May 25, 2026

MEMORANDUM

SUBJECT: Collisions on California State Route 138 – Data Analysis Report

FROM: The Transportation Initiative

Student Policy Institute Berkeley (SPIB)

TO: Jalen Wise

Assembly Fellow, Office of Assemblyman Juan Carrillo – California District 39

The purpose of this report is to characterize and explain the patterns of severe and fatal collisions on State Route 138 through an analysis of Caltrans data from 2020 to 2024, as well as qualitative testimony from community partners. The overall objective of our research is to support the Office of Assemblymember Carrillo in evaluating whether SR-138 meets the criteria for targeted state safety investments, enhanced enforcement strategies, infrastructure improvements, or formal designation as a Priority Safety Corridor.

I. Background and Methodology

The analysis is built on official collision data received directly from Caltrans in the form of Traffic Safety Analysis Reports (TSAR) and Table B collision listings, with one set of PDFs per calendar year, covering the full SR-138 corridor (PM 0.0–74.972) in Los Angeles County. We began by collecting holistic statistics on the crash data (the first table below) and visualizing the overall temporal patterns of collisions (Figures 1 and 2).

Year	Total	Fatal	Severe Injury	Other Injury	Minor Injury	PDO
2020	251	28	6	52	54	111
2021	357	30	11	65	74	177
2022	302	27	17	66	53	139
2023	306	25	18	80	56	127
2024	256	24	13	59	42	118
TOTAL	1,322	134	65	322	279	672

Methodology:

- Source: Caltrans TSAR (Traffic Safety Analysis Reports) + Table B collision listings, LA-138 PM 0.0–74.972, provided directly by Caltrans and organized by year (2020, 2021, 2022, 2023, 2024)
- Decoder: The Statewide Integrated Traffic Records System (SWITRS) Raw Collision Codebook[1]
- Decoder: TASAS (Traffic Accident Surveillance and Analysis System) and Injury Database Development [2]

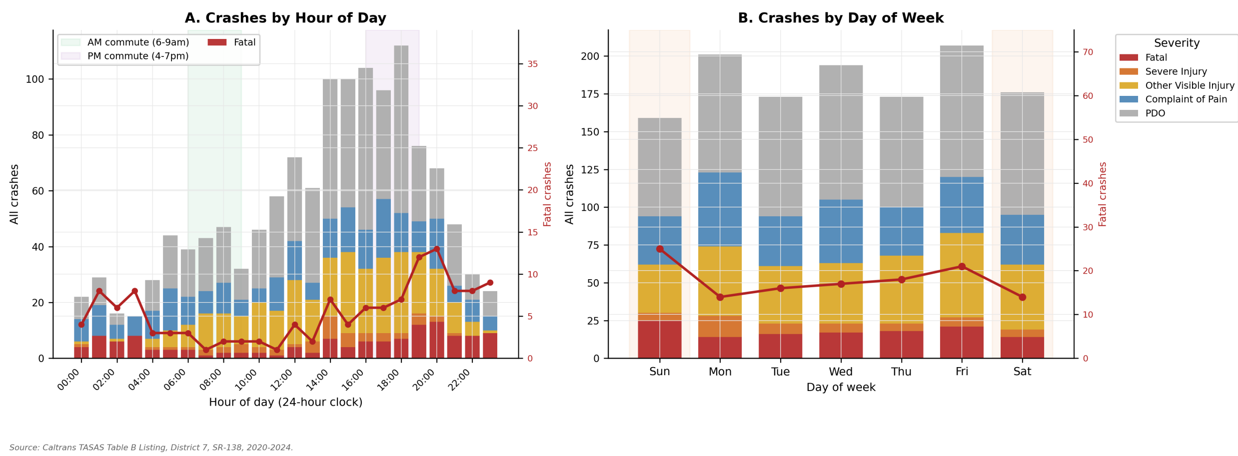

Figure 1 – Temporal Patterns of SR-138 Crashes (2020–2024)

Source: Caltrans TASAS Table B Listing, District 7, SR-138, 2020–2024.

