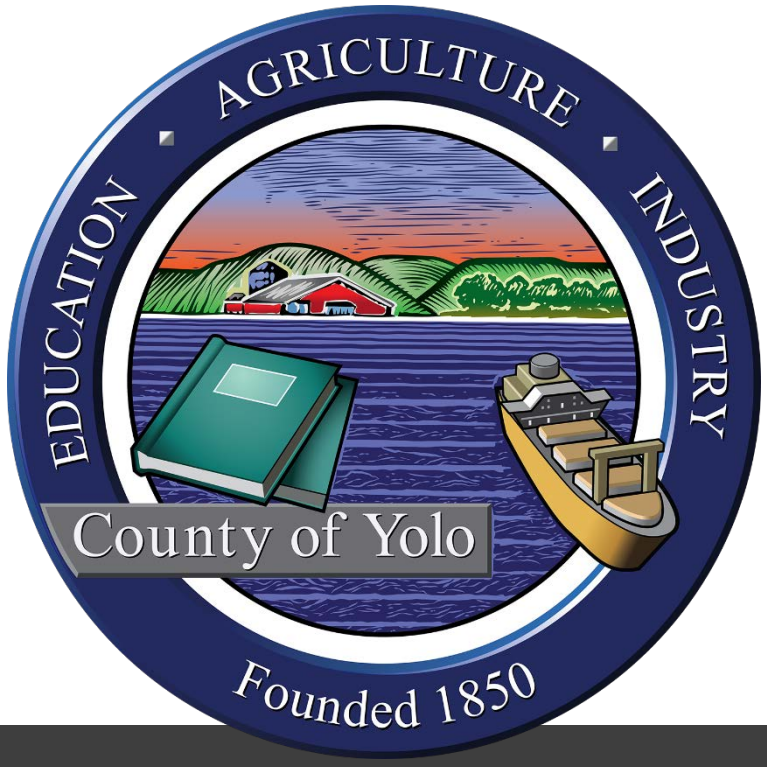


Yolo County Local Road Safety Plan

Yolo County Public Works

Transportation and Traffic Safety

Accepted and Adopted by the Yolo County Board of Supervisors on 4/12/22

Table of Contents, Figures, & Tables

Yolo County Local Road Safety Plan (LRSP)

INTRODUCTION

In **Yolo County**, improvements to public safety on county roads is a high priority. As part of meeting the County of Yolo's 2020-2024 Strategic Plan goals of Thriving Residents, Safe Communities, Sustainable Environment, Robust Economy and Flourishing Agriculture, this Local Road Safety Plan (LRSP) identifies goals and implementation strategies to improve transportation safety in Yolo County. "Transportation safety" implies the following: protection of life and property through regulation, management, and technology development of all forms of transportation. The framework of a LRSP helps with identifying, analyzing, and prioritizing roadway safety improvements on local roads. A LRSP results in a prioritized list of issues, risks, actions, and improvements that can be used to reduce fatalities and serious injuries on local roads.

With collision data provided by the California Highway Patrol (CHP) incident reports in the time period between 2015 and 2020, Yolo County was able to identify improper turning movements as the leading primary cause of roadway collisions. Yolo County faces many challenges in improving road safety with numerous straight roads connecting its denser populated urban communities through vast, open, rural, agricultural spaces. Behavioral driving habits tend to be a contributing factor in the majority of collisions in Yolo County.

The purpose of this safety plan is to increase transportation safety awareness among the residents and visitors of Yolo County, build and maintain working relationships with stakeholders to assist in the efforts of public outreach regarding transportation safety, while implementing engineering and behavioral safety improvements on the county's road and bridge network. The Highway Safety Plan (HSP) program and the Highway Safety Improvement Program (HSIP) will also provide funding for the implementation of safety improvements that will increase local road safety. These funding sources will be the primary sources to implement the strategies identified in this plan. Through a collaborative effort between safety stakeholders in engineering, enforcement, education, and emergency services, Yolo County hopes to see a reduction in fatalities and serious injuries to meet its goals.

In the past 6 years, *2.5% of collisions* in Yolo County have resulted in fatalities. The County is targeting *zero fatalities* over the next 20 years.

Starting in April of 2022, the Caltrans Division of Local Assistance requires an agency applying for funds through the Highway Safety Improvement Program (HSIP) to have a Local Road Safety Plan to be eligible to apply for HSIP Cycle 11 and on. Under Section 409 of Title 23 of the United States Code, crash data is prohibited from use in any litigation against state, tribal or local government that involves the location(s) mentioned in the crash data.

VISION & GOALS

Yolo County aligns with the California Strategic Highway Safety Plan with its vision, goals, and mission.

Vision: Yolo County will have a safe transportation system for all users.

Goal: Toward Zero Deaths, every 1 counts.

The Yolo County Board of Supervisors recently adopted a Strategic Plan (YCSP) for 2020-2025. The Yolo County Local Road Safety Plan also aligns itself with the Mission of the YCSP of "Making a difference by enhancing the quality of life in our community," and more specifically with the strategic goal of Safe Communities.

SAFETY PARTNERS

- *Yolo County Department of Community Services - Public Works*
- *California Highway Patrol*

- *Yolo County Sheriff's Office*
- *Yolo County Health & Human Services*
- *Yolo County Office of Education*
- *West Plainfield Fire Department*
- *Yolo County Board of Supervisors*
- *California Office of Traffic Safety (OTS)*
- *California Department of Transportation (Caltrans)*
- *Federal Highway Administration (FHWA)*

PROCESS

1. Collected County Data
2. Data was analyzed by VHB, Inc. (Federal Highway Contractor)
3. Identification of Stakeholders
4. Stakeholder Meeting(s)
    a. Held an initial meeting with the Yolo County Local Road Safety Plan Stakeholders to:
        i. Discuss improving local road safety through the 5 E's (engineering, enforcement, education, emergency services, and equipment)
        ii. Note existing efforts
        iii. Define emphasis areas using incident data and anecdotal evidence
        iv. Identification of safety countermeasures
        v. Prioritization of investments
5. Linking partners/funding with planned investments

EXISTING EFFORTS

Yolo County Public Works

Yolo County incorporates and/or considers safety in all maintenance and construction programs and projects. County crews annually review and maintain signing and traffic markings.

Figure 1 - All red reflective striping down entire length of stop sign posts for enhanced visibility / reflectivity

In June 2014, the California Manual on Uniform Traffic Control Devices (CAMUTCD) mandated agencies to implement a method to maintain minimum levels of roadside sign retroreflectivity by assessment and management. Yolo County Road Operations routinely checks a sample size of road signs by measuring sign retroreflectively with a portable retroreflectometer and comparing to the Minimum Maintained Retroreflectivity Levels (Table 2A-3 of the CAMUTCD). The management of sign retroreflectivity is Expected Sign Life. Replacing signs occurs before the retroreflective sheeting has degraded below minimum standards. Samples of signs are placed in the maintenance yard and monitored for their retroreflectivity periodically. Typically, signs are replaced before the end of their expected sign life of 10 years. Replacement is based on average sheeting life and disregards differential degradation due to environmental conditions.

The county uses the State HSIP program to make safety investments. Yolo County has invested more than a million dollars in HSIP funding annually for sign upgrades, enhanced traffic marking and guardrail updates. Community feedback has been positive with the usage of red striping down the entire length of stop signs to increase their conspicuity at higher risk intersections (Figure 1). Certain high-risk locations, those with multiple traffic collisions, are continuously monitored either by resident input or

reviewing a rising trend of traffic collisions to determine if placing the all red reflective striping down the entire length of a stop sign will be beneficial.

Figure 2 - Centerline rumble stripes on levee roads (Old River Rd & South River Rd)

Centerline rumble stripes have been in place in recent years on levee roads such as Old River Road and South River Road along the Sacramento River and is a proven safety countermeasure resulting in a 44-64% reduction of head-on, opposite-direction, and sideswipe fatal and injury crashes (Figure 2).

Areas of Emphasis

New construction projects or developments include bikeways on major roads and sidewalks in more urbanized areas where it is allowable by available right of way and/or funding.

Figure 3 – 20' wide shoulders to improve clear recovery zone on County Road 98

New construction or road reconstruction includes improving the clear/recovery zones to the extent that available right of way and funding allows (Figure 3).

- Systemwide Signing
  - CAMUTCD compliant sign size for traffic design speeds.

