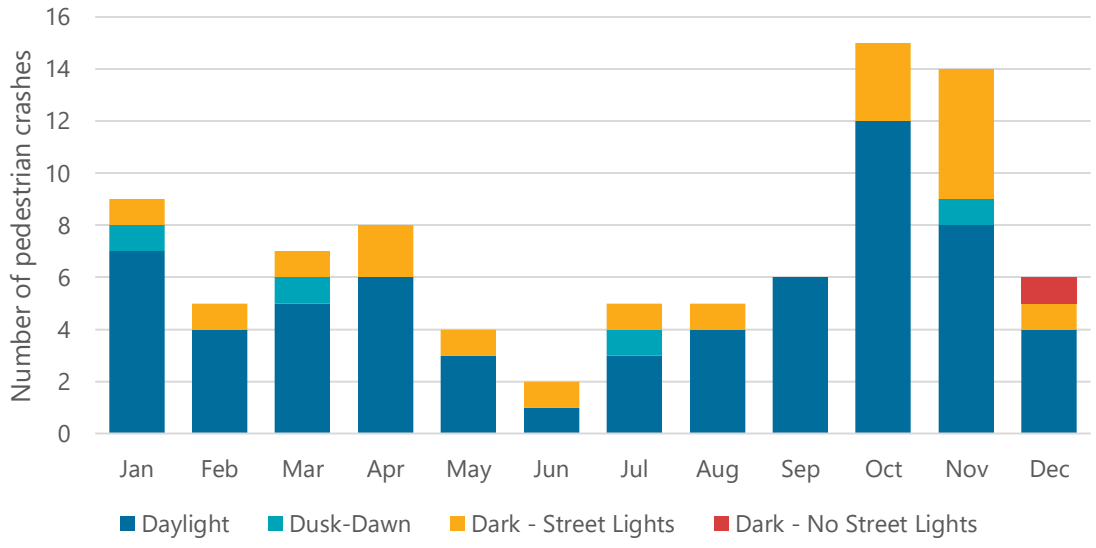


Figure 30 highlights the distribution of lighting conditions for the 52 bicycle injury crashes. The data shows that bicycle crashes predominantly occur during daylight. March, April, May, September, October, November, and December had bicycle crashes that occur in the dark with streetlights.

Figure 30 Lighting Conditions in Bicycle Injury Crashes by Month, 2015-2024

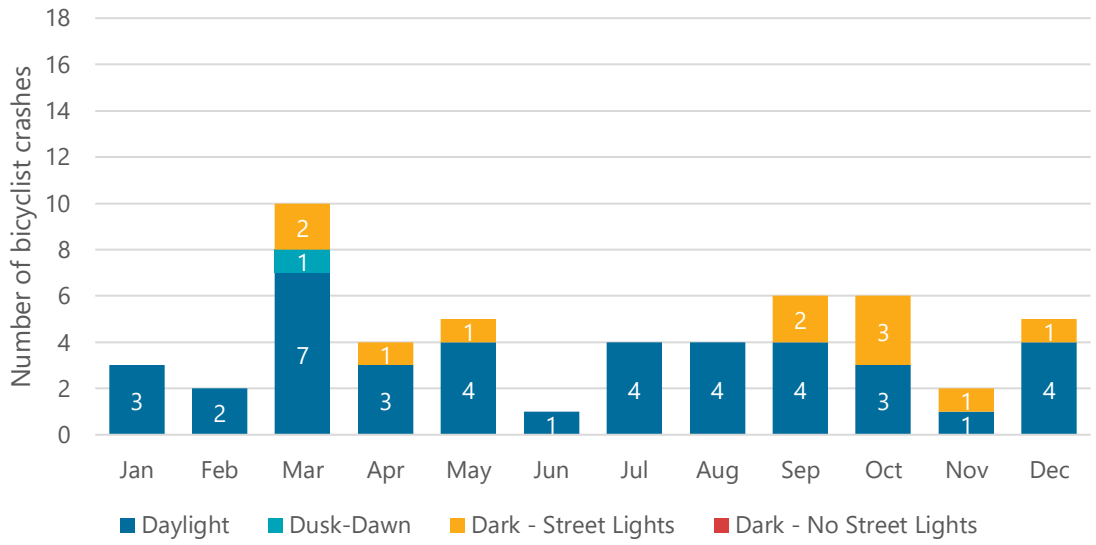
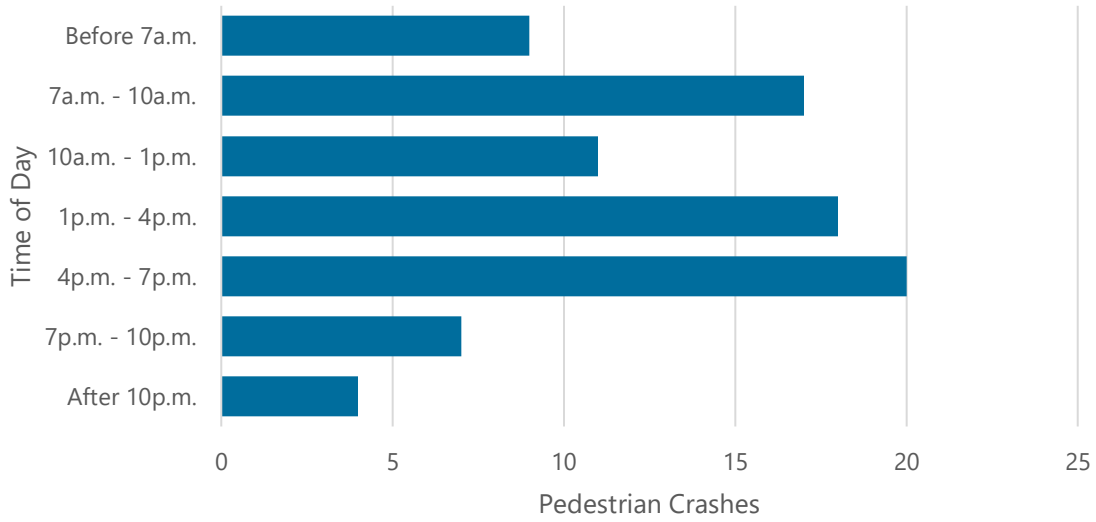


