

Transportation Safety Action Plan

Franklin County

October 2025



LEADERSHIP COMMITMENT

David Kelley, Estill Springs Mayor and County Commissioner District 8 Seat B

Chuck Stines, County Wide Fire Chief and Sherriff's Investigator

Patrick Stefanski, Sheriff's Patrol Sergeant

Doug Philpot, School Transportation Director

Luke McCurry, Franklin County Highway Superintendent

RESOLUTION LETTER

Date:

Resolution:

The Franklin County Commission in The State of Tennessee unanimously resolves to embrace the Transportation Safety Action Plan and pursue the elimination of all traffic fatalities and serious injuries on the county's roadways by the year 2045. Following complete review of the Transportation Safety Action Plan, the following matters will be settled:

WHEREAS, Vision Zero stands as a federally-endorsed strategy with the aim of eradicating all traffic-related fatalities and severe injuries while promoting safe, healthy, and equitable mobility for all.

WHEREAS, the Franklin County Commission has successfully developed a Transportation Safety Action Plan to address the safety concerns of all road users in the unincorporated areas of Franklin County, Tennessee;

WHEREAS, the Transportation Safety Action Plan is grounded in the fundamental principles that acknowledge human fallibility and vulnerability, deem fatalities and serious injuries as unacceptable, advocate for shared and proactive responsibility in preventing such tragedies, and recognize that enhanced redundancy in infrastructure can provide additional layers of protection, known as the Safe Systems Approach;

WHEREAS, the Transportation Safety Action Plan utilized historical crash data and engaged the public, stakeholders, and a steering committee to identify a High Injury Network comprising the most injury-prone roads and intersections in unincorporated Franklin County; and

WHEREAS, the Transportation Safety Action Plan encompasses a multi-faceted approach to address safety concerns, including the identification of 12 High Injury Network locations, with the ultimate goal of eliminating fatalities and serious injuries.

NOW, THEREFORE, BE IT RESOLVED by the Franklin County Commission in Tennessee to adopt the objective of eliminating traffic deaths and serious injuries by 2045, endorsing Vision Zero as a comprehensive and holistic approach towards achieving this goal.

BE IT FURTHER RESOLVED that the Transportation Safety Action Plan, detailed in Exhibit A, is hereby granted approval.

BE IT FINALLY RESOLVED that this resolution becomes effective from and after the date of its passage, in accordance with the welfare of the County.

X _____

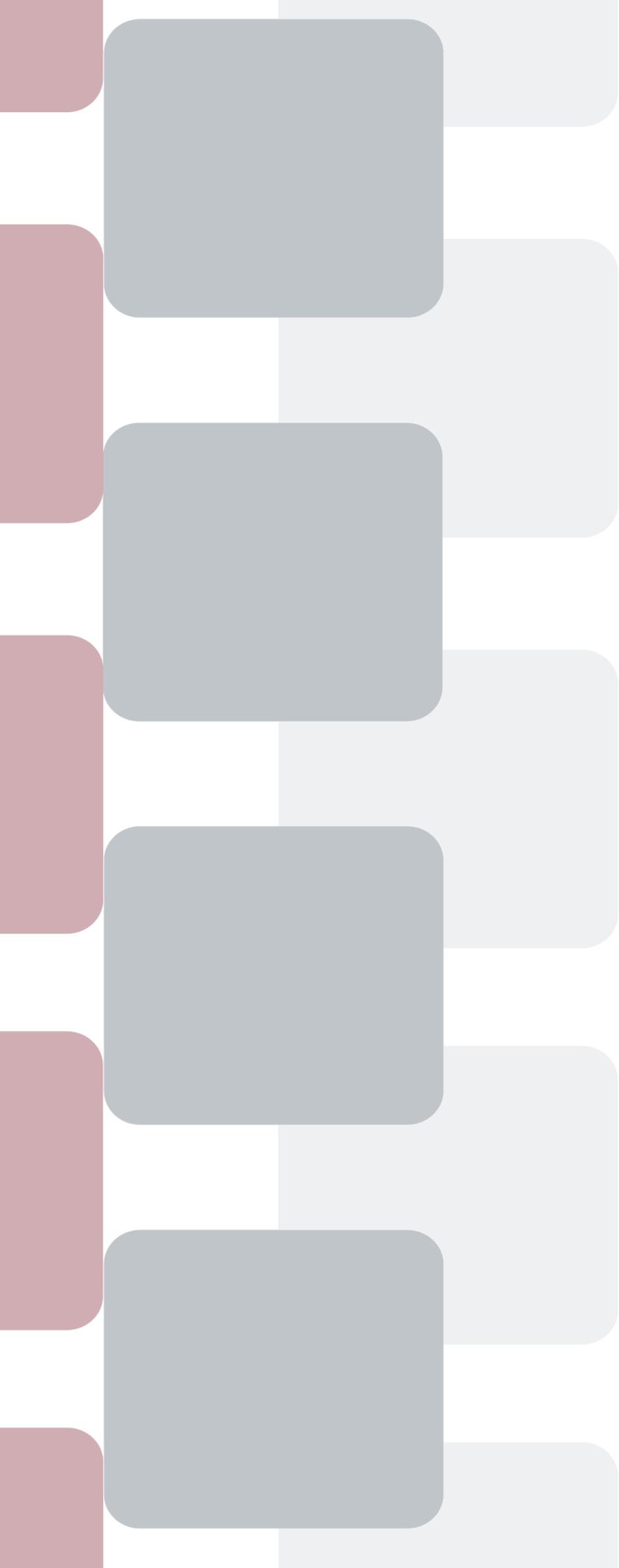
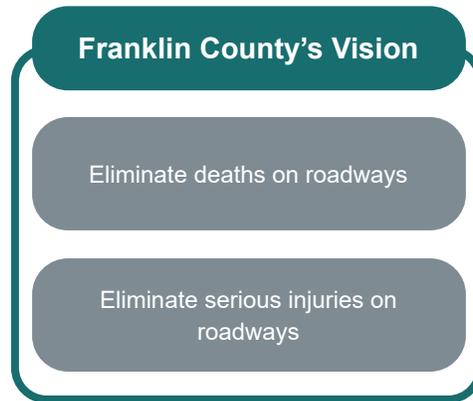


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INTRODUCTION

The state of Tennessee is committed to the Towards Zero Deaths (TZD) initiative which is a highway safety strategy dedicated to eliminating deaths and serious injuries on the nation's roadways. The TZD initiative adheres with "Vision Zero" which was a concept introduced in Sweden in 1997 and has since been adopted by numerous transportation agencies worldwide. These initiatives employ education, enforcement, engineering, and emergency response efforts to lessen both the frequency and severity of crashes on roadways.