Figure 4 - Warning beacon lights and chevrons at Co Rd 32A curve before Union Pacific/Amtrak crossing

Figure 5 – Warning rumble strips and flashing beacon ahead of Co Rd 32A & Co Rd 105 with Union Pacific/Amtrak at-grade crossing.

- Focus on horizontal curves (Figure 5)
  - CAMUTCD Compliance
    - Retroreflectivity of lane striping
  - Develop curve risk assessment to prioritize future investments
- Systemwide Striping Enhancements
  - Audible thermoplastic roadway markings and increased high visibility striping
- Focus on rural roads
  - Adding left turn lanes or roundabouts on higher traffic corridors and areas of high collision instances to accommodate numerous large trucks transporting many crude and manufactured construction materials along with trucks transporting raw and processed agricultural products
  - Widening narrow travelled lanes to 12 feet
  - Paving shoulders to increase clear recovery zones
  - Intersection improvements to increase sight distance and visibility
  - Adding edge lines
  - Enhance edge lines
  - Evaluate passing zones and add no-passing zones
    - Also consider improvement to allow for slow moving vehicles to get off roadway or provide safe passing opportunities, i.e., turnouts

- Guardrail improvements to current standards for increased safety (Figure 4)
- Installation of variable message signs to promote traffic safety information
- Replace failing and narrow county bridges as federal funding is secured

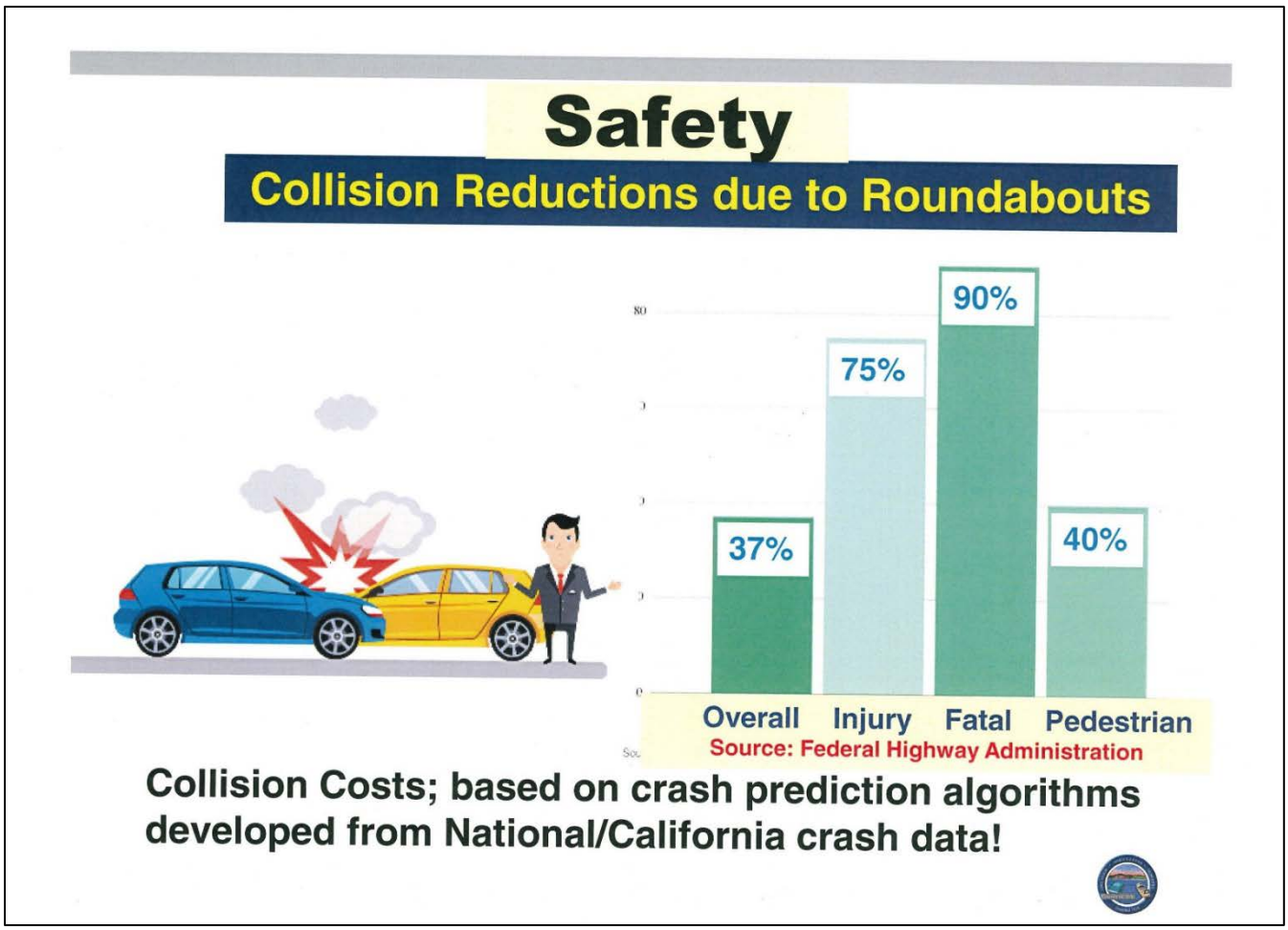


Figure 6- Roundabout Safety Statistics

Yolo County's practice also includes prioritization of roundabouts when intersection control is needed, such as the proposed County Road 98 improvements at 3 intersections with County Road 31/W Covell Blvd, Russell Blvd, and Hutchison Drive. The statistics related to reductions in types of collisions by implementing roundabouts are shown in Figure 6.

Figure 7 - Yolo County Public Works Road Maintenance Request Form

A proactive manner for the general public to participate in local road safety improvements is to report directly to Public Works any concerns related to road maintenance in order (Figure 7) for road crews to respond on a priority basis.

Through regular inspection or public notification, Yolo County Public Works is proactive in notifying property owners of potentially dangerous road hazards such as dying trees falling into the public right of way during stormy, winter conditions. Informing the property owner about California Streets and Highways Code Section 1480.5 and 1482 reinforces the importance of property owners maintaining encroaching trees and foliage on the public right of way. Property owners become directly involved improving public safety while limiting liability for damages caused from tree and foliage falling into the public right of way.

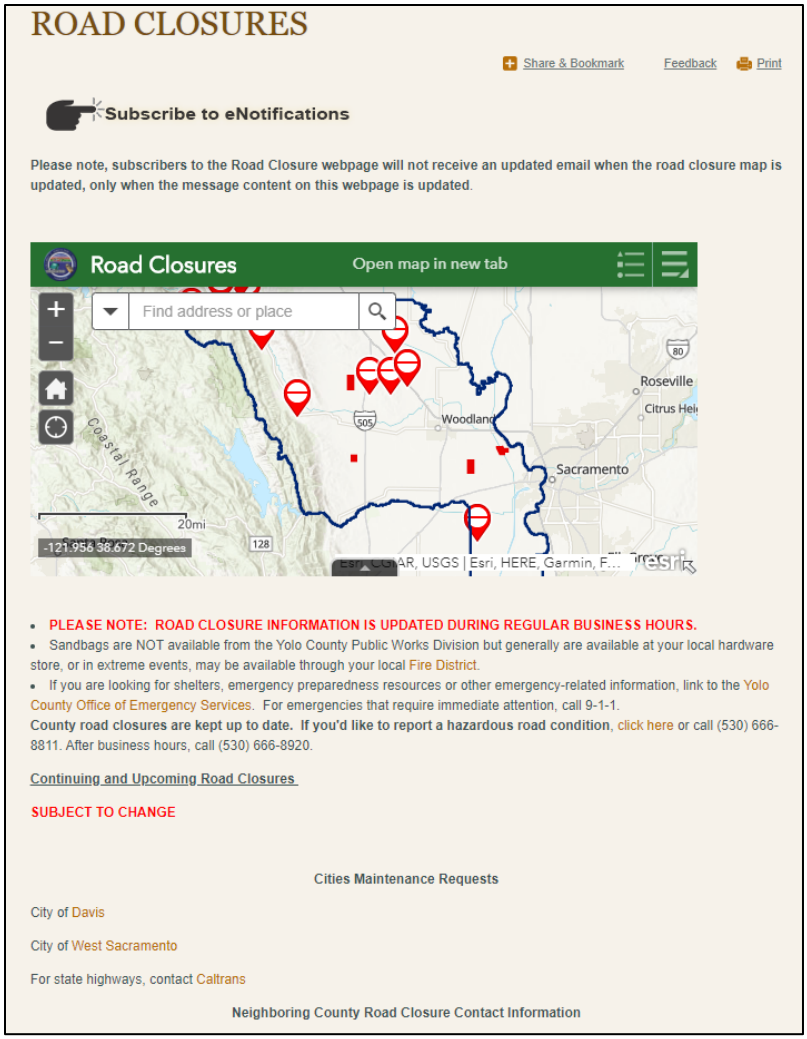


Figure 8 - Yolo County Public Works Road Closure webpage

The Public Works Division also keeps the public notified of upcoming and current road closures on the Road Closure Map on the Yolo County website (Figure 8). The webpage features regular updates to the county road network through maps and lists of ongoing and new road closures due to weather, construction projects, or other unforeseen events. Other useful information includes emergency preparedness resources, emergency notifications, and the road closure information of neighboring counties to Yolo County. The public can subscribe with eNotifications to be notified whenever the list of closures is updated on the webpage.