Figure 31 illustrates the distribution of pedestrian crashes by time of day during the analysis period. Most crashes occur between three timeframes: 7 am to 10 am, 1pm to 4 pm, and 4 pm to 7 pm. In sum, the rates are likely associated with exposure, as these times of day are expected to have more activity.

Figure 31 Pedestrian injury crashes by time of day occurrence, 2015-2024



Why are crashes occurring?

Crash reports provide details about the primary and contributing factors that caused a crash, and the sobriety of each party involved. This analysis examines the proportion of crashes where speed, impairment, and/or inattention was identified either as primary collision factor or contributing factor when applicable.

Figure 32 presents speed-related crashes by injury level. A crash was categorized as speed-related if the primary collision factor was identified as "unsafe speed". Among the 31 serious injury crashes, 3% were associated with speeding, a lower proportion compared to minor injury crashes and property damage only. This trend is atypical, as most crash analyses show a positive correlation between speed and injury severity.

Figure 32 Speed-Related Crashes by Injury Level, 2015-2024

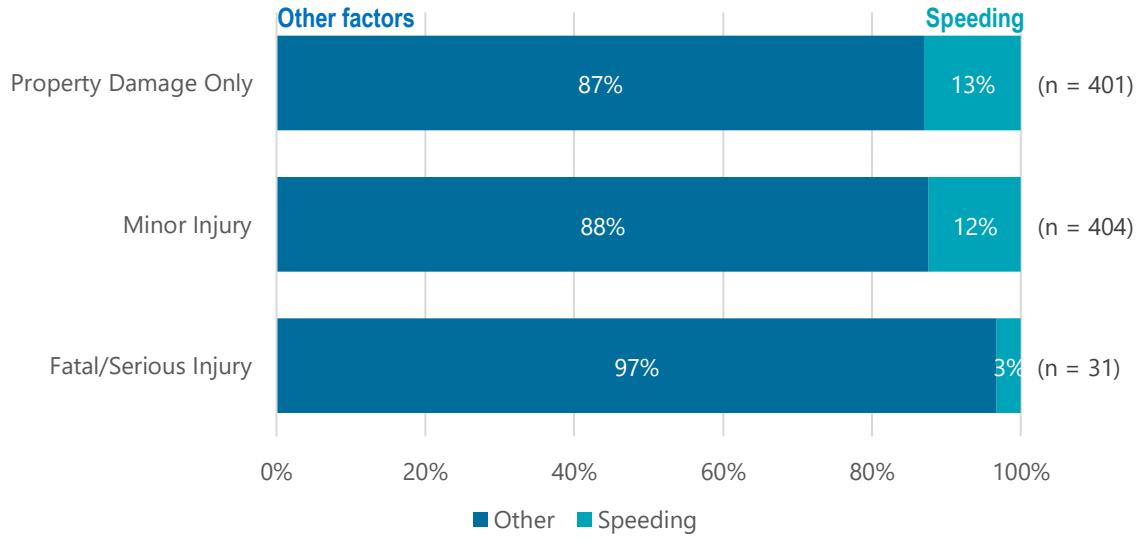


Figure 33 shows impairment-related crashes by injury level. A crash was considered impairment-related if any party "Had Been Drinking (HBD) - Under Influence" or "Under Drug Influence"; or if the crash primary collision factor was recorded as "Driving Under Influence". Out of the 836 crashes analyzed, only 48 (5%) were related to impairment. The proportion of crashes involving impairment is highest in property damage only (7%) and fatal/serious injury crashes (6%).