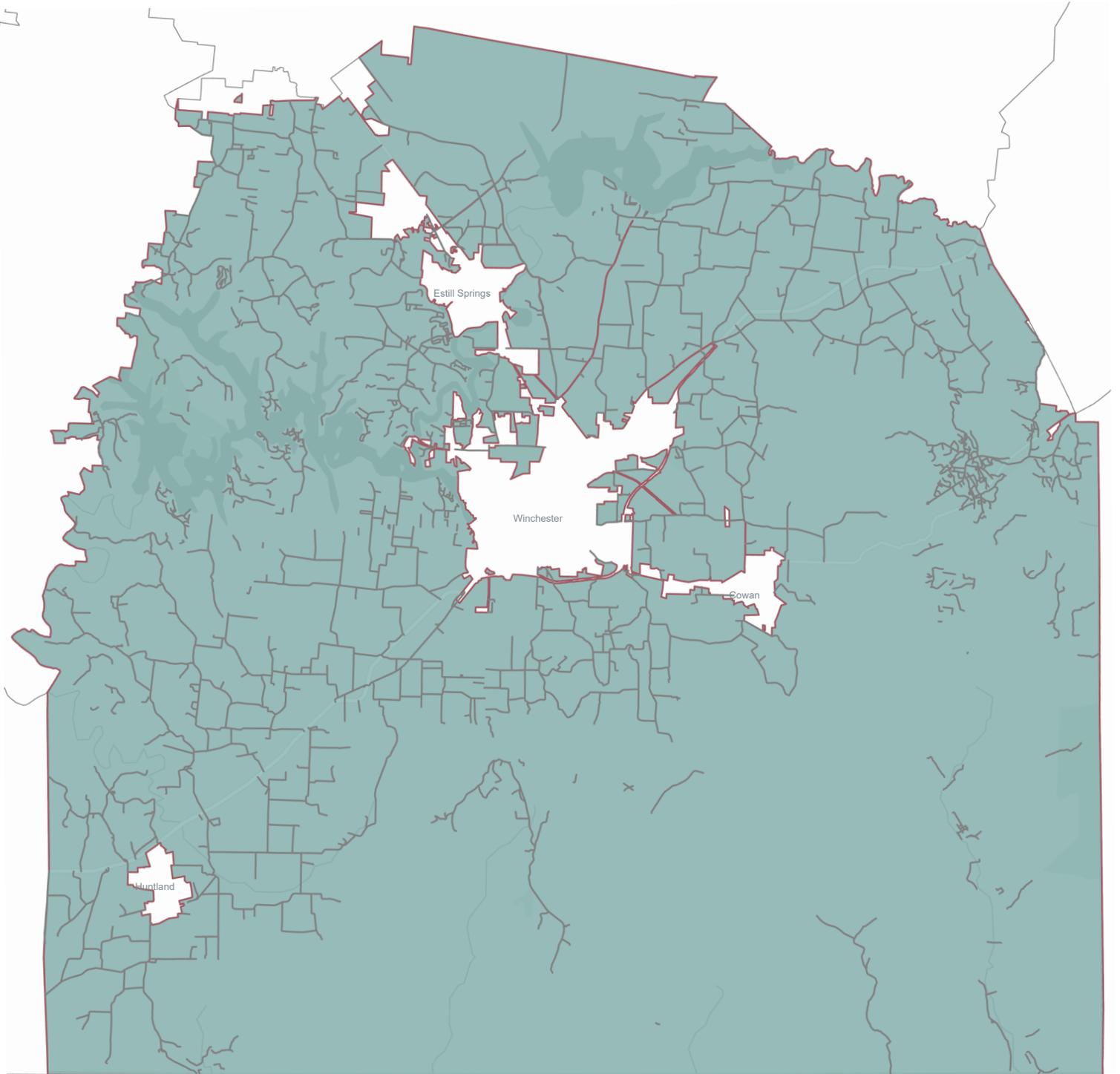


Located in the southern portion of Middle Tennessee, Franklin County has adopted the safety goals of these initiatives and has set an ambitious goal of eliminating all fatal and serious crashes on its roads by 2045. Franklin County has a population of approximately 42,980 as of the 2022 Census and welcomes thousands of visitors every year for its beautiful attractions including lakes, caves, and state parks. This Transportation Safety Action Plan (TSAP) was created with the goal of making sure everyone who lives in or visits Franklin County arrives at their destinations safely.

To set these goals into action, The Franklin County Safety Committee used a data-driven approach towards addressing roadway safety concerns throughout the county. To achieve the goal of 0 fatalities and serious injuries, Franklin County is committed to prioritizing safety and community needs that support state and nationwide transportation initiatives. By pledging specific goals, analyzing the county's crash history, engaging with the public, and enforcing changes through purposeful strategies and transparency, the Franklin County Safety Committee aims to reduce crash severity and enhance public safety.

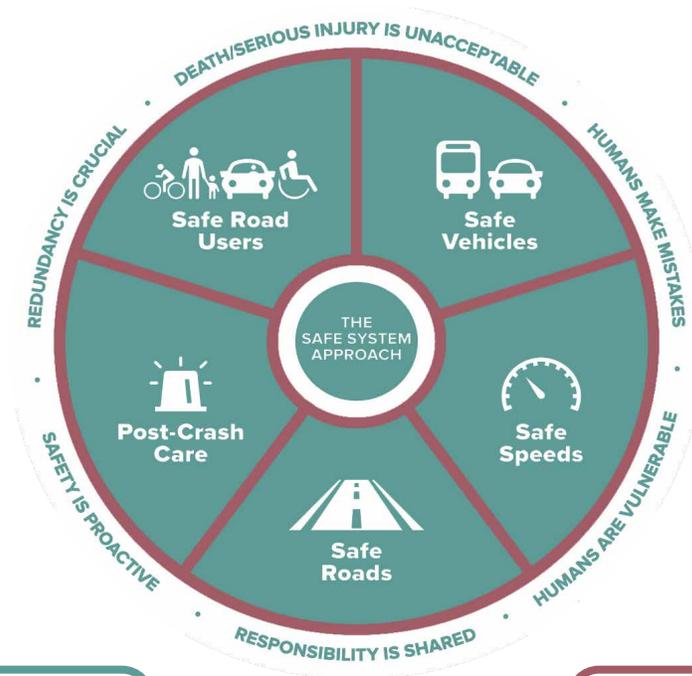


STUDY AREA



THE SAFE SYSTEM APPROACH

The Franklin County Safety Committee abides by the Safe System Approach, which has been adopted by the United States Department of Transportation. The Safe System Approach focuses on creating redundancies on roadways to mitigate inevitable human error. This objective is in line with the U.S. Department of Transportation's National Road Safety Strategy (NRSS), which holds that no death on our transportation systems is acceptable. The guiding principles are as follows:



Principles

Death and Serious Injuries are Unacceptable

Crashes that result in death and serious injuries must be eliminated

Humans Make Mistakes

Transportation systems should be designed and operated to anticipate inevitable human mistakes

Humans Are Vulnerable

Transportation systems should be designed to prioritize human safety and account for inherent physical limitations

Responsibility is Shared

Transportation safety requires shared responsibility among those who plan, design, manage, and use the road network

Safety is Proactive

Rather than responding only after crashes have taken place, proactive tools should be used to identify and address existing safety issues

Redundancy is Crucial

Reducing risks requires that all parts of the transportation system be strengthened, so that if one part fails, the other parts still protect people

Objectives

Safer Road Users

Foster safe, responsible road behavior and prioritize the safety of everyone using roads, ensuring they can reach their destinations unharmed

Safe Roads

Design road environments to accommodate human errors and reduce the impact of crashes, encouraging safer behavior and protecting the most vulnerable users

Safe Vehicles

Promote the availability of vehicle systems that prevent crashes and minimize their effects on both occupants and non-occupants

Safe Speeds

Encourage safer driving speeds through well-designed roads, appropriate speed limits, targeted education, outreach campaigns, and enforcement

Post-Crash Care

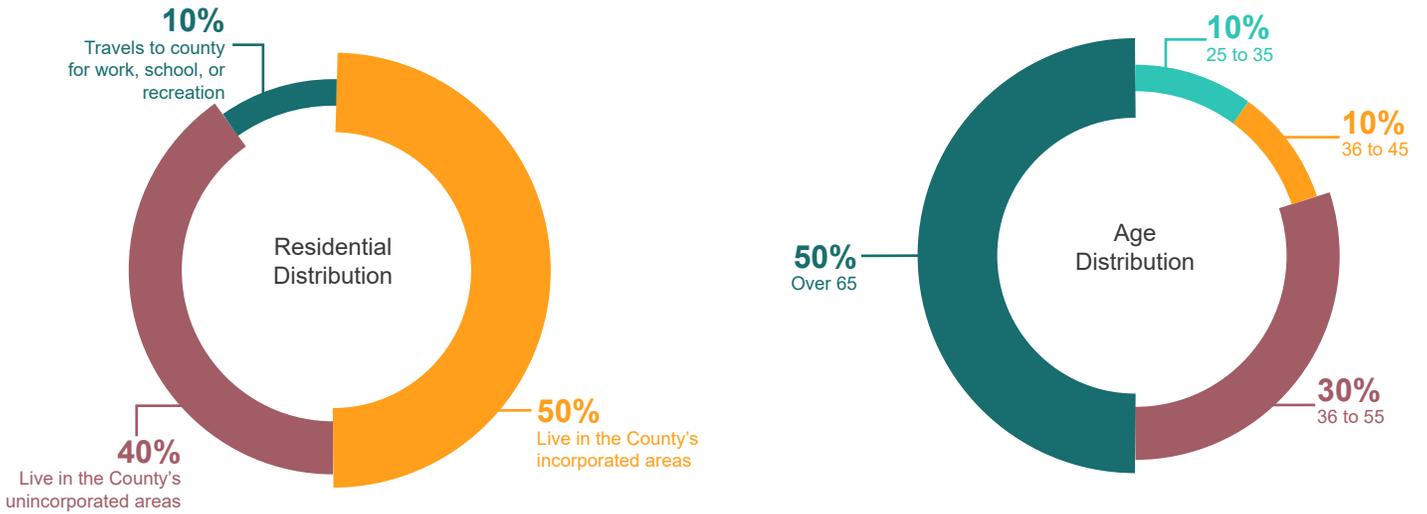
Enhance the chances of survival following crashes by improving access to emergency medical care, ensuring the safety of first responders, and preventing secondary crashes through effective traffic incident management

ENGAGEMENT AND COLLABORATION

This TSAP would be incomplete without involving the public and key stakeholders. While technical expertise and data offer objective analyses, community feedback provides critical context, ensuring that any transportation-related improvements align with the needs and values of those most affected.