Capital Improvement Projects with Safety Countermeasures

Yolo County includes safety counter measures in capital projects whenever possible. Projects that include features to improve traffic safety for the previous fifteen years are listed in Table 1.

The HSIP Guardrail Project saw the improvement of guardrail to modern standards at various locations along Old River Rd & South River Rd along the Sacramento River levee where multiple collisions occur. One of the few county roads that has many horizontal curves in the roadway and often result in roadway departure collisions.

The County Wide Striping Project used HSIP funds to place high reflective and wet reflective thermoplastic striping at locations throughout the County. These markings often coincided with a previously improved section of road with temporary markings in place after the warranty repairs were completed.

In Knights Landing, speed humps were installed along Railroad St to increase public safety by calming traffic along the residential street parallel to State Route 113 where residents have noticed higher traffic speeds.

Many projects have shown roadway improvements to the clear recovery zones through widening shoulders which does allow for improved accessibility and safety for cyclists on some roadways.

Table 1 - Previous Yolo County Projects with Safety Improvements

Project	Amount	Safety Countermeasure	Funding	Completed
South River Road Shoulder Widening and Rumble Strip from CR 142 to Pumphouse Road	$1,113,000	Increased Clear Recovery Zone / Rumble Strips	HRRR/ Road Fund	2011
Old River Road Shoulder Widening and Rumble Strip from CR 128A to CR 126	$1,718,350	Increased Clear Recovery Zone / Rumble Strips	HSIP	2011
CR 23 Shoulder Widening from CR 86A to CR 87B	$734,000	Increased	HRRR	2012
CR 98 Bike & Safety Project from CR 29 to Woodland City Limits	$13,691,000	Increased Clear Recovery Zone	HSIP/ STPL	2013

Project	Amount	Safety Countermeasure	Funding	Completed
CR 31 Left Turn Lane @ CR 95	$787,000	Left Turn Lanes	HSIP	2015
Highway Safety Improvement Program (HSIP) Guardrail Project Old River Road and South River Road (Cycle 8)	$1,200,000	Upgraded Guardrail	HSIP	2019
County Wide Striping Improvements	$3,197,000	Upgraded Reflective Pavement Markings	HSIP	2019
Knights Landing Traffic Calming	$45,000	Speed Humps	Yocha Dehe Tribal Mitigation	2019
Highway Safety Improvement Program (HSIP) Guardrail Project South River Road (Cycle 9)	$1,000,000 grant	Upgraded Guardrail	HSIP	2021

California Highway Patrol – (280) Woodland Area Command

The Woodland office of the California Highway Patrol offers multiple free traffic safety education programs in the community. Efforts with educational curriculum starts in elementary schools focused on pedestrian, passenger, and bicycle safety. The “Right Turn” program for junior high children features strategies to prevent underage drinking and riding with drivers under the influence. In high school, parents and children can participate in the “Start Smart” all-inclusive class to raise awareness of the dangers for teenage drivers such as distracted driving. CHP partners with local agencies to bring “Every 15 Minutes” program to local high schools to demonstrate the dangers of impaired driving. CHP conducts safety presentations for general traffic, distracted driving, and bicycle safety to safety organizations, clubs, groups, and places of business.

CHP provides a vital service to local agencies for reporting and documenting each traffic incident to gather data for statistical analysis such as locations and primary collision factors.

Yolo County Office of Education

Efforts within the Yolo County Office of Education include coordination with local CHP on educational curriculum of driver safety for school age kids from elementary to high school.

The effects of alcohol and drug abuse are integrated into school district policy as directed by State Board of Education Code 51203. Each school district in Yolo County teaches the effects of alcohol and drug abuse in health classes in middle and high schools.

Driver's education is offered each semester at Woodland Joint Unified School District and as a summer course at Davis High School. The curriculum in the driver's education course is a 6-week course to study laws and regulations pertaining to the operation of a motor vehicle. It is designed to teach each student about current issues including road rage, impaired driving, and situational awareness, and how each can affect driving and interaction with other drivers.

The California Office of Traffic Safety (OTS) awarded the Yolo County District Attorney's Office grant funds of $165,941 to extend its DUI program in January 2018. The Yolo County DA's office also received another $181,197 in October of 2019 and $200,00 in October 2020. The program focuses on raising awareness of DUI cases to prevent impaired driving and reduce alcohol and drug-impaired traffic fatalities and injuries. The "DUI in the Schools" program, launched in 2014, brings a DUI trial to schools around Yolo County for students to view and understand the dangers of DUI and its negative consequences.

Yolo County Sheriff's Office

The Sheriff's Office takes part in the Yolo County District Attorney's Citizens Academy. As a coordinated effort between local law enforcement agencies, the academy allows citizens residing in Yolo County to participate in mutual learning about the criminal justice system. The goal is to educate the public and improve relationships and communication between the many different communities in Yolo County and the criminal justice system. This experience allows citizens to promote various aspects of community pride and local road safety.

Town hall meetings are held periodically around unincorporated Yolo County through the Sheriff's office. Topics typically include implementation of law enforcement technology implemented within the community, safety protocol, and overviews of local crime statistics. Important community input is gathered at these meetings as well as strengthening the relationships of law enforcement in the community.

The Sheriff's Office also partners with CHP, Yolo County District Attorney, and incorporated local law enforcement on educational programs related to traffic road safety.

Yolo County Health & Human Services

The Car Seat Safety Program of the Yolo County Health & Human Services Agency aims to reduce injuries from motor vehicle crashes associated with children ages 0-12 by increasing the correct use of car seats. Starting in 2017, the department received two grants from OTS for $215,000 to start the program. In 2018, a $150,000 grant from the CA OTS through the National Highway Traffic Safety Administration has allowed this program to extend for another year. The program allows Yolo County residents to learn about safe use of child safety seats, while qualified residents can get access to car seats at a low cost. The program also allows the opportunity to recycle used and unsafe car seats through the car seat recycling program. The department also received $190,000 in 2019 and $175,00 in 2020 in grants to increase and expand the child passenger safety education and training programs.

The Friday Night Live program was originally developed by the CA OTS and Department of Alcohol and Drug Programs in 1984. Piloted by Sacramento, Riverside, and Contra Costa Counties, the program today in Yolo County provides different opportunities for middle school and high school students to engage in positive activities, develop life skills, and support lifestyles free of alcohol, tobacco, and other drugs. A county wide Youth Council meets to help plan and present youth led conferences and activities for youth. Components to the dangers of distracted driving habits and DUI are shared and reinforced through this program. Building caring and meaningful relationships with youth and adults will strengthen youth's involvement and connection to their community and school which will improve local road safety.

Yolo County Board of Supervisors

In addition to setting and adopting the polices and establishing programs for the various departments within Yolo County, the elected supervisors of the 5 districts in Yolo County

serve their constituents by gathering information on current issues happening within their district. Working with the Yolo County Farm Bureau and local residents in rural areas, Yolo County Public Works obtains information on public concerns regarding road safety.

West Plainfield Fire Department

One of the 15 fire protection districts in unincorporated Yolo County provides emergency services to residents in a large rural area between the cities of Woodland, Davis, and Winters with heavy traffic carried on county roads in between these incorporated cities. As the last line of defense in road safety, providing emergency services in an efficient time over a large area remains a challenge.

Figure 9 - West Plainfield Fire Protection District's Tweet on Road Safety

The fire district has started to increase its usage of social media platforms as another avenue of public outreach in sharing safety tips for fire prevention and road hazard awareness (Figure 9). Additional efforts with public outreach over social media could include sharing training videos on vehicle extrication of individuals involved in motor vehicle collisions.