Figure 33 Impairment-Related Crashes by Injury Level, 2015-2024

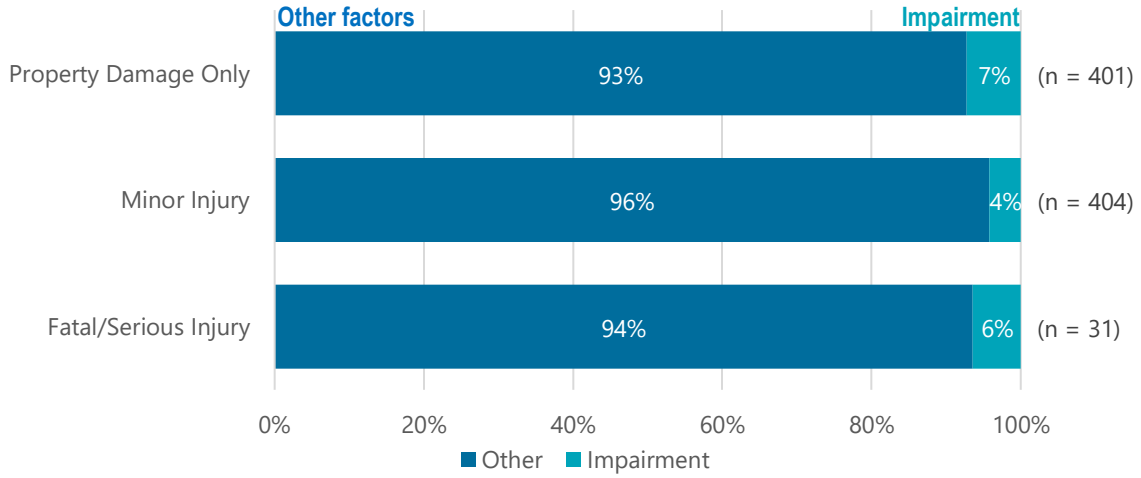
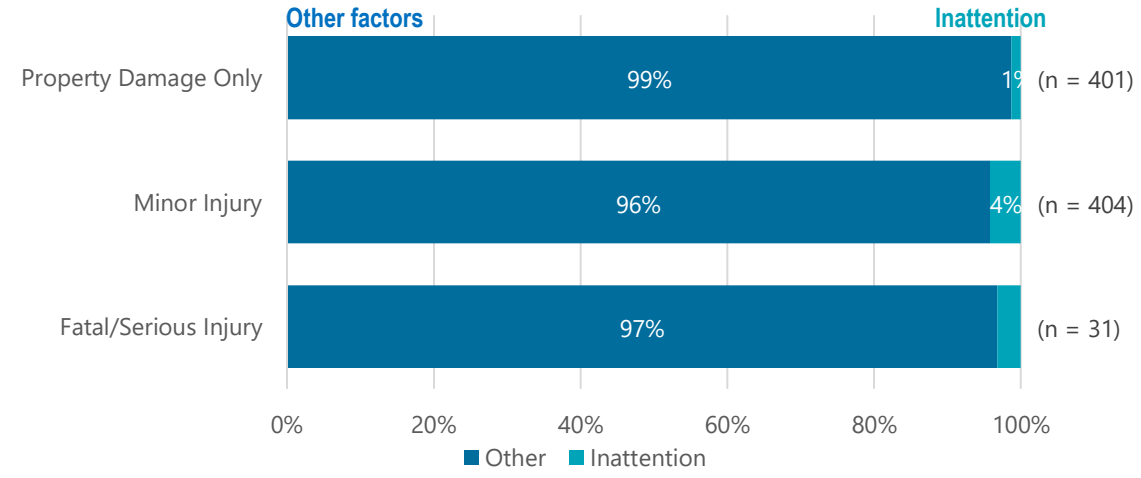