During the first quarter of 2025, Franklin County residents and visitors were invited to share their views on transportation safety. A public survey was made available for over two months and ultimately gathered ten responses. While the number of responses was small, this input provides a preliminary view of public sentiment that can still serve as a guideline for safety and transportation planning.

Approximately 40% of the respondents live in Franklin County’s unincorporated areas, providing an understanding of the issues faced by those communities specifically. Further demographic information is highlighted in the charts below. The survey participants included members from different age ranges, which reflects a broad understanding of the community’s needs currently and in the future.



Understanding the districts where survey participants live is valuable, as it offers useful insights into the demographic distribution of our sample. Although the response rate was low, majority of the respondents reside in Districts 2 and 6 (Figure 1). These districts include lakes, shopping centers, schools, an Airforce base and more, providing the community with jobs, housing, schooling, etc.

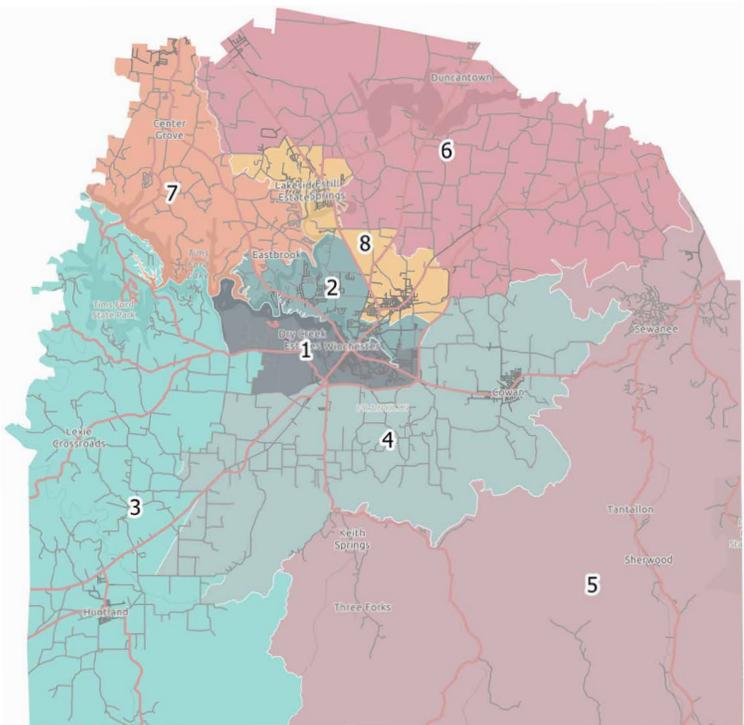
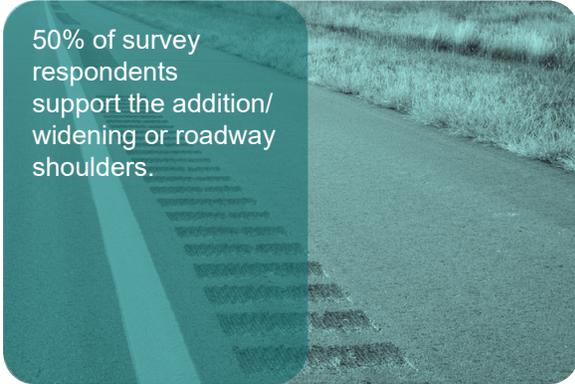


Figure 1: Franklin County district map.

District	Survey Respondents
1	0
2	3
3	0
4	1
5	1
6	3
7	0
8	1
Unsure	1

The survey also featured a question aimed at identifying the five transportation safety improvements that respondents consider most essential for enhancing road safety in Franklin County. The results from the survey are as follows:

50% of survey respondents support the addition/widening or roadway shoulders.



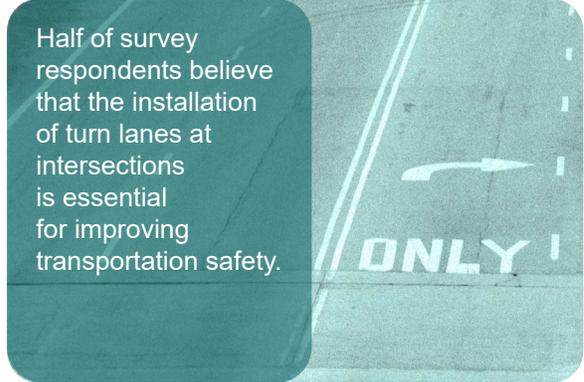
50% of survey respondents support the widening of roadway travel lanes.



3 of the 10 survey respondents expressed a desire for the installation of warning signs and pavement markings on roads.



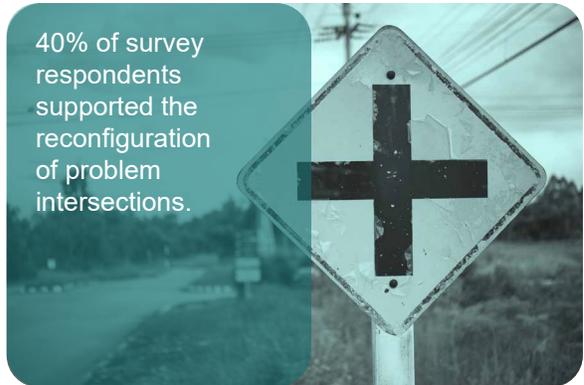
Half of survey respondents believe that the installation of turn lanes at intersections is essential for improving transportation safety.



Excessive roadside vegetation was identified as a prominent safety issue.



40% of survey respondents supported the reconfiguration of problem intersections.



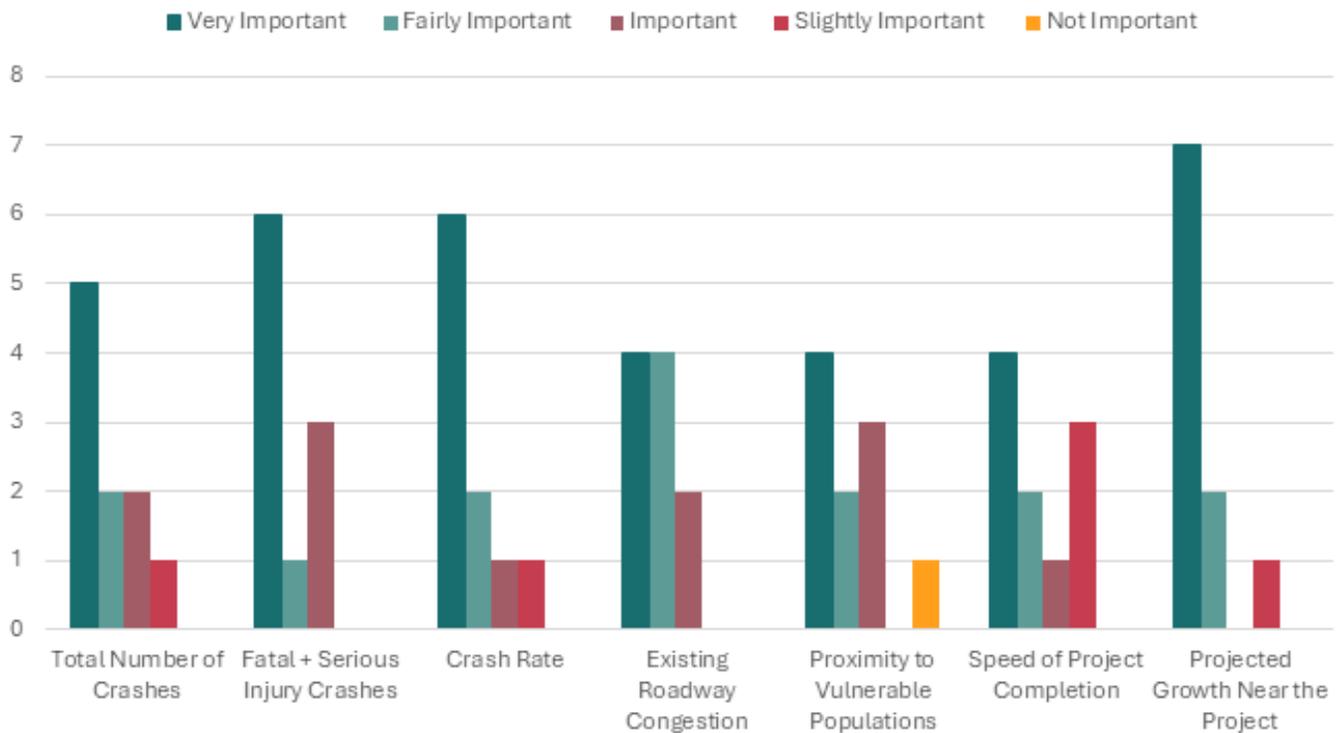
3 of the 10 respondents conveyed a need for more guardrails.