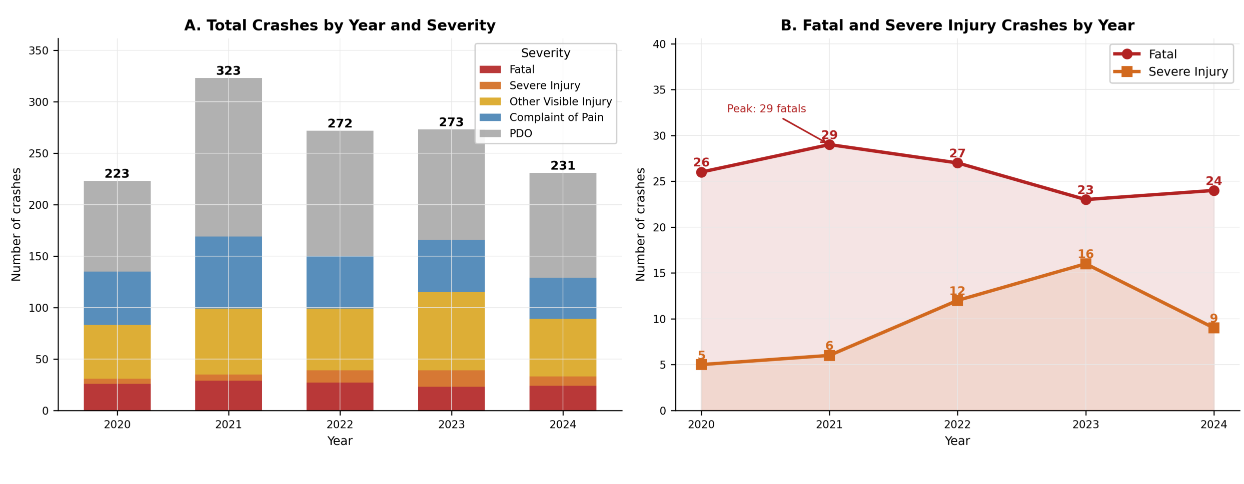

Figure 2 – SR-138 Crash Trends, 2020–2024

Source: Caltrans TASAS Table B Listing, District 7, SR-138, 2020–2024.

We went on to perform geospatial mapping of collisions at each postmile and convert the postmiles into named corridors for easier identification, using the Caltrans Postmile Query Tool.[3] The route was divided into several smaller corridors: Gorman, Fort Tejon, Pearblossom Approach, SR-14 Merge Zone, Pearblossom, and the Eastern Corridor (Figures 3 and 4).

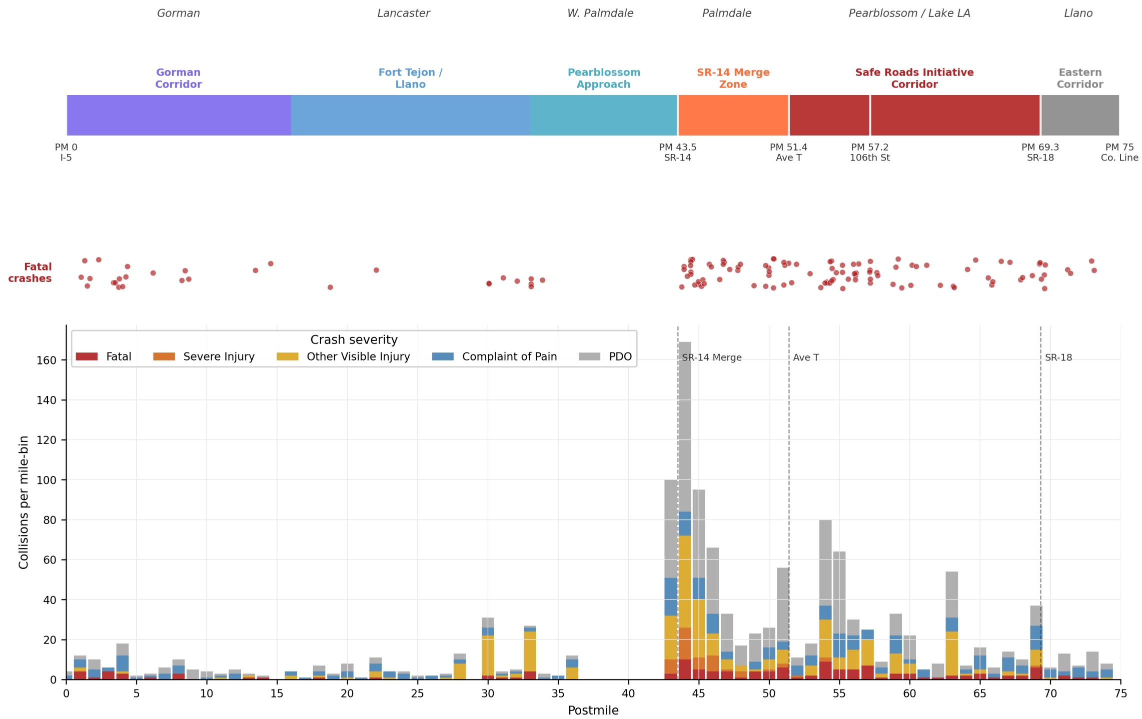

Figure 3 – SR-138 Corridor: Crash Density and Fatal Locations (2020–2024)