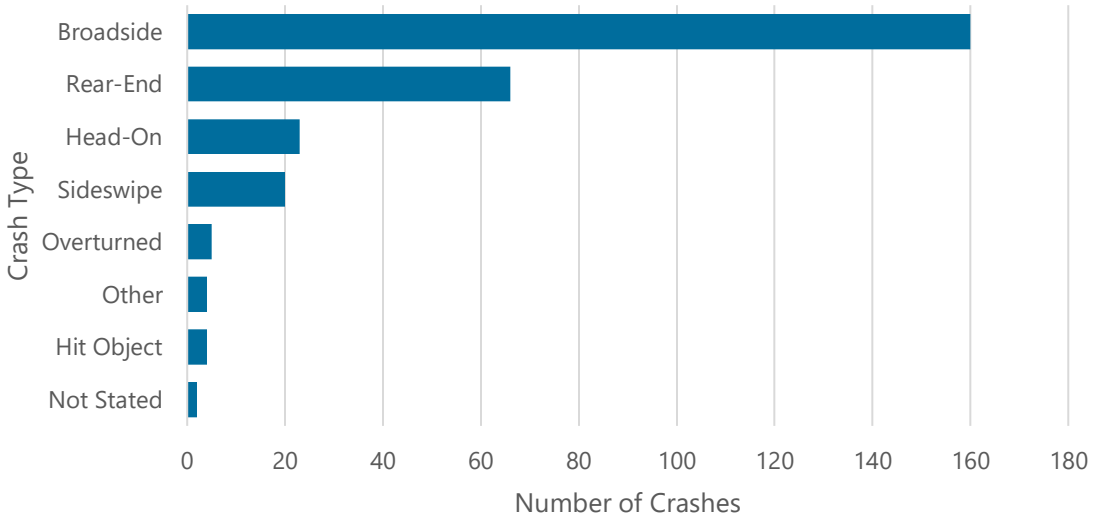
Figure 34 highlights inattention-related crashes by injury level. A crash was classified as inattention-related if the contributing factor for any party was listed as "Inattention". According to the crash data, inattention is a small factor in crashes on Santa Monica Boulevard.

Figure 34 Inattention-Related Crashes by Injury Level, 2015-2025



For motor vehicle-only injury crashes, the most common crash type is a broadside crash, where the front of one vehicle strikes the side of another vehicle. Figure 35 shows that 160 out of the 284 motor vehicle injury crashes were broadside crashes, followed by rear-end crashes (66) and head-on collisions (23).

Figure 35 Motor Vehicle Injury Crash Types, 2014-2025



A deeper understanding of why crashes occur requires an evaluation of the movements made by the parties involved immediately before the crash.

Table 7 illustrates the combinations of preceding movements by motor vehicles involved in motor vehicle-only injury crashes.

The most common scenario involves two vehicles proceeding straight. These movements are typical for broadside crashes. Other common scenarios include a vehicle proceeding straight colliding with a vehicle making a left turn, vehicle proceeding straight into a stopped vehicle.

Table 7 Motor Vehicles Movement Combination Preceding Motor Vehicle-Only Injury Crashes
(continued on following page)

Motor Vehicle 1 Action	Motor Vehicle 2 Action	Number of Crashes
Proceeding straight	Proceeding straight	107
Making left turn	Proceeding straight	59
Proceeding straight	Stopped in road	45
Making right turn	Proceeding straight	12
Entering traffic	Proceeding straight	10
Making U-turn	Proceeding straight	8
Changing lanes	Proceeding straight	5

Motor Vehicle 1 Action	Motor Vehicle 2 Action	Number of Crashes
Parked	Proceeding straight	4
Proceeding straight	*NA*	4
Backing	Making left turn	2
Backing	Proceeding straight	2
Making left turn	Parked	2
Making left turn	Stopped in road	2
Making right turn	Stopped in road	2
Other	Proceeding straight	2
Proceeding straight	Slowing / stopping	2

Note: Preceding movement combinations with fewer than two crashes are not shown in the table.

Table 8 illustrates the combinations of pedestrian and motor vehicle actions leading to pedestrian injury crashes. The dominant preceding crash type is a vehicle making a left turn into a pedestrian crossing in a crosswalk at an intersection.

Table 8 Pedestrian and Vehicle Movement Combination Preceding Pedestrian Crashes

Pedestrian action	Motor Vehicle Action	Number of Crashes
Crossing in crosswalk at intersection	Making left turn	23
Crossing in crosswalk at intersection	Proceeding straight	16
Crossing in crosswalk at intersection	Making right turn	11
In road	Proceeding straight	10
Not in road	Proceeding straight	5
Crossing not in crosswalk	Proceeding straight	3
Not in road	Making right turn	3
Crossing in crosswalk at intersection	Traveling wrong way	2

Note: Preceding movement combinations with fewer than two injury crashes are not shown in the table. Refer to California Highway Patrol Collision Investigation Manual.

Table 9 highlights the combinations of bicycle and motor vehicle movements preceding injury crashes. The most common motor vehicle movement involved in these crashes was making a right turn, making a left turn, and proceeding straight, while the bicycle was proceeding straight in all instances.