60% of survey respondents supported roadway improvements for pedestrians.



Survey participants were also asked to rank the factors they consider most important in selecting transportation projects. The results (shown below) clarified both the primary safety concerns and the community's top priorities in addressing these issues.



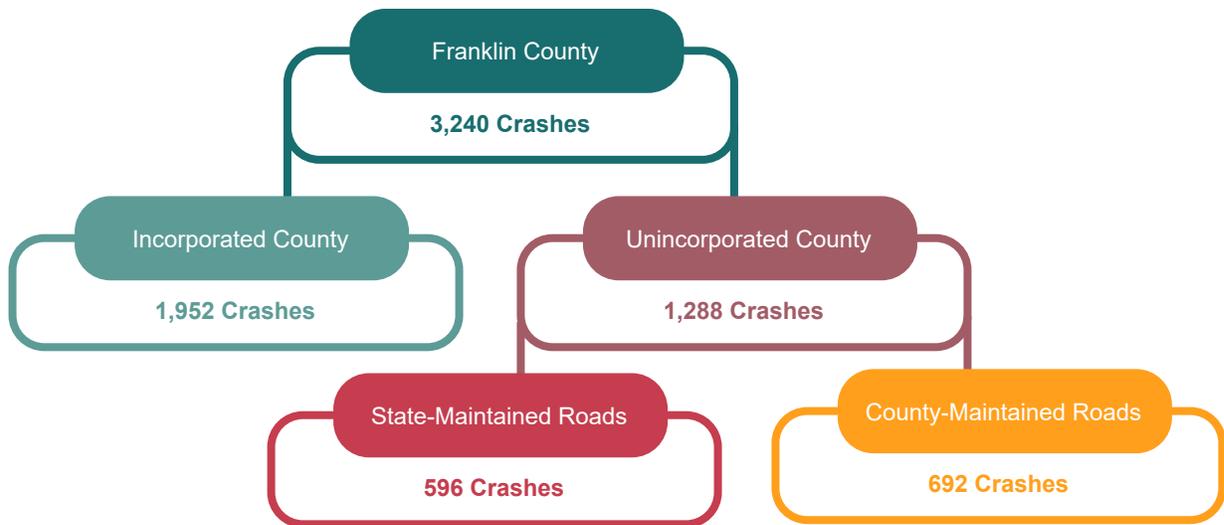
These findings highlight that the community's priorities are to decrease both overall crash frequency and crashes resulting in fatalities or serious injuries, aligning with the county's Vision Zero objectives. Moreover, 7 out of 10 respondents indicated that projected growth in the project area should influence which projects are selected.

The Franklin County Safety Committee prioritizes active community engagement, especially concerning transportation safety. Recognizing that input from residents and visitors is crucial, the committee thanks all those who participated in the survey and aims to develop an action plan that authentically reflects the community's needs. Following the implementation of this TSAP, the committee is committed to monitoring progress and will provide regular progress reports, ensuring the community remains informed and involved throughout the process.

SAFETY ANALYSIS FOR ALL FRANKLIN COUNTY

A robust five-year data analysis process was conducted to inform the decision making presented in this TSAP. The crash data presented in this report was gathered using the Tennessee Department of Transportation's Enhanced Tennessee Roadway Information Management System (E-TRIMS), a comprehensive database containing traffic safety data collected by law enforcement agencies statewide.

Between 2020 and 2024, there was a total of 3,240 crashes in Franklin County. Tragically, 31 individuals lost their lives in fatal collisions, while 208 sustained incapacitating injuries. Additionally, 1,052 people suffered injuries that were classified as either minor or possible injury. In 2022, Franklin County's fatality rate per 100,000 residents surpassed that of larger metropolitan counties in Tennessee, including Knox, Williamson, and Wilson. This disparity suggests that despite Franklin County's smaller population size, it faces a disproportionately high number of fatal traffic crashes.



The data analysis for this action plan examines crashes by the most severe injury outcomes according to the KABCO scale. The KABCO Scale was developed by the Federal Highway Administration (FHWA) and is used by law enforcement agencies to classify crash severity. Crash severity for Franklin County is shown below.



Figure 2, below, illustrates all crashes that have occurred throughout Franklin County from 2020 to 2024, highlighting their severity with distinct markers that indicate the location of each crash.

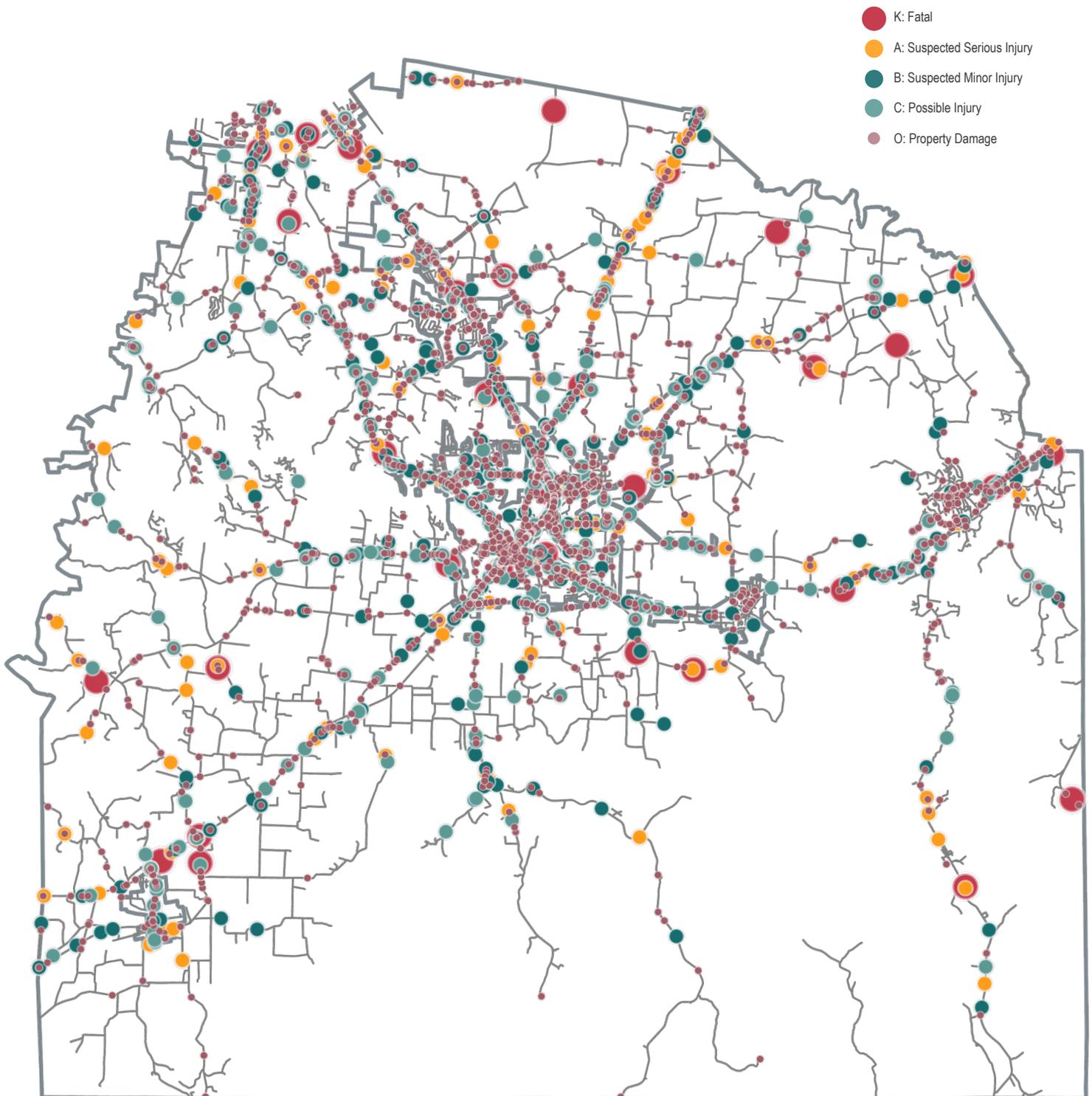


Figure 2: All crashes throughout Franklin County (2020-2024)