Source: Caltrans TASAS Table B Listing, District 7, SR-138, 2020–2024. Coordinates: Caltrans Postmile Locator.

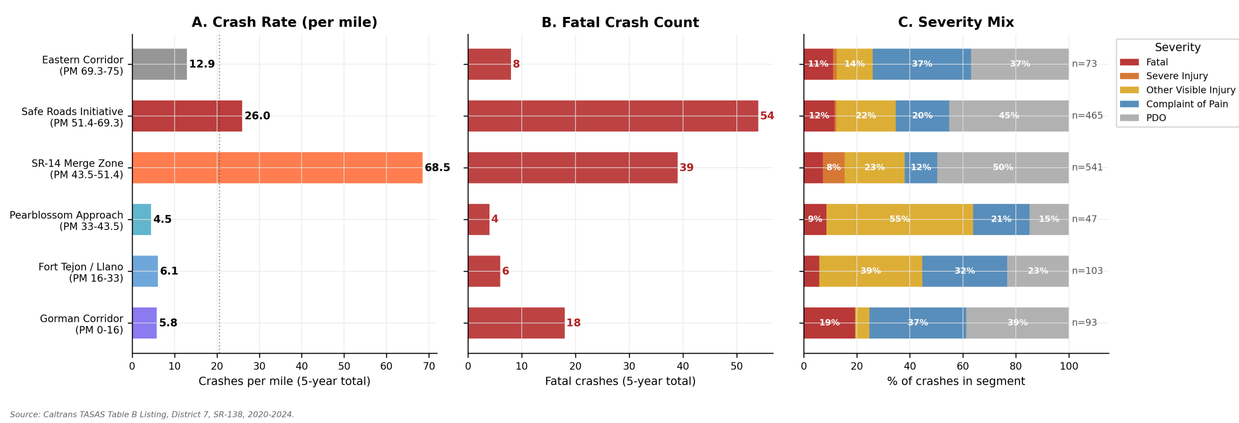

Figure 4 – SR-138 Crash Profile by Corridor Segment (2020–2024)

Source: Caltrans TASAS Table B Listing, District 7, SR-138, 2020–2024.

While the data shows a spike in collisions around the State Route 14 Merger, and higher rates throughout the second half of the corridor, from post mile 43 onward, we went on to run statistical hotspot analysis using two methods. First, we identified statistically confirmed crash hotspots using a Poisson rate test with a Bonferroni correction, which tests the null hypothesis that crashes are distributed uniformly across the corridor. This process produced 9 statistically confirmed hotspots.

However, Raw crash counts favor segments with high traffic volume, meaning crash distribution that is not uniform is expected if there are varying levels of traffic volume across a corridor. Therefore, we used Annual Average Daily Traffic Data (AADT) to adjust the crash rates for traffic volume along the corridor. Figure 5 shows the breakdown of traffic volume along the corridor, while Figure 6 shows identified hotspot segments after the AADT-adjusted crash rates were calculated.

Postmile Range	AADT	Landmark / Context
PM 0.0 – 36.9	2,200 – 3,600	Remote rural / Gorman / Antelope Valley desert
PM 36.9 – 43.4	30,000	SR-14 North junction approach
PM 43.4 – 44.4	35,500 (PEAK)	SR-14 South junction — highest volume on corridor
PM 44.4 – 47.3	18,500 – 23,400	Palmdale urban transition
PM 47.3 – 56.2	10,700 – 18,500	Palmdale / Pearblossom Hwy
PM 56.2 – 74.9	9,200 – 15,000	High Desert rural (to SR-18)