DATA SUMMARY

Data obtained in this study is a combination of data gathered by VHB Inc., a Federal contractor, collision data provided by the local CHP office in Woodland, statewide data from the CHP SWITRS reports, and information from the California OTS.

Roadway Inventory

752 centerline miles of road in Yolo County

Study Period

2015 to 2020

Total Collisions

1747

Mapped Fatal and Serious Injury Collisions in Yolo County (2015-2020)

The locations of fatal collisions from 2015 and 2020 in unincorporated Yolo County are shown for all roads (Caltrans and Yolo County) in Figure 10 and only for Yolo County Roads in Figure 11.

Sources: SWITRS, UC Berkeley, FARS, Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community.

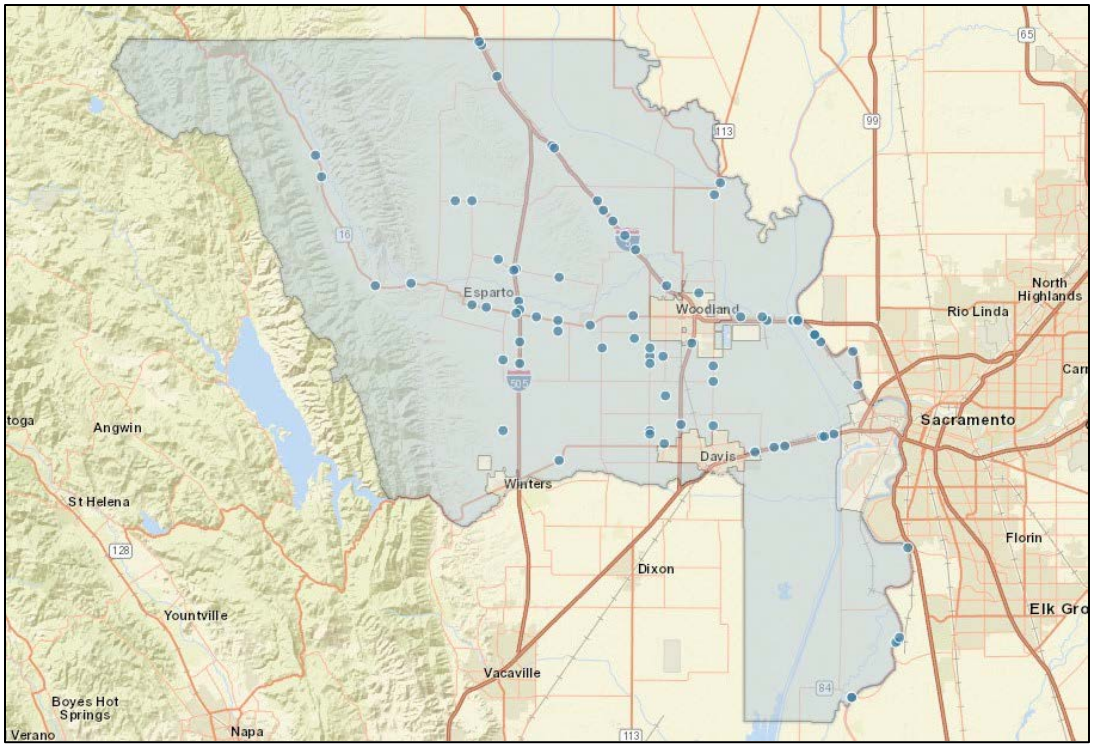


Figure 10 - Fatal collisions in unincorporated Yolo County from 2015-2020(all roads)

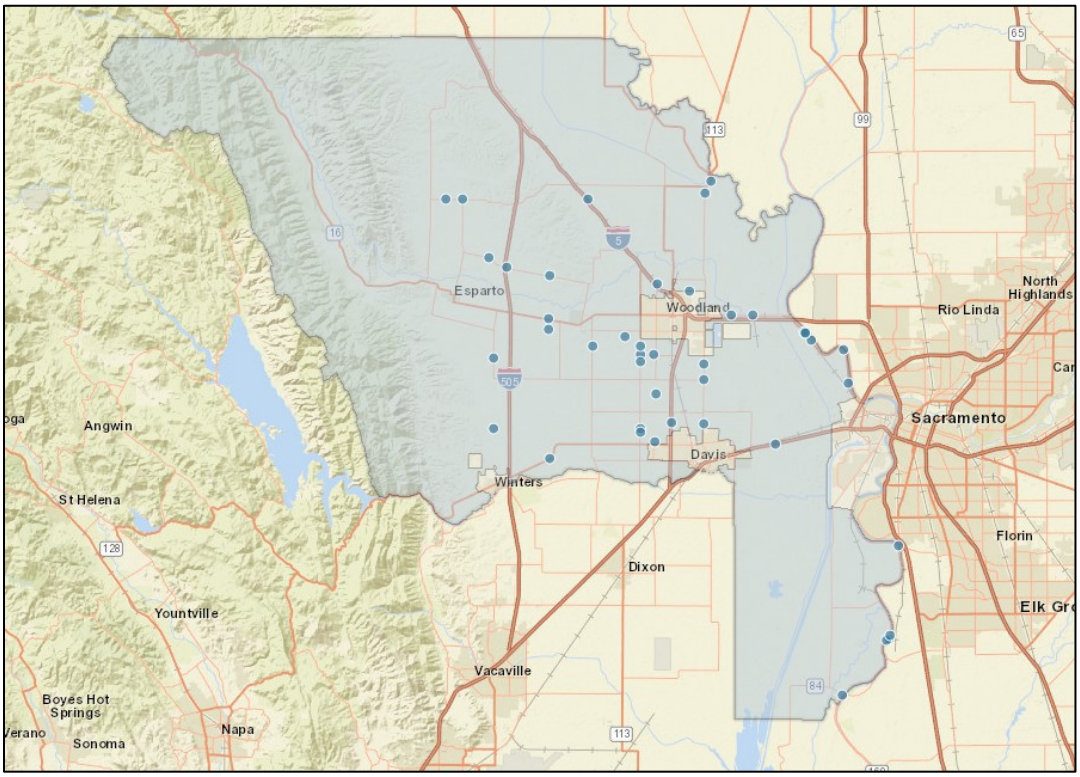


Figure 11 – Fatal collisions in unincorporated Yolo County from 2015-2020(county roads only)