Understanding the full spectrum of traffic crashes throughout the county can reveal underlying issues such as driver behavior, road conditions, or weather patterns. By analyzing all crash types, The Franklin County Safety Committee was able to identify contributing factors and behaviors, allowing for more comprehensive safety measures. Although the primary objective of this TSAP is to focus on preventing fatalities (K) and serious injuries (A), studying crashes that involve minor injury (B), possible injury (C), and property damage (O) can also provide detailed patterns and allow for proactive rather than reactive safety measures.



29 Fatal Crashes

31 people dead



166 Serious Injury Crashes

208 people incapacitated or seriously injured



697 Minor or Possible Injury Crashes

1,052 people hurt or incapacitated



2,348 Property Damage Crashes

Millions of Dollars spent on Property Damage

It is important to note that the total number of injured people and the total number of injury crashes represent two different counts. One crash can involve multiple injured individuals. For example, in Franklin County there were 31 people who lost their lives because of 29 car crashes from 2020-2024.

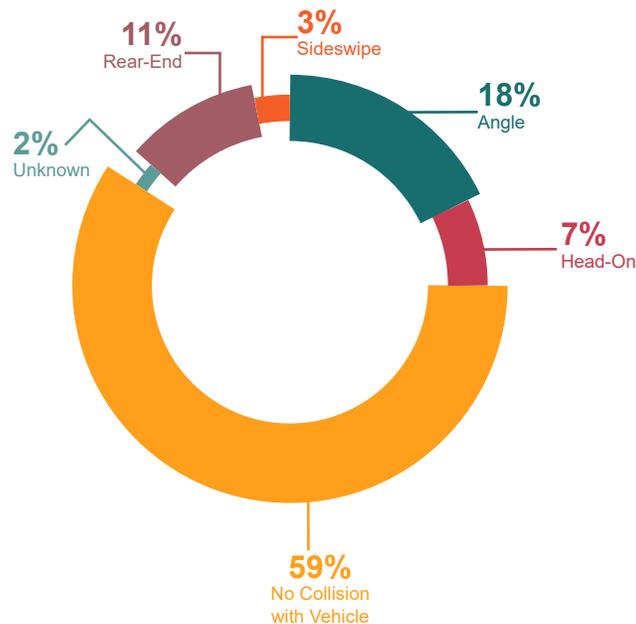
Fatal and Serious Injury crashes are unacceptable and must be prevented. The lives lost and the lives impacted serve as a glaring reminder of the cost of roadway crashes. The numbers presented through Franklin County's crash data underscore the urgent need for safety measures, public awareness, and systemic reforms to prevent further tragedies. The minor injury, possible injury, and property damage crashes show that preventative measures must be taken to improve road safety, reduce economic losses, and prevent further damage and loss. Franklin County is committed to eliminating deaths and injuries on its roadways and that begins with ensuring that property damage and minor/possible injury crashes do not escalate into fatal and serious injury crashes.

FATAL (K) & SERIOUS INJURY (A) CRASHES

29 Fatal (K) crashes and 166 serious injury (A) crashes lead to 31 deaths and 208 incapacitating injuries. To fully understand these crashes, it is crucial to investigate the underlying factors. Are they predominantly influenced by characteristics typical of rural driving, such as winding roads, limited visibility, animal encounters, or distracted driving? Or are there broader systemic issues, including insufficient road maintenance, poor signage, or a lack of enforcement? Identifying the root causes of these crashes is required for developing targeted solutions that address the safety challenges on Franklin County's roadways.



Of the 195 fatal (K) and serious injury (A) car crashes throughout the county, approximately 59% were non-collision incidents, involving drivers striking non-vehicular objects. The other crash types are illustrated below. The high percentage of non-collision crashes underscores the importance of addressing potential contributing factors such as roadway conditions, driver behaviors, and environmental factors. This data also provides insight into potential solutions that can be beneficial to eradicating these types of crashes.



Driver Behaviors in Fatal and Serious Injury Crashes

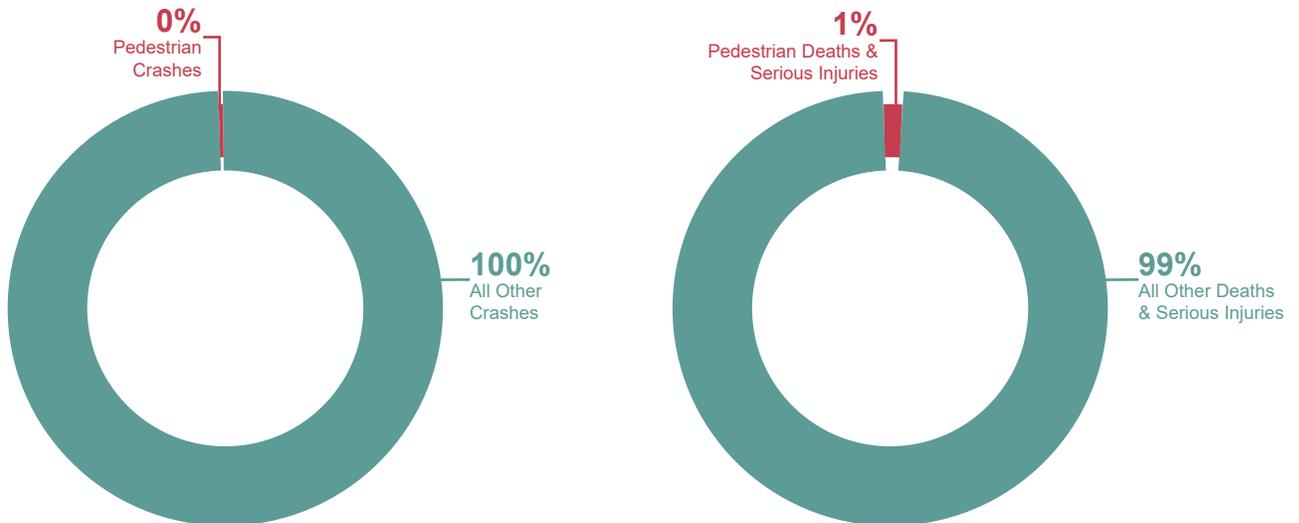
External roadway environments such as pavement conditions, weather, presence of signage, etc. play a major role in vehicular crashes. Though nuanced, these factors can be measured or predicted at times, however, human vulnerability is more uncertain and unpredictable. Driver behavior has a profound impact on the severity of crashes. Factors such as impaired reaction times, distraction, and fatigue not only increase the likelihood of collisions but also amplify their consequences. According to research from the National Highway Traffic Safety Administration, 90% of motor vehicle crashes are caused by driver-related factors. Understanding these behaviors allows for the identification of patterns and risk factors, enabling the development of targeted interventions to improve road safety. By focusing on driver vulnerability, safety measures can be tailored to address specific issues, such as promoting attentiveness, reducing distractions, and encouraging adherence to traffic laws. Below lists the driver actions that contributed to the fatal and serious injuries throughout the county. The data shows that around 28% of fatal and serious injury crashes occurred when drivers veered off the roadway, deviating from their designated travel lane (Lane Departure).