Caltrans AADT segment profile

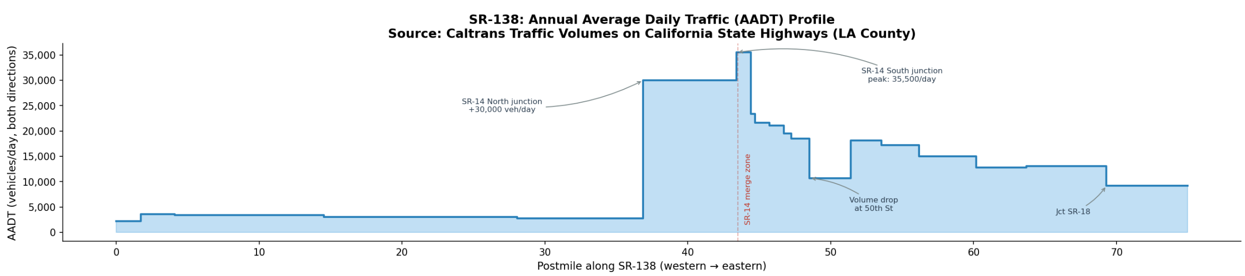

Figure 5 – SR-138 Annual Average Daily Traffic (AADT) Profile

Source: Caltrans Traffic Volumes on California State Highways (LA County).

Methodology:

- AADT source: Caltrans Annual Average Daily Traffic data using bins to assign segment-specific values from official Caltrans count stations.
- Vehicle Miles Traveled (VMT) Calculation for each 1-mile bin: VMT = AADT × 365 days × 1 mile × 5 years (2020–2024).
- Crash Rate Formula: (crash count × 100,000,000) ÷ VMT. Expressed as crashes per 100 million vehicle miles traveled.
- Poisson Statistical Test: Compared observed crash rates to expected crash rates, calculated as route-wide rate × that bin’s VMT.

Segment	Crashes	AADT	Crash Rate (per 100MVMT)	Serious Rate (per 100MVMT)	Sig.
PM 30.0–31.0	31	2,750	618	40	Yes
PM 33.0–34.0	27	2,750	538	80	Yes
PM 44.0–45.0	169	23,400	396	61	Yes
PM 1.0–2.0	12	2,200	299	100	—
PM 4.0–5.0	18	3,400	290	48	—
PM 28.0–29.0	13	2,750	259	0	—
PM 54.0–55.0	80	17,200	255	35	Yes
PM 45.0–46.0	95	21,600	241	28	Yes
PM 36.0–37.0	12	2,750	239	0	—
PM 63.0–64.0	54	12,800	231	9	Yes

Top 10 segments by AADT-adjusted crash rate

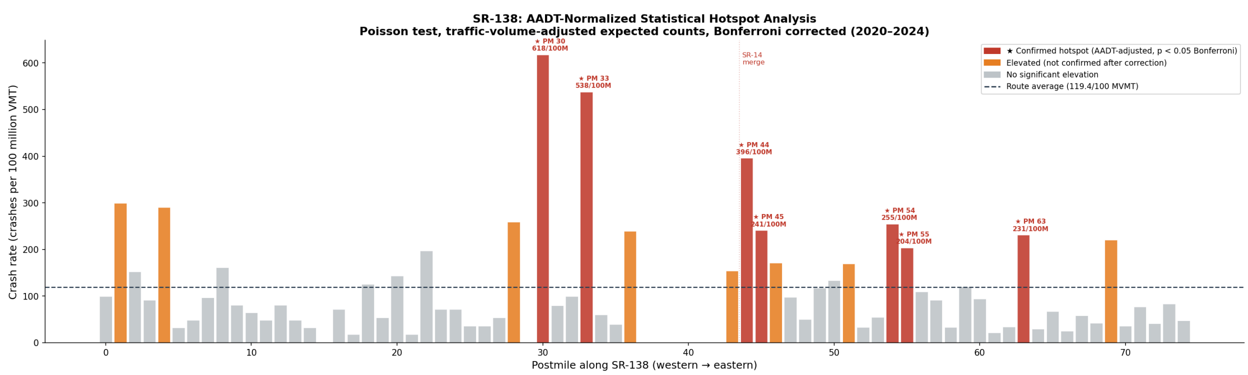

Figure 6 – SR-138 AADT-Normalized Statistical Hotspot Analysis (2020–2024)

Source: Caltrans TASAS Table B Listing, District 7, SR-138, 2020–2024. AADT: Caltrans Traffic Volumes on California State Highways.

Finally, in Figure 7, we looked at crashes by location type (highway mid-block, intersection, ramp) to understand whether the corridor's problem is primarily a speed/alignment issue (mid-block) or a conflict-point issue (intersections).