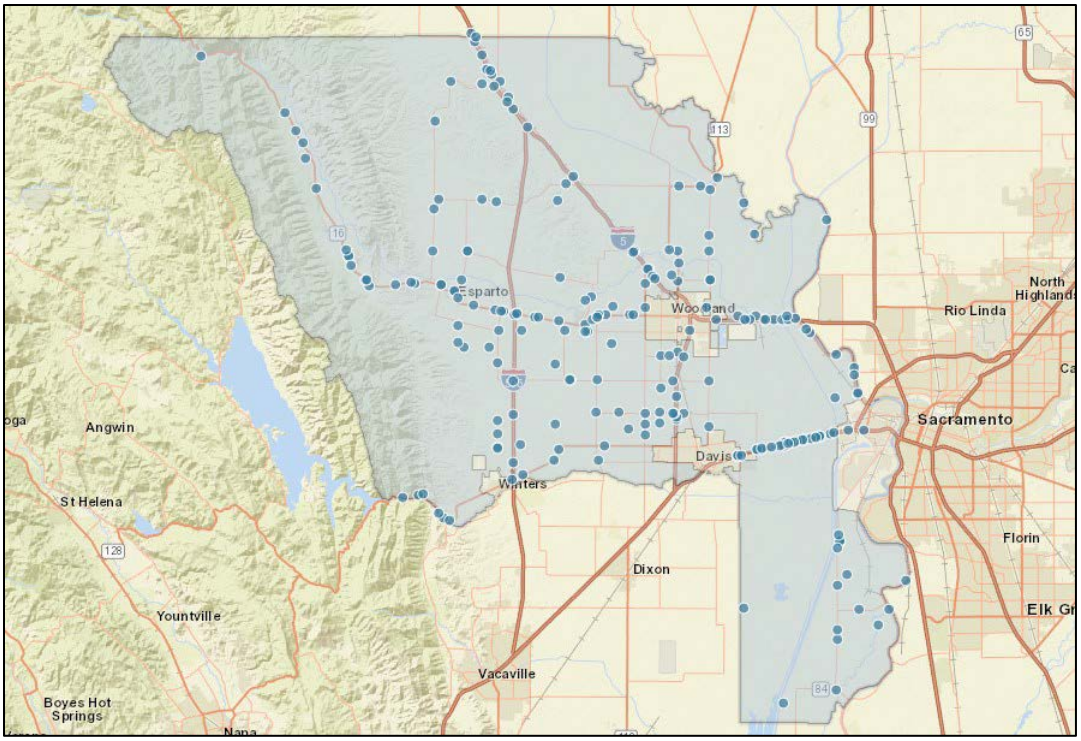


Figure 12 - Serious Injury Collisions All Roads from 2015-2020

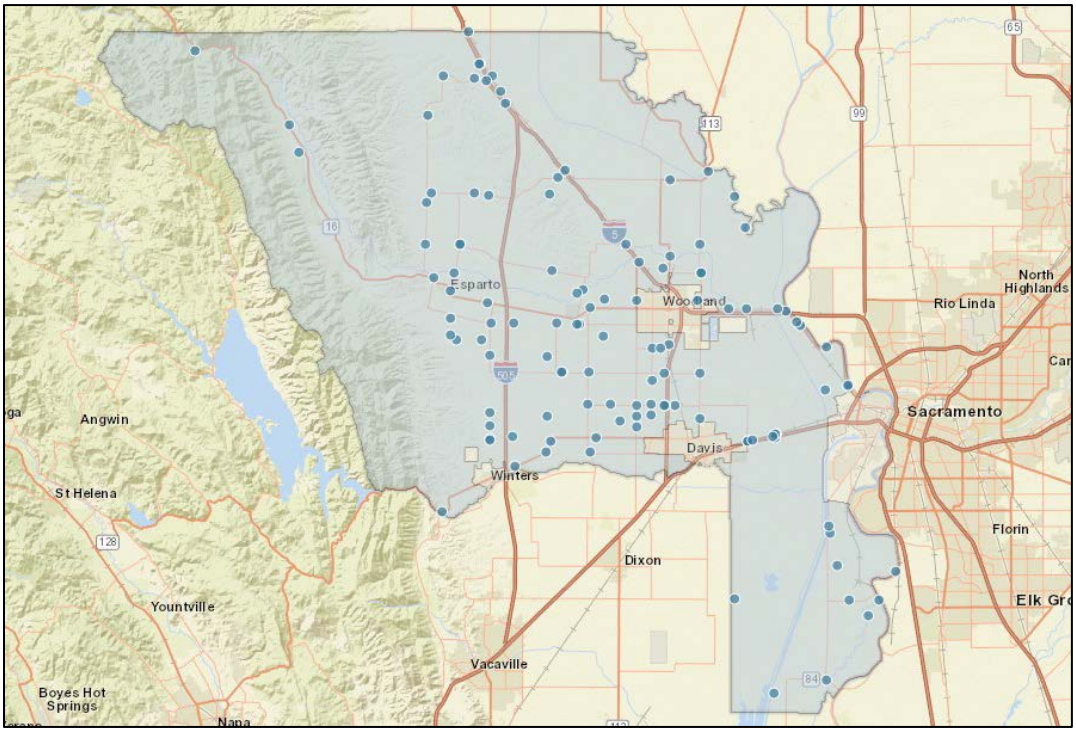


Figure 13 - Serious Injury Collisions County Roads Only From 2015-2020

Collisions by Injury Severity

The Federal Highway Administration (FHWA) classifies injury codes according to severity scale which differs for each State. For California, the KABC injury codes follow this convention and description:

K – Fatal Injury: Death because of injuries sustained in a collision or an injury resulting in death within 30 days of the collision.

A – Severe Injury: An injury other than a fatal injury which results in broken bones, dislocated or distorted limbs, severe lacerations, or unconsciousness at or when taken from the collision scene.

B – Other Visible Injury: This includes bruises (discolored or swollen); places where the body has received a blow (black eyes and bloody noses); and abrasions (areas of the skin where surface is roughened or blotchy by scratching or rubbing which includes skinned shins, knuckles, knees, and elbows).

C – Complaint of Pain: This classification could contain authentic internal or other non-visible injuries and fraudulent claims of injury. Includes 1. Persons who seem dazed confused, or incoherent (unless behavior attributed to intoxication, extreme age, illness, or mental infirmities). 2. Persons who are limping but do not have visible injuries. 3. A person who is known to have been unconscious as a result of the collision, although it appears they have recovered. 4. Persons who say they want to be listed as injured but do not appear to be so.

Total Fatalities and Serious Injuries

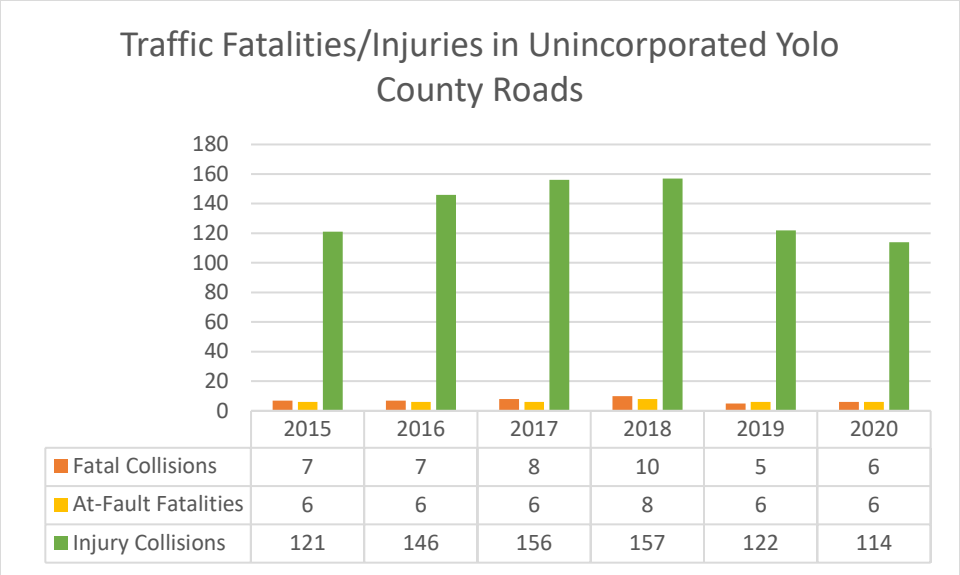
There were 155 total fatal and serious injury collisions representing 8.9% of total collisions on Yolo County roads occurring from 2015-2020as shown on Table 2.

Table 2 - Collisions by Severity (Source: SWITRS, CHP Reports)

	2015	2016	2017	2018	2019	2020	6 Year Summary	% of Total Collisions
Collisions By Injury Severity								
Fatal - K	7	7	8	10	5	6	43	2.5%
Severe Injury - A	11	18	23	23	20	17	112	6.4%
Other Visible Injury - B	57	56	49	71	45	55	333	19.1%
Complaint of Pain - C	46	66	76	53	52	36	329	18.8%
Property Damage Only	135	159	172	159	168	137	930	53.2%
Total	256	306	328	316	290	251	1747	100%

Traffic Fatalities on County Roads

In Figure 14, the comparison of the fatalities and injuries on Yolo County maintained roads is shown amongst the number of at-fault fatalities. An at-fault fatality is where a victim is the driver or a passenger in the party at fault. Over the past six years twenty percent of the collision fatalities were victims not in the in party at fault. This disparity in fatalities in cases where the victim(s) are not in the party at fault is important for public outreach efforts to demonstrate the harm caused by the poor decisions made by some.



	2015	2016	2017	2018	2019	2020
Fatal Collisions	7	7	8	10	5	6
At-Fault Fatalities	6	6	6	8	6	6
Injury Collisions	121	146	156	157	122	114

Figure 14 - Traffic Fatalities in Unincorporated Yolo County vs. At-Fault Fatalities (Source: CHP Reports)

Cyclists

Figure 15 - Class II Bike Lane along a County Road

Cycling is a popular activity for recreation or as a means of transportation within Yolo County, especially at UC Davis and the City of Davis. Although only 16 total collisions, less than1% in the 6-year period, involved bicycles. Of these collisions 100% included injuries, 31% involved serious injuries and three collisions involved fatalities. Because cyclists are particularly vulnerable, we will address the specific issues significant to bicycles in all emphasis areas.

High Incidence Collision Locations

Reviewing collision history for high incidence locations, sometimes paired with comments from the public, helps identify intersections and midblock locations with frequent collision reports.