Table 9 Bicycle and Vehicle Movement Combination Preceding Bicycle Injury Crashes

Bicycle action	Motor Vehicle Action	Number of Crashes
Proceeding straight	Making right turn	11
Proceeding straight	Making left turn	9
Proceeding straight	Proceeding straight	9
Proceeding straight	Parked	4
Proceeding straight	Entering traffic	3
Making left turn	Proceeding straight	2
Proceeding straight	Stopped in road	2
Traveling wrong way	Making right turn	2

Note: Preceding movement combinations with fewer than two injury crashes are not shown in the table.

Another way to analyze crash patterns is by examining the reported violation codes. During this period, the top three cited violations in reported crashes were: unsafe lane change (n=134), excessive speed (n=102); and failure to stop at a stop sign before entering an intersection (n=51).

5 DEMAND ANALYSIS

Methodology

A travel demand analysis was conducted to identify high activity areas along Santa Monica Boulevard generating trips taken by any mode that require travel across the boulevard. This analysis utilized data from Replica, a platform that provides modeled mobility insights based on anonymized location data.

To obtain origin-destination (OD) flows, the Replica platform allows users to select predefined geographies (e.g., census tracts) or define custom geographies. Twelve (12) custom areas were used for this analysis, designed to evaluate trip flows across Santa Monica Boulevard. These areas are bounded by Wilshire Boulevard to the north and Colorado Avenue to the south, with Santa Monica Boulevard serving as the central divider. Odd-numbered zones represent areas north of Santa Monica Boulevard (bounded by Wilshire Boulevard), while even-numbered zones represent areas south of Santa Monica Boulevard (bounded by Colorado Avenue).

The crossing streets that define the boundaries of these zones are as follows:

- **SM01 and SM02:** Ocean Avenue to 4th Street
- **SM03 and SM04:** 4th Street to Lincoln Boulevard

- **SM05 and SM06:** Lincoln Boulevard to 14th Street
- **SM07 and SM08:** 14th Street to 20th Street
- **SM09 and SM10:** 20th Street to 26th Street
- **SM11 and SM12:** 26th Street to Centinela Avenue

These zones were loaded into the Replica platform to retrieve all individual trips starting or ending within any of the custom zones. The query returned approximately 25,000 daily trips within the defined zones.

An origin-destination (OD) matrix was then constructed to aggregate all trips between zones. For instance, trips starting in zone SM01 and ending in zone SM03 were combined with trips starting in SM03 and ending in SM01. Using this matrix, the analysis consolidated unidirectional flows into bidirectional flows and identified the OD pairs with the largest trip volumes.

It is important to note that only flows involving a north zone paired with a south zone were considered, as these trips require crossing Santa Monica Blvd. The remainder of this section presents the results of the demand analysis.

Trip Origin and Destination Analysis

Figure 36 illustrates trip origin and destination pairs that have more than 400 daily trips across Santa Monica Boulevard. The top five zones with more than 400 daily trips are shown below. Analyzing travel patterns of how people cross Santa Monica Boulevard can provide insights into where potential conflicts may occur.

Figure 36 Origin Destination Pairs with more than 200 Trips, 2019-2023

SM 01 (Santa Monica Boulevard between Ocean Avenue and 4th Street) and SM 04 (Santa Monica Boulevard between 4th Street and Lincoln Boulevard)

SM 01 is located between Ocean Avenue and 4th Street and SM 04 is located between 4th Street and Lincoln Boulevard. SM 01 primarily consists of office buildings, retail and dining areas, and hotels, while SM 04 features a mix of dining and retail areas, such as 3rd Street Promenade, along with a library and residential apartment buildings.

These two zones have the most daily trips with 737 trips. Trips are divided into two flows:

- 57% of trips (419 trips) originate in SM 01 and end in SM 04.
- 43% of trips (318 trips) originate in SM 04 and end in SM 01.

SM 01 and SM 02 (Santa Monica Boulevard between 4th Street and Lincoln Boulevard)

SM 01 and SM 02 are also located in the downtown area between 4th Street and Lincoln Boulevard. SM 01 primarily consists of office buildings at 100 Wilshire Boulevard and 1299 Ocean Avenue, retail and dining areas, and hotels. SM 02 consists of retail areas including Santa Monica Place, a shopping mall. 3rd Street Promenade intersects both zones.

These two zones have a total of 643 daily trips, and trips are divided into two flows:

- 44% of trips (286 trips) originate in SM 01 and end in SM 02.
- 55% of trips (357 trips) originate in SM 02 and end in SM 01.