Location Type	Crashes	% of Total	Infrastructure Implication
Highway (mid-block)	896	67.8%	Speed/alignment/run-off-road — rumble strips, curve warning, median treatment
Intersection	465	35.2%	Conflict-point crashes — turn lane improvements, signal timing, advance warning
Ramp	13	1.0%	Merge/weave conflicts — primarily SR-14 interchange ramps

Crash breakdown by location type with infrastructure implication.

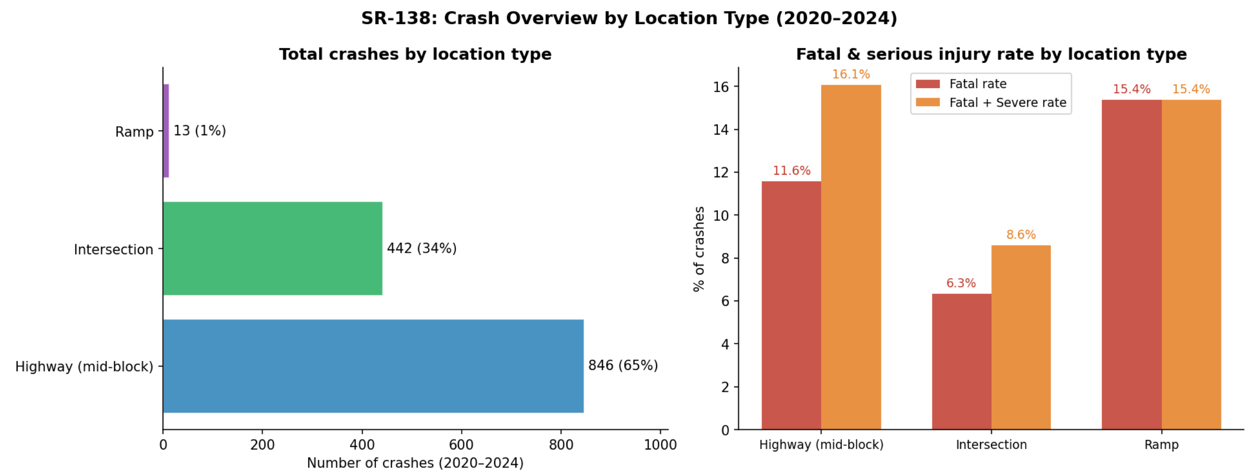

Figure 7 – SR-138 Crash Overview by Location Type (2020–2024)

Source: Caltrans TASAS Table B Listing, District 7, SR-138, 2020–2024.

II. Key Findings

1. There is a significant spike in collisions during PM rush hour, which can be attributed to lighting issues, increased traffic volume, and/or driver behavior.
2. The highest concentration of collisions is on the post miles surrounding the SR-14 merger, which also experiences the highest traffic volume across the corridor.
3. The majority of fatal collisions happen on the second half of the highway within the SR-14 and Pearblossom initiative corridor.

III. Recommendations

(1) Institutionally Recognized Analysis and Campaign Efforts:

In order to advance long-term safety improvements along SR-138, we recommend the pursuit of institutionally recognized crash-data analysis through UC Berkeley's SafeTREC. Earlier this year, CalSTA expanded its statewide efforts to utilize SafeTREC's High Injury Network methodology to identify priority safety corridors.[4] Since patterns on SR-138 are illustrative of many issues commonly associated with high-injury corridors (including severe and fatal collisions, habitual speeding, and congestion), a thorough SafeTREC analysis could lead to the formal recognition of SR-138 as a priority safety corridor.[5] This designation would be significant in strengthening future OTS and HSIP grant applications for the state highway. Additionally, we recommend the introduction of a "Safe on 138" campaign modeled off of California's effective "Safe on 17" Initiative; the program's utilization of multi-agency collaboration, education efforts, and infrastructural improvements effectively reduced collision rates along Highway 17.[6] After considering the similarities and applicability of the campaign, we argue that a similar corridor-focused approach could help agencies secure sustained funding aimed at improving roadway safety on SR-138.