Lane Departure	28%
No Contributing Actions	17%
Unknown/Other	12%
Failure to Yield Right of Way	10%
Speed too Fast for Conditions	6%
Over Correcting	5%
Reckless Negligent Driving	4%
Careless Erratic Driving	3%
Failure to Obey Traffic Controls	3%
Driving Left of Center	2%
Exceeding Posted Speed Limit	2%
Following Improperly	2%
Operator Inexperience	2%
Improper Passing	1%
Swerved or Avoided	1%
Aggressive Driving Road Rage	1%
Driver Distracted	1%
Driving Wrong Way on One-Way Road	1%
Inattentive (Eating, Reading, Talking, etc.)	1%
Not Comply with License	1%
Vision Obstructed	1%

FRANKLIN COUNTY'S MOST VULNERABLE ROADWAY USERS

According to the National Road Safety Strategy, vulnerable road users (VRU) are road users not in a car, bus or truck. They are generally considered to include pedestrians, motorcycle riders, cyclists, children 7-years and under, the elderly and users of mobility devices. In the event of a crash, VRUs have little to no protection from crash forces.

The crash data from Franklin County shows that although pedestrian-related crashes represented approximately 0.3% of all crashes, they accounted for approximately 1% of the fatal and serious injuries in the county. This indicates that while pedestrian crashes in Franklin County are infrequent, they have a disproportionately high chance of severe outcomes, highlighting the need for targeted safety measures.



Traffic comes with unpredictability, but some patterns can be detected to alleviate potential crashes. Faster driving speeds contribute to longer stopping distances, smaller fields of vision, and increased pedestrian injuries and fatalities. Larger vehicles also require more stopping distance, have higher impact forces, and inflict increased pedestrian injuries and fatalities. The Governor's Highway Safety Association (GHSA) has reported that from 2008 to 2019, pedestrian fatalities increased by 53%, while other traffic fatalities increased by 2%. The GHSA data also revealed that 81% of pedestrian fatalities occurred from dusk to dawn, highlighting potential visibility concerns. To mitigate these factors and other roadway hazards, it is crucial to Franklin County to prioritize the safety of vulnerable users through countermeasures such as improved crosswalk visibility, efficient traffic calming strategies, and strict enforcement of speed limits to reduce and eliminate the risks of deaths and serious injuries.

Drivers are more than **3X** as likely to yield to pedestrians with continuous crosswalk lighting or triggered illuminators

(Insurance Institute for Highway Safety)

Drivers are more than **13X** as likely to yield to pedestrians when Rectangular Rapid-Flashing Beacons and crosswalk lighting are used together

(Insurance Institute for Highway Safety)

VRU Safety Countermeasures

Drivers are **3X** more likely to slow down by more than 10 mph at crosswalks when crosswalk lighting systems are installed

(Insurance Institute for Highway Safety)

High-visibility crosswalks can reduce pedestrian injury crashes up to **40%**

(Federal Highway Administration)

SPEED MANAGEMENT AND VOLUME STUDIES

Speeding was reported as a driver characteristic in approximately 8% of the fatal and serious injury crashes throughout Franklin County. Taking a proactive approach to speed related issues enhances road safety for all residents and creates redundancies to protect drivers, pedestrians, and other road users from potential injuries and fatalities. Speed studies were conducted on several roads throughout the county that residents reported as areas of concern due to speeding. Because volume on these roads was mostly unknown, traffic count studies were conducted to determine the AADT on these roads. The 85th percentile speed was also collected as shown in the chart below.

Road Name	AADT	85th Percentile Speed (MPH)	Posted Speed Limit (MPH)	Lane Width (ft)
Blue Creek Rd	575.8	50.5	30	11
Dechard Estill Rd	826	47	45	10
Gourdneck Rd NW	1082.4	37	45	9
Keith Springs Mountain Rd	297.6	44.5	-	9
Mingo Rd	837.6	47.5	-	9
Otter Falls Rd	583	35.5	-	9
Pleasant Ridge Rd	871	39.5	30	9
2573 Rock Creek Rd	512.2	50	45	9
4460 Rock Creek Rd	540.6	59	45	9
Spur Rd	133.6	50.5	40	9
Stewart Ln	804.2	43.5	30	9

The 85th percentile speed represents the speed that 85% of vehicles are traveling either at or below under free-flowing conditions. It reflects the speed that most drivers feel comfortable and safe with. Although the 85th percentile speed provides a good guideline for setting the legal speed limit, other factors can influence the posted speed limit, such as the roadway's geometry, its proximity to various establishments such as schools and parks, the presence of VRU, etc.

With a significant number of vehicles driving over the legal speed limit on the roads listed above, it is important to further assess these areas and consider potential resolutions such as reassessing the posted speed limits or speed management mitigations such as speed limit reductions, speed humps, speed safety cameras, and enhanced enforcement. These results indicate that further evaluation and studies must be completed to address the specific needs of each roadway and tailor effective solutions to each location to create safety for all road users.

STATE ROUTES

Though this TSAP is primarily focused on roads maintained by Franklin County, it is also crucial to prioritize road safety across all roads within the county, regardless of jurisdiction. Franklin County crash data indicates that crashes on state-maintained routes in unincorporated areas occur at disproportionately high rates compared to their share of the road network. These routes, which make up only 16% of the total centerline miles, account for an astonishing 46% of all reported crashes and 54% of all fatal and serious crashes in unincorporated areas.

Unincorporated Facility Type	Unincorporated Centerline Miles	Unincorporated Total Crashes	Unincorporated Fatalities + Serious Injuries
State Routes	126.90 (16%)	596 (46%)	82 (54%)
County Roads	672.94 (84%)	692 (54%)	71 (46%)
State Park Roads	0.0670 (0%)	0 (0%)	0 (0%)
TVA	2.6020 (0%)	0 (0%)	0 (0%)
Air Force	0.2840 (0%)	0 (0%)	0 (0%)
Private Roads	0.5050 (0%)	0 (0%)	0 (0%)
Total	803.30	1288	153

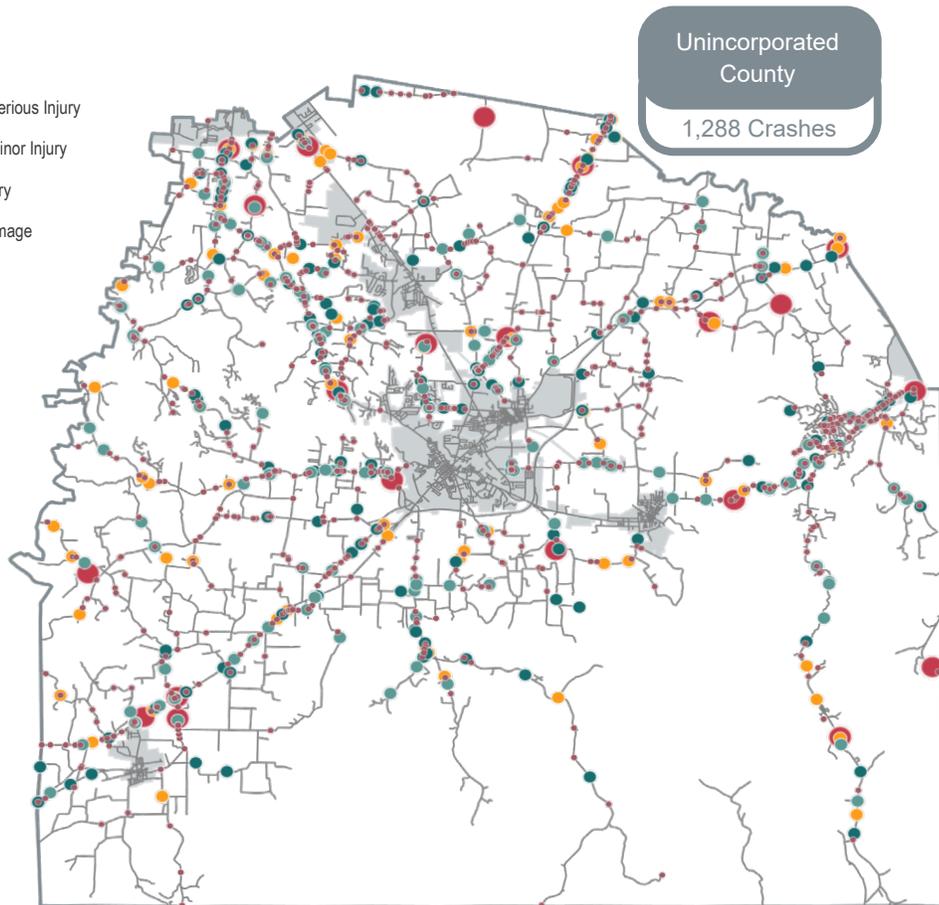
State Routes within the county experience high crash frequencies and pose significant safety concerns. These routes often serve as connector roads for residents, meaning crashes along them directly impact county communities. Although the county does not have direct jurisdiction over State Routes, documenting these patterns provides an opportunity for multi-jurisdictional collaboration with the Tennessee Department of Transportation. Coordinated planning and investment between the county and the state can help align safety priorities and ensure enhancements across the entire roadway network. The chart below presents a summary of all state route crashes throughout Franklin County.