SM 01 (Santa Monica Boulevard between Ocean Avenue and 4th Street) and SM 06 (Santa Monica Boulevard between Lincoln Boulevard and 14th Street)

SM 01 is located between Ocean Avenue and 4th Street and SM 06 is located between Lincoln Boulevard and 14th Street. SM 01 SM 01 primarily consists of office buildings, retail and dining areas, and hotels, while SM 06 consists of dining and retail areas, offices, and residential apartment buildings.

These two zones have a total of 296 trips, and trips are divided into two flows:

- 54% of trips (160 trips) originate in SM 01 and end in SM 06.
- 46% of trips (136) originate in SM 06 and end in SM 01.

SM 02 (Santa Monica Boulevard between Ocean Avenue to 4th Street) and SM 03 (Santa Monica Boulevard between 4th Street and Lincoln Boulevard)

SM 02 is located between Ocean Avenue to 4th Street and SM 03 is located between 4th Street and Lincoln Boulevard. SM 02 consists of retail areas including Santa Monica Place and 3rd Street Promenade. SM 03 consists of a mix of retail spaces, offices, and residential areas.

These two zones experience a total of 201 trips and are divided into two flows:

- 50% of trips (101 trips) originate in SM 02 and end in SM 03.
- 50% of trips (100 trips) originate in SM 03 and end in SM 02.

SM 03 and SM 04 (Santa Monica Boulevard between 4th Street and Lincoln Boulevard)

SM 03 and SM 04 are located between 4th Street and Lincoln Boulevard. Both areas feature a mix of retail spaces including car dealerships, offices, and residential areas.

These two zones experience a total of 463 daily trips and are divided into two flows:

- 56% of trips (261 trips) originate in SM 03 and end in SM 04.
- 44% of trips (207 trips) originate in SM 04 and end in SM 03.

SM 05 and SM 06 (Santa Monica Boulevard between Lincoln Boulevard and 14th Street)

SM 05 and SM 06 are located between Lincoln Boulevard and 14th Street. SM 05 consists of retail including car dealerships, dining, offices, and residential areas.

These two zones have a total of 355 trips and are divided into two flows:

- 46% of trips (165 trips) originate in SM 05 and end in SM 06.
- 54% of trips (190 trips) originate in SM 06 and end in SM 05.

SM 06 (Santa Monica Boulevard between Lincoln Boulevard and 14th Street) and SM 07 (Santa Monica Boulevard between 14th Street and 20th Street)

SM 06 is located between Lincoln Boulevard and 14th Street and SM 07 is located between 14th Street 20th Street. SM 06 consists of retail, dining, offices, and residential areas. SM 07 consists of retail areas including car dealerships, dining, and offices. SM 07 consists of retail areas including retail areas including car dealerships, offices, and residential areas.

These two zones have a total of 313 total trips and are divided into two flows:

- 50% of trips (156 trips) originate in SM 06 and end in SM 07.
- 50% of trips (157 trips) originate in SM 07 and end in SM 06.

SM 07 (Santa Monica Boulevard between 14th Street and 20th Street) and SM 10 (Santa Monica Boulevard between 20th Street and 26th Street)

SM 07 is located between 14th Street and 20th Street and consists of retail areas including retail areas including car dealerships, offices, and residential areas. SM 10 is located between 20th Street and 26th Street and consists of healthcare facilities such as the UCLA Health Santa Monica Parkside Family Medicine and Providence Saint John's Cancer Institute, office buildings including Colorado Center, retail and dining areas, and residential areas.

These zones experience 226 total trips and are divided into two trip flows:

- 52% of trips (117 trips) originate in SM 07 and end in SM 10.
- 48% of trips (109 trips) originate in SM 10 and end in SM 07.

SM 09 and SM 10: (Santa Monica Boulevard between 20th Street and 26th Street)

SM 09 and SM 10 are located between 20th Street and 26th Street. SM 09 consists of healthcare facilities such as Providence Saint John's Health Center, educational facilities like McKinley Elementary School, retail and dining areas, and residential areas. SM 10 consists of healthcare facilities such as the UCLA Health Santa Monica Parkside Family Medicine and Providence Saint John's Cancer Institute, office buildings including Colorado Center, retail and dining areas, and residential areas.

These zones experience 594 daily trips and are divided into two flows:

- 43% of trips (254 trips) originate in SM 09 and end in SM 10.
- 57% of trips (340 trips) originate in SM 10 and end in SM 09.

SM 09 (Santa Monica Boulevard between 20th Street and 26th Street) and SM 12 (Santa Monica Boulevard between 26th Street and Centinela Avenue)

SM 09 is located between 20th Street and 26th Street, and SM 12 is located between 26th Street and Centinela Avenue. SM 09 includes healthcare facilities, offices, retail, and residential areas. SM 12 features a mix of retail spaces, hotels, and residential areas.