Between 2015-2020 thirty-two intersections and fifty-three midblock road segments had five or more reported collisions. The tables below identify the locations with the five highest number of incidents at intersections and midblock segments, respectively. The County will continue to review collision data to identify high incidence intersection and midblock locations and assess possible countermeasures and pursue grant funding when resources are available. Data for Tables 3 & 4 should be reviewed at least quarterly to investigate new areas of concern for possible improvements.

Table 3 – High Incidence Locations with Primary Collision Type for Intersections 2015-2020

Rank	Intersection	Primary Collision Type
1	County Road 32A at County Road 105(N)	Hit Object
2	County Road 102 at County Road 27	Rear-End & Broadside
3	County Road 98 at County Road 25A	Broadside
4	County Road 101A at County Road 29	Hit Object
5	County Road 27 at County Road 98	Broadside

Table 4 – High Incidence Locations with Crash Rate for Midblock Segments 2015-2020

Rank	Intersection	Crashes per mile
1	Old River Rd from Monument Bend to County Road 124	12.5
1	Old River Rd from County Road 128A to Monument Bend	8.5
3	County Road 22 from Woodland City Limit to Yolo Bypass	10.4
4	County Road 32B from County Road 32B I 80 EB On to County Road 105D	11.8
5	County Rd 98 from County Rd 31 to County Road 30	12.9
5	County Road 102 from County Rd 18B to County Road 17	8.6

Recent Implementations of Safety Improvements

The tables above include road segments on which safety improvements have recently been implemented. A series of improvements on County Road 98 near the City of Woodland include a stop sign installation at the intersection with CR 27, left-turn lanes at intersections and improving the clear recovery zone. Improvements for CR 98 near Davis are planned and include installing a series of roundabouts. On Old River Road

around the Monument Bend area two Vehicle Speed Feedback Signs and additional Do Not Pass/No Passing Zone signs were installed at the end of 2020. Vehicle Speed Feedback Signs were also installed along South River Road in Clarksburg. An Engineering and Traffic Study along County Road 102 highlighted a series of collisions at the intersection with County Road 27 and additional stop signs were installed for a multi-way stop intersection. The different improvements at these locations are continuing to be evaluated for effectiveness.

EMPHASIS AREAS

Observing the frequent primary collision factors among all traffic collisions from 2015-2020 as seen in Table 5, the County and its stakeholders identified these particular emphasis areas:

1. Crashes with Improper Turning as a PCF and Roadway Departures
2. Crashes with Driving Under the Influence as a PCF
3. Crashes with Unsafe Speed, Distracted Driving and Passing as PCFs

These factors make up about 84% of all collisions in Yolo County. A contributing factor to each collision factor can also include right of way violations, especially at intersections and driveways of conflict points. Improved technology in consumer electronics and advancements in automobiles have created a potential increase of distracted driving in the former while unsafe speeding more likely in the latter.

Table 5 - Primary Collision Factor 2015-2020 (Source: CHP Reports, VHB Inc.)

	2015	2016	2017	2018	2019	2020	6-year Summary	% of Total Collisions
Collisions by Primary Collision Factor								
Auto Right of Way Violation (Yield, Stop)	32	37	36	36	34	28	203	11.6%
Driving Under the Influence	29	45	45	36	41	38	234	13.4%
Following Too Closely	1	1	2	0	1	0	5	0.3%
Hazardous Parking	0	0	0	0	1	0	1	0.1%
Impeding Traffic	0	0	0	0	0	0	0	0.0%
Improper Passing	5	4	5	7	7	5	33	1.9%
Improper Turning / Run Off the Road	111	121	126	134	100	111	703	40.2%

Other	3	1	0	0	0	0	4	0.2%
Other Equipment	0	0	1	2	0	2	5	0.3%
Other Hazardous Movement	1	1	0	0	0	1	3	0.2%
Other Improper Driving	3	0	0	0	0	1	4	0.2%
Other than Driver or Pedestrian	1	8	14	7	15	10	55	3.1%
Pedestrian R/W Violation	1	1	0	0	0	0	2	0.1%
Pedestrian Violation	0	0	0	1	1	1	3	0.2%
Traffic Signals and Signs	5	7	12	12	10	7	53	3.0%
Unknown	4	4	5	4	1	3	21	1.2%
Unsafe Lane Change	0	0	0	1	2	0	3	0.2%
Unsafe Speed	52	54	69	56	60	34	325	18.6%
Unsafe Starting or Backing	2	8	9	9	3	7	38	2.2%
Wrong Side of Road	6	14	4	11	14	3	52	3.0%
Total	256	306	328	316	290	251	1747	

1. Improper Turning & Roadway Departure Collisions

Collisions involving improper turning typically involve roadway departures of vehicles for various reasons. Vehicles departing the roadway will become overturned, strike fixed objects along the roadway, and also include head-on and sideswipe collisions with other vehicles. Intersections & road access may or may not always be a factor in improper turning collisions, though often improper turning at intersections can result in more severe collisions. Other notes from the collision data on improper turning collisions include:

- 40% of all crashes from 2015-2020were improper turning crashes
- 71% of fatal and severe injury crashed from 2015-2020 occurred in the mid-block section of a road, more than 250 feet from the nearest intersection (Table 6)
- 62% of all crashes from 2015-2020 occurred in the mid-block section of a road, more than 250 feet from the nearest intersection (Table 6)

Table 6 – Collision statistics for intersection, midblock classification, and degree of injury

Intersection vs Non-Intersection Related	2015-2020	Percentile	2020	2019	2018	2017	2016	2015
Intersection Collisions (Fatal/Severe)	45	29%	5	7	7	10	11	5
Non-Intersection / Mid-Block Collisions	110	71%	18	18	26	21	14	13
Intersection Collisions - KABC	296	36%	39	35	57	61	61	43
Non-Intersection / Mid-Block Collisions	521	64%	75	87	100	95	86	78
Intersection Collisions - All Collisions	672	38%	94	90	123	123	142	100
Non-Intersection / Mid-Block Collisions	1074	62%	157	200	192	205	164	156

Strategies for Emphasis Area 1:

- Education
  - Engagement with Health & Human Services, CHP, Sheriff, and Public Works to share materials and knowledge to increase public awareness of road safety.
  - Target the distractions created by cell phone or electronic device use while operating a motor vehicle, and the likelihood of anyone being involved in a collision due to cell phone/electronic device usage.
  - Yolo County Public Works provide further assistance with CHP and Office of Education in the Impact Teen Driver classes offered in local high schools.
- Enforcement
  - Saturate patrols to areas susceptible to distracted driving through statistically higher traffic regions, high occurrence rates of infractions, anecdotal evidence, and public/elected official input for areas of concern.

- Engineering
    - Yolo County Public Works will evaluate and prioritize road safety concerns for areas of improvement based on available crash data, Traffic Studies, road maintenance records, and concerns from the public and elected local officials. Additional improvements as requested by the stakeholders and others should also be considered and addressed. The FHWA's Proven Safety Countermeasures (PSC) will be a tool for Yolo County Public Works to evaluate possible improvements for areas of concern relating to speed management, roadway departure, intersections, pedestrian/bicyclists, and crosscutting.
    - Public Works will continue existing efforts to evaluate and implement systemwide applications of warning beacon lights, chevrons, warning rumble strips, signage, striping enhancement opportunities and typical lane and edge widening wherever possible.
    - Yolo County Public Works in conjunction with City of Davis, Sacramento Council of Governments (SACOG), Union Pacific Railroad, and the California Public Utilities Commission are working towards relocating the existing at-grade railroad crossing at Co Rd 32A and Co Rd 105 intersection to decrease crashes at crossing and improve horizontal curve. Collision data between 2015 and 2020 identified this intersection as a high incidence collision location and had twenty-three reported crashes. Primary collision factors at the at-grade crossing include unsafe speeds, improper turning and DUIs, many resulting in roadway departures. In November 2021 the County received the Project Study Report and the preferred option was a grade-separated crossing with road realignment and a lower design speed. The next step for the county is to pursue available funding opportunities for design, environmental, right-of-way acquisition, and construction of the preferred alternative.
    - Yolo County Public Works to evaluate clear zone/sight distances, left turn pockets, and/or roundabouts at three targeted locations by 2025. This effort will be supported by using collision data and any available information including Table 3 & 4 for review of high incidence collision locations.