Route	Total Crashes	Total Fatalities	Total Incapacitating Injuries	AADT (2023)
SR015	164	3	10	9738
SR130	114	2	11	6495
SR050	94	3	19	7562
SR127	61	1	13	5982
SR056	34	1	5	1325
SR476	32	0	2	2498
SR016	31	0	2	19445
SR156	19	1	1	1496
SR279	17	1	2	995
SR121	15	0	1	774
SR097	9	0	3	697
SR122	6	0	1	3727

SAFETY ANALYSIS FOR UNINCORPORATED FRANKLIN COUNTY

Over 39% of Franklin County's crashes occur in unincorporated regions. Focusing on unincorporated areas is crucial to this TSAP because these regions experience higher traffic fatality rates compared to urban areas. Often, unincorporated areas yield longer emergency response times, and increased prevalence of risky driver behaviors like opting out of wearing seatbelts and speeding. Additionally, unincorporated areas frequently lack the resources and infrastructure found in urban settings, leading to challenges in implementing safety measures. In the following section, crash trends within Franklin County's unincorporated communities will be examined more closely, providing a focused analysis of where these patterns are emerging and how they can be mitigated.

- K: Fatal
- A: Suspected Serious Injury
- B: Suspected Minor Injury
- C: Possible Injury
- O: Property Damage



State-Maintained
Routes

596 Crashes

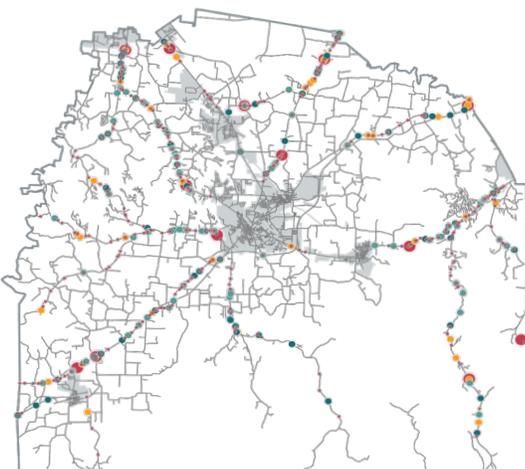
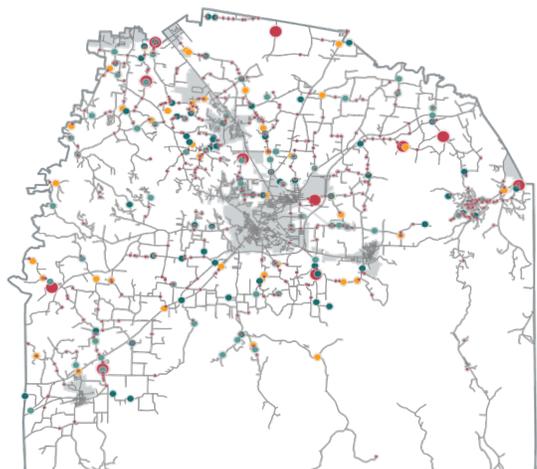


Figure 3: All crashes throughout unincorporated Franklin County (2020-2024)

County-Maintained
Roads

692 Crashes



During the analysis of crash trends throughout all unincorporated areas of Franklin County, the following key findings were determined:

What Types of Crashes are Occurring?



Approximately **66%** of crashes resulted in property damage only (O)



Approximately **24%** of crashes resulted in minor injury (B)



10% of crashes resulted in fatality (K) or serious injury (A)

Where are these Crashes are Occurring?



Approximately **89%** of all unincorporated crashes occurred somewhere along the roadway



11% of all unincorporated crashes occurred at intersections

Who is Impacted by these Crashes?

1 Pedestrian Killed and **1** injured



23 Drivers and/or Passengers killed



From 2020-2024, the following road users were impacted by crashes on Unincorporated Roads in Franklin County

4 Cyclist injured



587 Other Drivers and/or Passengers injured



SAFETY ANALYSIS FOR COUNTY-MAINTAINED ROADS

A total of 692 crashes were reported on unincorporated county-maintained routes. Franklin County emphasizes the importance of the safety and analysis of unincorporated, county-maintained roads. These roads are vital for residents, and improving safety measures will greatly lower accident risks, protecting drivers, pedestrians, and cyclists alike. Residents in these unincorporated areas often have limited access to alternative transportation, so enhancing safety on these roads will help close gaps and ensure access to services and opportunities.

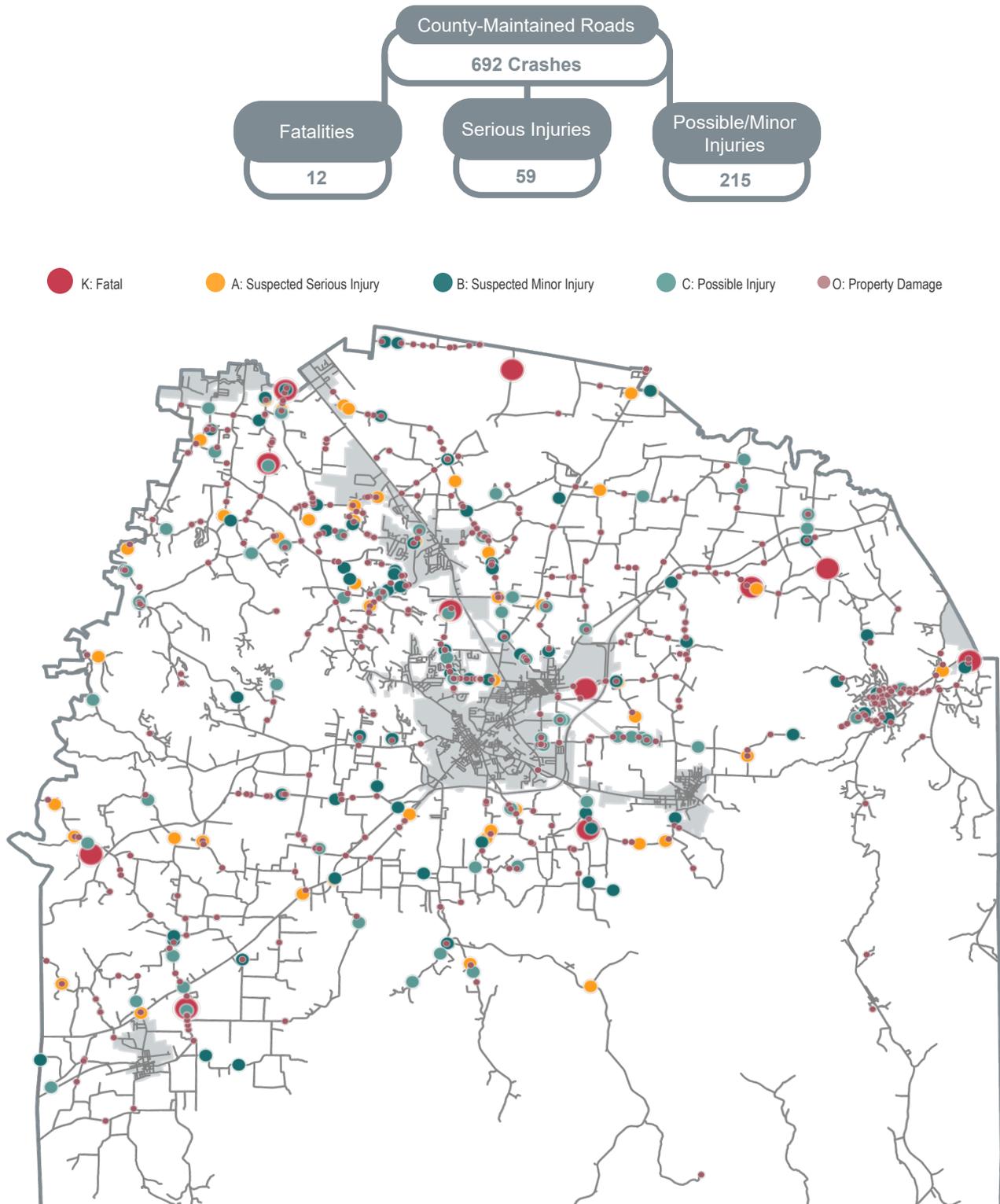
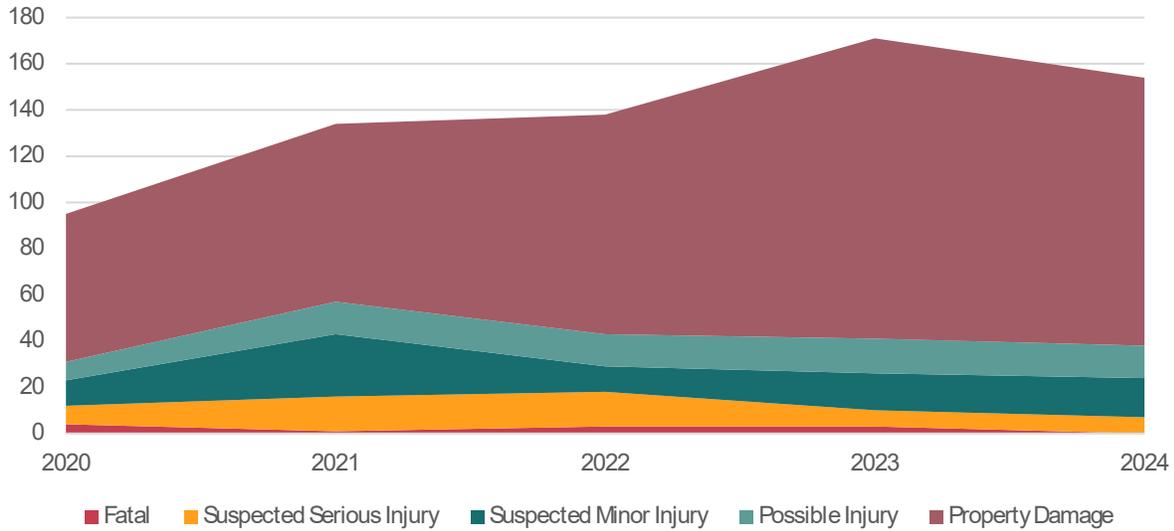