These zones have a total of 325 trips and are divided into two flows:

- 57% of trips (204 trips) originate in SM 09 and end in SM 12.
- 43% of trips (154 trips) originate SM 12 and end in SM 09.

SM 10 (Santa Monica Boulevard between 20th Street to 26th Street) and SM 11 (Santa Monica Boulevard between 26th Street and Centinela Avenue)

SM 10 is located between 20th Street and 26th Street, and SM 11 is located between 26th Street and Centinela Avenue. SM 10 includes healthcare facilities, retail, and offices, and residential. SM 11 has a mix of retail spaces, hotels, and residential areas.

These two zones have a total of 272 trips and are divided into two flows:

- 49% of trips (133 trips) originate in SM 10 and end in SM 11.
- 51% of trips (139 trips) originate in SM 11 and end in SM 10.

SM 11 and SM 12 (Santa Monica Boulevard between 26th Street and Centinela Avenue)

SM 11 and SM 12 are located between 26th Street and Centinela Avenue. Both areas feature a mix of retail spaces, hotels, and residential areas.

These two zones have a total of 477 daily trips and are divided into two flows:

- 48% of trips (229 trips) originate in SM 11 and end in SM 12.
- 52% trips (248 trips) originate in SM 12 and end in SM 11.

Downtown Santa Monica Station and SM 01 (Santa Monica Boulevard between Ocean Avenue to 4th Street)

Downtown Santa Moncia E Line Metro Station is located on Colorado Avenue and 4th Street, and SM 01 is located between Ocean Avenue to 4th Street.

These two zones have a total of 297 trips and are divided into two flows:

- 85% of trips (253 trips) originate in the Downtown Santa Monica Station and end in SM 01.
- 15% of trips (36 trips) originate in SM 01 and end at the Downtown Santa Monica Station.

6 SYNTHESIS OF SAFETY ISSUES

The following issues elevated by the technical walk audit and safety analysis should be considered when making recommendations for Santa Monica Boulevard.

1. **Excessive speed**

Excessive speed has been identified as one of the top three collision factors in reported crashes. Speeding is more prevalent in the areas between Cloverfield Boulevard and Centinela Avenue where many drivers were reported traveling 5 to 15 mph over the posted speed limit. Safety walk audit participants also shared concerns about higher vehicle speeds in the eastern portion of Santa Monica Boulevard due to wider lanes and larger block spacing which encourages speeding. Evaluate appropriate traffic calming measures approaching intersections to reduce injury collisions of all types.

2. **Collisions involving people walking in the crosswalk**

Pedestrian crashes are overrepresented in serious injury crashes. Appropriate safety measures should be explored during the recommendation phase to increase driver awareness of pedestrians and compliance with yielding laws.

3. **Inconsistent pavement markings and signs**

Pavement markings and signs are inconsistent throughout the Santa Monica Boulevard corridor. Some crosswalks and warning and regulatory signage are faded, while crosswalks are missing on north-south running streets. While pedestrian crashes are fewer in unmarked areas compared to marked areas, standardizing crosswalks and signage throughout the corridor could help reduce overall crashes. Additionally, consistent and clear crosswalks and warning and regulatory signage would enhance visibility for both drivers and pedestrians.

4. **Side street conflicts**

A significant number of crashes involve vehicles making left turns while pedestrians are crossing crosswalks. During the safety walk audit, numerous drivers were observed completing their left turns during permissive phases when the traffic signal turned yellow or red. The lack of sufficient gaps in opposing through movements causes drivers to focus on completing their turns and failing to notice pedestrians crossing the street. For signalized intersections, consider eliminating permissive phases at high pedestrian volumes areas. At unsignalized intersections with side streets, a similar threat is posed by drivers turning off the boulevard where left turn prohibitions can be considered.

Additionally, it is difficult for drivers traveling straight across the boulevard from side streets to find acceptable gaps, resulting in the threat of broadside collisions. Consider implementing right turn only restrictions where the predominant crash type is broadside and/or the resulting out of direction travel impacts are low.

5. **Excessive distance between marked crosswalks**

Large block spacing causes many pedestrians to walk long distances to access crosswalks, causing many to jaywalk as pedestrians often opt for a shorter route. This behavior is promoted due to the lack of crosswalks running north-south of Santa Monica Boulevard.