(2) Exploring Funding Mechanisms:

The current funding mechanism for CHP and the projects on State Route 138 comes, in large part, from the MVA, which is a fund that comes from the State of California. However, the Legislative Analysts' Office has determined that it is an unstable source of funding due to the mechanisms of the fund that consistently lead to a deficit.[7] Therefore, local officials should look into alternative funding sources. There are two types of grants that our research determined would be best suited. The first of which comes from the Office of Traffic Safety (OTS), which is funded by two federal grant programs, the Federal Highway Administration and the Governors' Highway Safety Association.[8] They combine enforcement measures, educational approaches, and community engagement. The second is called the Highway Safety Improvement Program (HSIP), a federal program created to help states reduce fatalities on all public roads.[9] HSIP projects are selected based on crash experience, crash rate, crash potential, or other data-supported means. Applications are submitted by cities and counties. Both kinds of funding follow the same set of guidelines called the Strategic Highway Safety Plan (SHSP) to determine which projects are best suited for additional funding. It is a federally mandated program for states to highlight how they plan to make roads safer.[10]

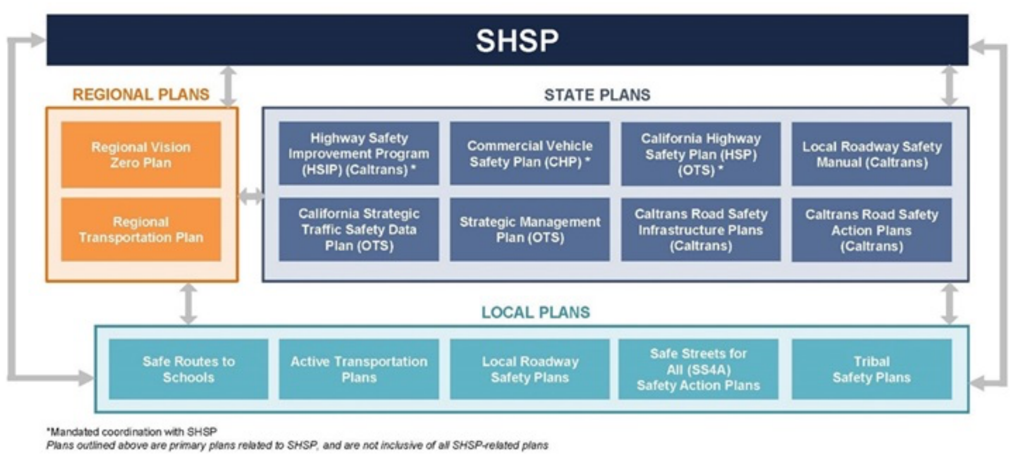

Figure 8 – Strategic Highway Safety Plan (SHSP) Framework

**Mandated coordination with SHSP. Plans outlined above are primary plans related to SHSP, and are not inclusive of all SHSP-related plans.*

(3) HSIP Cycle 13:

We are advocating for an all-encompassing, safety design that replaces the traditional signalized ramp terminals with an improved roundabout design, modeled after a successful implementation at Caltrans District 7. Looking at periodical data, we see trends that suggest traditional signals at high desert interchanges frequently cause cars to become backed up as they are trying to exit. Subsequently, this type of traffic leads to cars spilling backward onto the rest of the freeway, which contributes to high-speed rear-end collisions. Through the utilization of data-driven strategies prioritized in Caltrans HSIP Cycle 12, a roundabout interchange eliminates this design flaw. It minimizes intersection conflict points from 32 down to just 8, erasing high-speed T-bone and head-on risks. Furthermore, the shape of a hypothetical roundabout that could be designed for this interchange enforces a natural 15–20 mph calming zone for drivers transitioning to local roads from the fast-paced desert portion of SR-138, maintaining a continuous flow of cars that prevents dangerous freeway backups.

Moreover, building on the data-proven success of Caltrans HSIP Cycle 12, we strongly recommend deploying a multi-layered safety infrastructure design along the SR 138 corridor, to be funded through the upcoming HSIP Cycle 13 application window. This proactive engineering strategy combines the continuous flow of our previously suggested roundabout concept with three highly effective, Caltrans-approved countermeasures. Firstly, we recommend constructing dedicated turn lanes to isolate decelerating vehicles from 70-mph through-traffic, a measure highly favored in past projects from HSIP cycle 12 for its high Crash Reduction Factors (CRFs) that dramatically decrease rear-end and T-bone collisions. Secondly, to combat severe driver fatigue, the installation of shoulder rumble strips will provide critical auditory and tactile warnings, directly aligning with the federal High Risk Rural Roads (HRRR) strategic focus to minimize run-off-road fatalities.