Goals for Emphasis Area 1:

- Observe a percentage reduction, ~10-15%, in improper turning collisions resulting in death or serious injury by 2030
- Yolo County Board of Supervisors implement driver safety training/defensive driving courses for county employees institutionally to increase safe driving habits for operators of county fleet vehicles by end of 2022.
- Using six-year crash history, evaluate top five high incidence midblock collision locations with improper turning as a PCF for possible safety improvements by end of 2022. Any improvement project opportunities would be followed up with investigating available grant funding including the HSIP.
- Research implementation of Optical Speed Bars as a possible low-cost treatment for horizontal curve safety along South River Road and Old River Road by end of 2023.
- Refer relevant collision data information to Sheriff's office to deploy available resources such as the speed trailer to a minimum of two targeted locations every 6 months based on 12-month historical crash data addressing mid-block crash locations with Improper Turning and Road Departures
- Continue to observe crash data and input from stakeholders including the pubic for high-incidence intersection crash locations for possible improvements

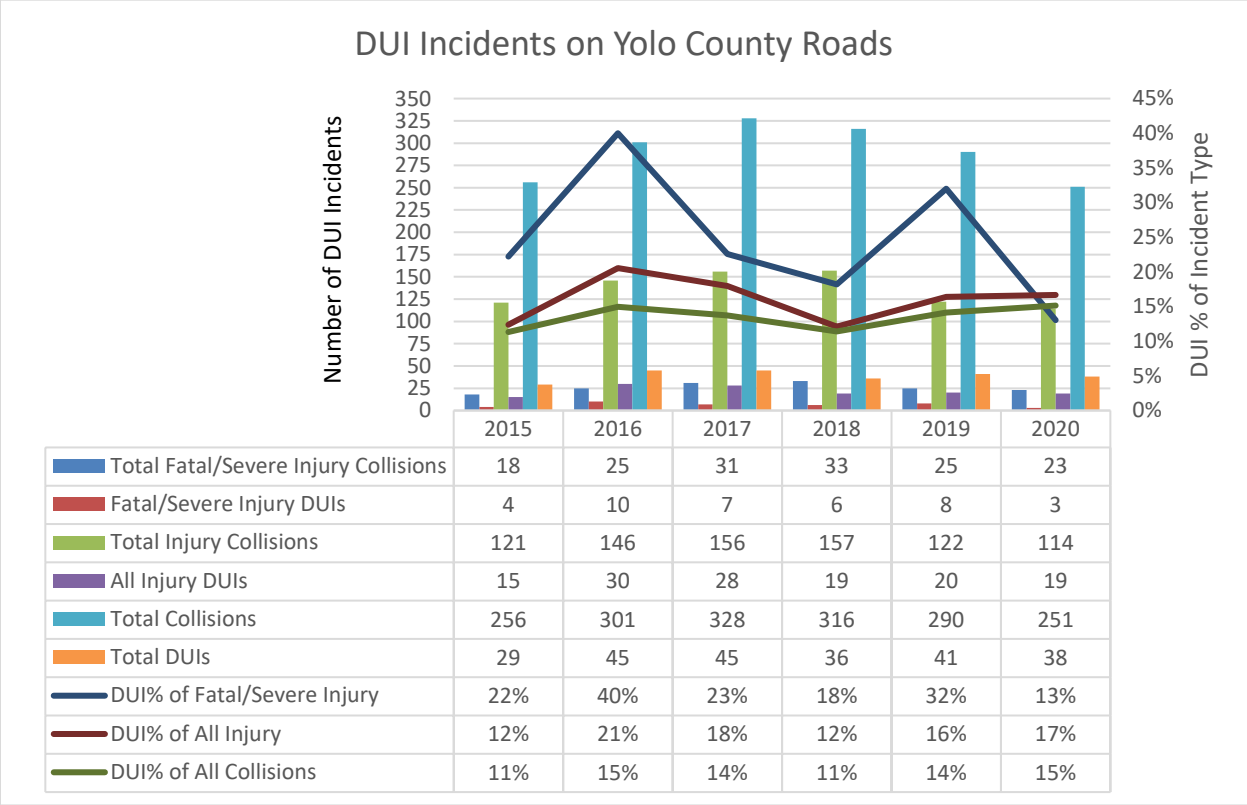
2. Driving Under the Influence Collisions

In multiple locations, driving under the influence of alcohol and drugs, both recreational and prescription, has remained a challenge in traffic safety. As a primary collision factor, DUIs also will typically involve dangerous secondary collision factors. In reviewing DUI collision incidents in Yolo County (Figure 16), the percentage of DUI collisions represents the number of collisions involving DUI over the total number of collisions for each type for that year. For example, in 2020, 13% of fatal/serious injury is represented by 3 fatal/serious injury DUI collisions over 23 total fatal/serious injury collisions that year.

To review the total 6-year period (2015-2020) statistics of DUI related collisions:

- DUI collisions were 16% (131/816) of all injury (KABC) collisions reported between 2013-2018
- 24.5% of all fatal/serious injury collisions (38/155) from 2015-2020were DUI-related

- Collisions involving DUI as a PCF occurred primarily during weekends, Friday-Sunday, 57% (129/225)
- Of the 45 crashes that resulted in fatalities there were 9 where the victim was not in the party at fault and DUI was a PCF for 2 of the 9 victims



	2015	2016	2017	2018	2019	2020
Total Fatal/Severe Injury Collisions	18	25	31	33	25	23
Fatal/Severe Injury DUIs	4	10	7	6	8	3
Total Injury Collisions	121	146	156	157	122	114
All Injury DUIs	15	30	28	19	20	19
Total Collisions	256	301	328	316	290	251
Total DUIs	29	45	45	36	41	38
DUI% of Fatal/Severe Injury	22%	40%	23%	18%	32%	13%
DUI% of All Injury	12%	21%	18%	12%	16%	17%
DUI% of All Collisions	11%	15%	14%	11%	14%	15%

Figure 16 - DUI Incidents on Yolo County Roads (Sources: CHP Incident Reports, VHB Inc.)

Strategies for Emphasis Area 2:

- Education
  - All stakeholders continued support of education, emergency, and enforcement efforts with the District Attorney's Office of Traffic Safety Grant to bring DUI education to local schools
  - Support of mandatory treatment programs, peer group counseling for prior DUI offenders
  - Health and Human Services to continue teen mentor programs, Friday Night Live, could add effects and consequences of DUI and riding with impaired drivers to program curriculum

    - Continued efforts to describe adverse effects of alcohol and drug abuse and its consequences on the roads.
- Enforcement
    - High Visibility Enforcement
    - Vertical Prosecution
    - Probation – Intensive supervision of DUI probationers (completion of alcohol education programs, DUI warrant service operations with local enforcement agencies)
- Health and Human Services
    - Mentor teen programs, Friday Night Live, could add effects and consequences of DUI and riding with impaired drivers to program curriculum
- Education
    - Continued efforts to describe adverse effects of alcohol and drug abuse and its consequences on the roads.
- Engineering
    - Increasing the clear recovery zones and including paved shoulders and widened travel lanes, where appropriate and when funding and right of way is available, could reduce the severity of collisions by providing an area clear of fixed objects if a vehicle leaves the roadway.
    - Adding or upgrading guardrail and end treatments.
    - Improved marking and signage especially on curves.
    - Improved lighting at intersections or horizontal curves.

Goals for Emphasis Area 2:

- Reduce the number of persons killed and severely injured alcohol/drug-involved collisions by 15% by 2030.
- Reduce the number of DUI% of all collisions below 10% by 2024.
- Provide increased training to 25% of law enforcement officers to identify drug-impaired drivers by 2023.
- Analyze 12-month historical crash data for high-incidence mid-block and intersection locations with DUI as a PCF for potential improvements for enforcement and DUI countermeasures

3. Unsafe Speed, Distracted Driving and Passing

Figure 17 - Car passing while crossing a solid yellow line

- The challenge for law enforcement is to determine if an improper turning collision was from distracted driving since narratives without any other neutral observer may not indicate cell phone or electronic device usage prior to collision.

Increased residential developments in Yolo County communities and a robust economy has led to more vehicles on the County Roads that connect the communities within the county in addition to diverted overflow traffic from congested Caltrans freeways during peak hours.