7 RANKED INTERSECTION LIST

Table 10 15 Intersections Ranked by Weighted Severity of Reported Crashes

Intersection	Total crashes	Total Crashes Weighted (a)	Serious Injury Crashes	Pedestrian Crashes	Bicycle Crashes	Scooter Crashes	Motor Vehicle Crashes	Most common turning movement combinations	Most common injurious collision type
Santa Monica Blvd and 14th St	34	152	2	4	4	1	25	Westbound through – Southbound through (2) Eastbound turn left – Northbound through (2)	Broadside (9)
Santa Monica Blvd and 16th St	37	152	1	5	4	0	28	Westbound through – Northbound through (8)	Broadside (17)
Santa Monica Blvd and Lincoln Blvd	38	144	2	1	1	0	36	Eastbound through – Northbound through (3)	Broadside (5)
Santa Monica Blvd and 20th St	37	140	1	5	4	0	28	No movement combination with more than 1 crash	Broadside (9)
Santa Monica Blvd and 4th St	56	139	1	3	0	3	50	Westbound through – Southbound through (4)	Broadside (6)
Santa Monica Blvd and 26th St	31	137	2	7	3	0	21	Westbound through – Northbound through (2) Westbound through – Northbound turn left (2)	Broadside (9)
Santa Monica Blvd and 15th St	24	122	2	2	0	0	22	Eastbound through – Southbound through (6)	Broadside (11)
Santa Monica Blvd and 18th St	18	112	2	2	2	0	14	Eastbound through – Southbound through (6)	Broadside (9)
Santa Monica Blvd and 5th St	30	109	1	4	3	1	22	Eastbound through – Northbound through (2)	Broadside (5)

Intersection	Total crashes	Total Crashes Weighted (a)	Serious Injury Crashes	Pedestrian Crashes	Bicycle Crashes	Scooter Crashes	Motor Vehicle Crashes	Most common turning movement combinations	Most common injurious collision type
Santa Monica Blvd and 10th St	18	99	3	5	0	0	13	Westbound through – Southbound through (2) Westbound through – Northbound through (2)	Broadside (6)
Santa Monica Blvd and 11th St	17	99	2	4	3	0	10	Westbound through – Northbound through (2)	Broadside (7)
Santa Monica Blvd and 6th	20	97	3	2	4	0	14	Eastbound turn right – Northbound through (1)	Sideswipe (3)
Santa Monica Blvd and Princeton St	18	92	2	2	2	0	14	No movement combination with more than 1 crash	Broadside (5)
Santa Monica Blvd and 19th St	19	75	0	3	1	0	15	Westbound through – Northbound through (5)	Broadside (10)
Santa Monica Blvd and Franklin St	14	69	1	1	1	1	11	Eastbound through – Southbound through (3	Broadside (5)

(a) Crashes are weighted by injury severity as follows: fatal and serious injury = 20, other injury = 5, and property damage only = 1.
Number in parenthesis indicates the number of crashes corresponding to that movement combination or collision type.

APPENDIX –COLLISION FACTOR DEFINITIONS

Auto R/W Violation: Situations where a driver fails to yield the right-of-way to another vehicle as mandated, causing conflicts or collisions.

Driving Under Influence: Operating a vehicle while impaired by alcohol or drugs, significantly increasing crash risk.

Following Too Closely: When a vehicle maintains an insufficient distance from the vehicle ahead, leading to rear-end collisions.

Impeding Traffic: Driving at unusually low speeds or stopping without cause, obstructing the normal flow of traffic.

Improper Passing: Overtaking another vehicle in prohibited zones or without ensuring a clear path, risking side-swipe or head-on collisions.

Improper Turning: Executing turns in a manner that violates traffic rules or endangers others, like turning from the wrong lane.

Not Stated: Cases where the specific cause or contributing factor of the crash isn't specified.

Other Hazardous Movement: Dangerous driving actions not categorized elsewhere, such as sudden swerving.

Other Improper Driving: Driver behaviors that are inappropriate but don't fall under specific infractions, like erratic driving.

Other Than Driver: Crashes attributed to factors not involving driver error, such as mechanical failures or environmental conditions.

Other: Miscellaneous crash causes that don't fit standard categories.

Ped R/W Violation: Situations where a pedestrian fails to yield the right-of-way when required, leading to potential accidents.

Pedestrian Violation: Incidents where a pedestrian's actions, like jaywalking, contribute to a collision.

Traffic Signals and Signs: Crashes resulting from disregarding or misinterpreting traffic control devices, such as running red lights.

Unknown: Instances where the cause of the crash hasn't been determined or recorded.

Unsafe Lane Change: Switching lanes without proper signaling, checking blind spots, or yielding, causing potential collisions.

Unsafe Speed: Driving at speeds unsuitable for conditions, exceeding limits, or too fast for road/weather conditions.

Unsafe Starting or Backing: Initiating movement from a stationary position or reversing without ensuring the path is clear.

Wrong Side of Road: Driving against the designated direction, leading to potential head-on crashes.