Finally, we must protect vehicles along these high-speed segments by upgrading the current 27-inch barriers to more modern 31-inch Midwest Guardrail Systems (MGS), ensuring full MASH compliance and providing enough structural stability to safely contain high-center-of-gravity electric vehicles (EVs). Overall, to successfully capture a portion of the state's upcoming Cycle 13 funding allocation before the fall deadline, our immediate next step requires local public agencies to finalize CEQA Readiness and ensure a certified Local Roadway Safety Plan (LRSP) is actively on file.

(4) Assembly Bills on Automated Enforcement

Automated Speed Enforcement (ASE) systems use cameras paired with LIDAR or RADAR technology to automatically detect and cite speeding vehicles without requiring officer intervention, making them a safer and more efficient alternative to traditional roadside stops. Despite being endorsed by national agencies like the U.S. DOT, California has historically been hesitant to adopt them, though that is beginning to change. AB 645, signed in October 2023, authorized a pilot program allowing ASEs on local streets within high-injury zones, school zones, and areas with documented street racing in six cities: San Francisco, Los Angeles, Oakland, San Jose, Long Beach, and Glendale. The bill includes important safeguards, such as prohibiting facial recognition, requiring that all revenue be reinvested into traffic safety improvements, and only collecting rear license plate data. Early results are promising, SFMTA data shows an 80% decline in speeding across 33 locations since ASE citation enforcement began in August 2025.[11]

On the state highway side AB 289, signed October 13, 2025, authorizes Caltrans to deploy up to 75 automated speed safety systems in active state highway construction and maintenance zones, making it immediately actionable on corridors like SR-138 where active work zones exist. A 2010 NTSB review of 28 studies found crash reductions of 8 - 49% and fatal/serious injury reductions of 11 - 44% following ASE implementation, while Delaware, Pennsylvania, and Maryland all saw significant crash and speeding reductions through their own work-zone ASE programs.[12] The longer-term goal is to expand ASE coverage beyond temporary work zones. The proposed path forward involves amending AB 289 to create a new category allowing ASEs on corridors that meet a specific danger threshold, such as a crash rate above a certain level per million vehicle miles traveled, or corridors already identified as dangerous under initiatives like the State Priority Safety Corridors program.

To maximize public trust and legislative viability, any new bill should mirror the language of AB 645 and AB 289 by incorporating mandatory legislative reporting, public information campaigns with warning periods before activation, sunset clauses, civil rather than criminal penalties, revenue reinvestment requirements, privacy protections, and income-graduated fines, all features that helped make those earlier bills politically palatable, despite general public skepticism toward speed cameras.

(5) Community Involvement

It is requisite that highway improvement efforts continue to involve community partners, including groups like the Pearblossom Saferoads Initiative, who have a strong grasp of the safety concerns along the route. The Pearblossom Saferoads Initiative is a group with members from communities along SR-138. They have focused on advocating for increased safety measures on the highway, including stop signs and traffic lights. Members of the Pearblossom Saferoads Initiative identify the major issues as speeding and a lack of enforcement, specifically they note that traffic from high-speed open desert areas often fails to adapt to the slower speed limits in small towns along the highway.

IV. Conclusion

State Route 138 is a critical corridor for commuters in Assemblyman Carrillo's district, and its high collision rate and high traffic volume require the state's attention and resources. Following this initial report, there are several avenues of research that the office may decide to pursue, including a study of Primary Collision Factors (PCF) along the route, which was not readily available in our data set, as well as a summary and evaluation of all ongoing infrastructure projects along the route.

At this time, the immediate action steps available are:

1. (1) Commission a SafeTREC Corridor Assessment on SR-138.

   Objective: Convert our analysis into institutionally credible documentation that Caltrans, OTS, and FHWA applications will accept. SafeTREC (UC Berkeley's Safe Transportation Research and Education Center).

2. Formally request Caltrans District 7 to nominate SR-138 projects into the next HSIP cycle / Pursue Designation through CalSTA

Objective: Within a request or application, show that the SR-138 Corridor aligns with SHSP safety objectives and utilizes the formalized data to strengthen designation.

3. Convene an SR-138 Safety Task Force using the Safe on 17 model

Objective: Convene an initial meeting of transportation authorities to review data and prepare for OTS grant applications (Corridor Safety Program Grant). The first meeting should include Caltrans District 7, CHP Inland Division, LA County, and San Bernardino County transportation staff, and any community groups already organized around the issue.

NOTES

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