- As driving is a goal-oriented activity, with the purpose of arriving at a destination quickly, combined with technology making automobiles more comfortable and powerful than ever before.
- Traffic collisions that occur close to intersections could indicate instances of excessive speeding and/or distracted driving and the likelihood of a roadway lane departure, rear-end or head-on collisions.
- Flourishing agriculture has meant more interactions between farm vehicles and increased traffic. Increasing frustration with slower, rural, or farm vehicle traffic

may lead to more instances of speeding, failure to yield or stop at intersections, and unsafe passing with crossing double yellow lines (Figure 17).

Strategies for Emphasis Area 3:

- Education
    1. All stakeholders have open discussions with targeted groups likely to exhibit forms of unnecessary risky driving (young drivers).
    2. Start smart program provided by CHP.
- Enforcement
    1. High Visibility Enforcement / Saturated Patrols
    2. Centipede Enforcement
    3. Assist with identifying specific travel corridors with unsafe speeding and passing through citation history
- Engineering
    1. Identify corridors where excessive speeding and unsafe passing is likely to take place through CHP citation history, roadway evidence (such as skid marks for rapid breaking, pavement rutting on the outside of curves, worn centerline markings, or high incidences of sign knockdowns or guardrail/fencing strikes), and concerned input from citizen/elected officials. The FHWA's Proven Safety Countermeasures will be a primary reference tool when strategizing and implementing safety improvements.
    2. Yolo County Public Works will consider left-turn lanes or roundabouts, widen paved shoulders, and clear recovery zones on previously identified high traffic corridors, permissible with available funding or right of way, to allow effective traffic flow with large trucks and agricultural equipment to reduce instances of aggressive driving by providing improved clear recovery zones and higher visibility as funding becomes available. Current projects that are implementing this goal are the CR 98 Bike & Safety project on CR 98 between CR 29 and Solano County and the CR 27 Safety Project between CR 99 and CR 100A. The CR 98 project is in the preliminary engineering phase which is estimated to be complete in May 2024. The CR 27 project is expected to complete construction in FY 2022-23.

Goals for Emphasis Area 3:

- Circulate informational material on distracted & aggressive driving to promote safe driving practices in Yolo County Health & Human Services Agency offices by end of 2022.
- Observe a reduction of unsafe speed / right of way collisions resulting in death or serious injury by 15% by 2025.
- Increase awareness of aggressive driving habits through a collaborative public awareness campaign video through events with County presence (Yolo County Fair, Yolo County Office of Education partnerships) by end of 2022.
- Improve driver perceptions of safety through reviewing Yolo County Public Works capital improvement projects starting in 2022.
- Refer collision data and information to the Sheriff's office for the possible deployment of resources such as a speed trailer to areas of high-incidence mid-block crash locations with Unsafe Speed as a PCF
- Continue to analyze crash data and input from stakeholders including the public for areas with concerns for speeding and review existing conditions for possible improvements using FHWA Proven Safety Countermeasure

Strategies need to be sustainable from a maintenance perspective as the county does not want to make a safety investment that cannot be reasonably maintained.

Prioritization Strategy

Through the incident data, the following criteria prioritize areas to target improvements first. A combination of statistical evidence, i.e., CHP incident reports, and expectation of higher traffic locations will help identify where our safety stakeholders can focus implementation of safety countermeasures in engineering, enforcement, education, and emergency services.

Within engineering, identifying corridors for possible safety improvements can be accomplished through several means including reviewing crash data and CHP collision reports, through input from safety stakeholders and comments from the public. A more in-depth analysis of crash data would involve considering factors like primary collision factors, highest degree of injury, collision type, involved with and collision rate. Once

identified, a road or section of road can be evaluated for possible safety improvements. The safety improvements being considered should target road characteristics as well as the crash factors provided by the data. A list of potential countermeasures should then be narrowed down by researching the implementability and effectiveness of a countermeasures or combination of countermeasures. After implementation, crash data should continue to be reviewed to assess the improvements for effectiveness at each location which can then be used as a tool for decision-making for future applications.

Planned / Upcoming Capital Improvement Projects

From Table 7, Yolo County has many upcoming projects that aim to improve public safety on its road infrastructure network.

Relocating the Union Pacific/Amtrak railroad crossing at the intersection County Road 32A and County Road 105 may improve traffic safety in two areas. Separating the train crossing and the horizontal curve intersection will reduce the frequency of traffic collisions and decrease the likelihood of a vehicle getting hit by a train while crossing the tracks at the wrong time. Yolo County in partnership with the City of Davis received Community Design Funding from SACOG to prepare a Project Study Report (PSR) to establish alternatives and a preferred option for the railroad crossing relocation. In November 2021 the county received the PSR and the preferred option is a grade-separated crossing with road realignment. The next steps are for the County to apply for grant funding for the project approval and environmental document (PA&ED) and plans, specifications, and estimates (PS&E).

The upcoming phase 2 of the County Road 98 Bike & Safety Improvements will see the installation of 3 roundabouts at 3 intersections along Co Rd 98 just west of the City of Davis and the campus of UC Davis at Co Rd 31, Russell Blvd, and Hutchison Dr.

Figure 18 - Russell Blvd Corridor Improvements (City of Winters)

The Grant Ave, State Route 128, and Russell Blvd Corridor Improvements will be a joint effort between the City of Winters, Caltrans, and the County of Yolo to embrace a Complete Streets concept which will improve overall safety and usability of the corridor for pedestrians and bicyclists (Figure 18).

Another upcoming HSIP project involves improving more guardrail and features on and around the roadway on South River Rd between the city limits of West Sacramento to Rose Rd, just south of the Freeport Bridge. This update will improve a stretch of roadway on the Sacramento River levee and upgrade more guardrail on a vital corridor to the Clarksburg area of the County that has seen more traffic in the recent years due to tourism.

Following the prioritization strategy, identifying opportunities for grant funding can also be data driven by reviewing crash data to come up with potential countermeasures that could possibly help improve safety at target locations. Further analyzing this data using filters for crashes with fatal and severe injuries as well as primary collision factors can help establish areas where certain countermeasures could be more effective. The Local Roadway Safety Manual for California's Local Road Owners and FHWA's Proven Safety Countermeasures are a good reference for possible safety improvements.

Table 7 - Potential Future Improvements to County Roads

Road	Start Limit	End Limit	Potential Countermeasures
County Rd 98	County Rd 29	Solano County (Putah Creek)	Roundabouts, Bicycle Lanes, Wider Edge Lines, Safety Edge, Lighting, Widened Shoulders, Longitudinal Rumble Strips and Stripes
County Rd 32A	County Rd 105	Yolo Causeway (I-80)	Grade Separated Crossing, Bicycle lanes, Wider Edge Lines, Safety Edge, Widened Lanes, Widened Shoulders, Lighting, Appropriate Speeds for All Users
County Rd 102	County Road 29	Pole Line Rd	Bicycle Lanes, Wider Edge Lines, Safety Edge Widened Shoulders,
County Rd 22	Old River Rd	City of Woodland City Limit	Wider Edge Lanes, Safety Edge, Widened Shoulders, Longitudinal Rumble Strips and Stripes
County Rd 32B	County Rd 32A	City of Davis City Limit	Wider Edge Lines, Bicycle Lanes, Widened Shoulders, Widened Lanes, Safety Edge
County Rd 14	County Rd 13	County Rd 85	Wider Edge Lines, Enhanced Delineation for Horizontal Curves, Longitudinal Strips and Stripes, Safety Edge
County Rd 19	County Rd 94B	Interstate 505	Wider Edge Lines, Widened Lanes, Widened Shoulders, Safety Edge, Longitudinal Strips and Stripes
County Rd 24	County Rd 90A	County Rd 93	Widened Lanes, Widened Shoulders, Wider Edge Lines, Safety Edge

County Rd 97	County Rd 24	County Rd 27	Corridor Access Management, Wider Edge Lines, Safety Edge, Widened Shoulders, Widened Lanes, Multiple Low-Cost Countermeasures at Stop-Controlled Intersections
County Rd 98	County Rd 24	County Rd 29	Safety Edge, Multiple Low-Cost Countermeasures at Stop-Controlled Intersections, Bicycle Lanes

EVALUATION & IMPLEMENTATION

This section describes the process that will be used to evaluate the success of the plan, ensure implementation, and determine when an update is needed.

Yolo County Public Works will continue to host meetings with stakeholders at least once a year to discuss implementation of the plan and strategies for each emphasis area.

- The plan will be updated every two years starting in 2022 to see how many goals have been reached or need to be adjusted.
- The plan will be evaluated for effectiveness five years after implementation.
- Every year there is a call for projects the plan will be reviewed as part of the HSIP/HSP application process.