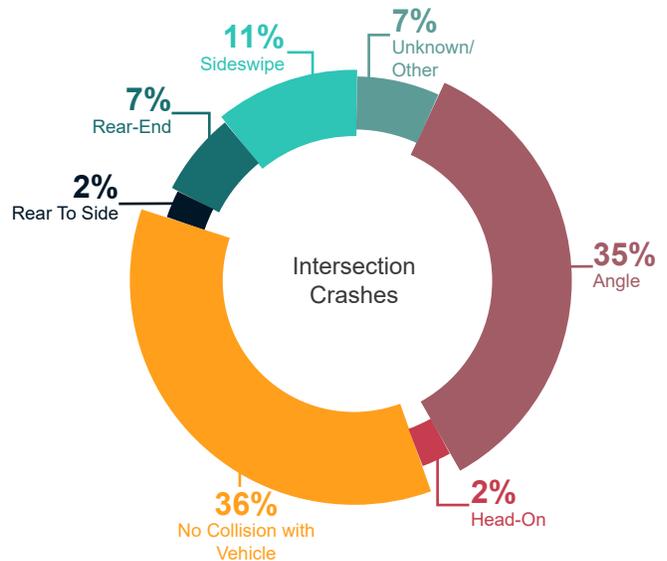
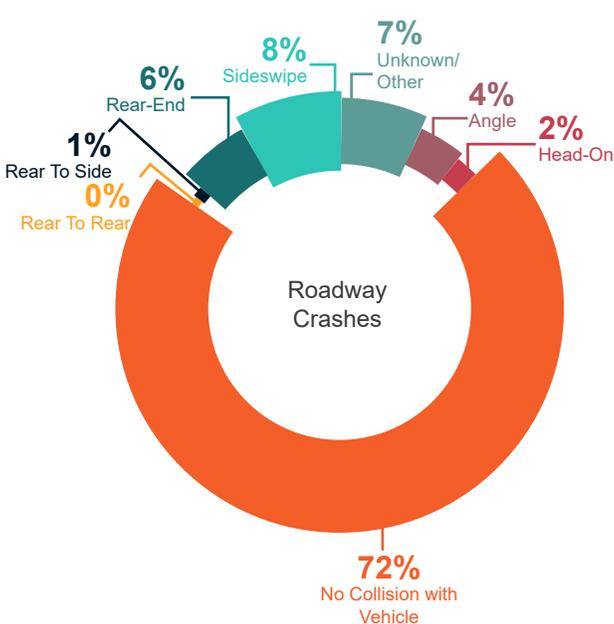
Figure 4: All crashes on county-maintained roads throughout unincorporated Franklin County (2020-2024)

The distribution of crashes that occurred on the county-maintained roads in unincorporated Franklin County is displayed below.



Crash Type	2020	2021	2022	2023	2024	Total
Fatal	4	1	3	3	0	11
Suspected Serious Injury	8	15	15	7	7	52
Suspected Minor Injury	11	27	11	16	17	82
Possible Injury	8	14	14	15	14	65
Property Damage	64	77	95	130	116	482
Total	95	134	138	171	154	692

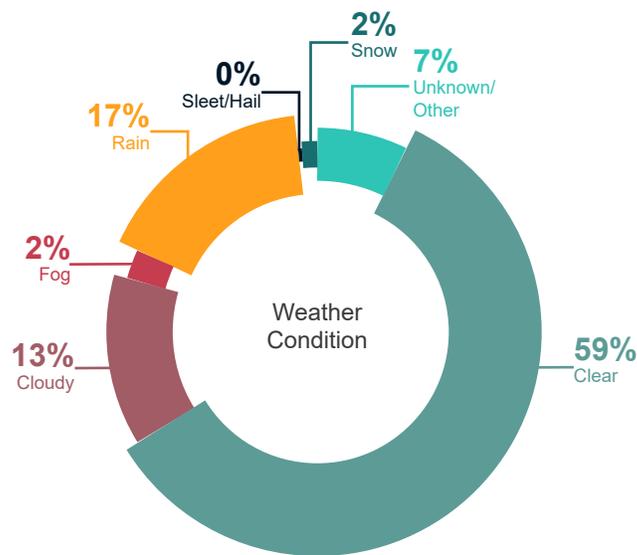
A significant 93% of these crashes occurred directly on the roadway and 7% occurred at intersections. Most incidents involved non-collision events with other vehicles. These crashes have had serious consequences, resulting in 10 fatalities and 50 incapacitating injuries. The primary cause of these crashes was roadway departure, a trend often seen on rural roads. Addressing these patterns is essential for improving overall road safety and reducing crashes in the area.



Distinguishing between crashes that happen on the roadway and those that occur at intersections is crucial, as different types of crashes often require different safety interventions. Knowing where crashes take place helps prioritize specific actions, such as improving signage, adding traffic signals, or redesigning intersections. By identifying high-risk areas, whether on the road or at intersections, Franklin County can allocate resources more efficiently, focusing on the locations with the most potential for reducing crashes and enhancing safety.

Further analysis of Franklin County's roadway data shows the impacts of weather and light conditions during crash incidents. Adverse weather and dark lighting conditions have been revealed to affect driver and vehicle performance and capabilities, pavement surface conditions, traffic flow, etc. Throughout the United States, 21% of annual crashes are weather-related. Although the impacts of lighting conditions and darkness on driving behaviors are not fully understood, patterns show that the risk of crashes increase with darkness.

114 of the 692 Franklin County-maintained crashes reported occurred during rain. Another 92 crashes occurred during cloudy-weather conditions and 12 crashes occurred during snow and ice events. The chart below demonstrates the weather conditions present on Franklin County roadways during crashes.



After analyzing crash data for county-maintained roads in unincorporated areas, Franklin County identified patterns highlighting high-risk locations. By reviewing the frequency and severity of incidents, key areas in urgent need of safety improvements were pinpointed. This data-driven approach enables us to prioritize these locations and allocate resources effectively, improving road safety for residents and visitors alike.

THE HIGH INJURY NETWORK

A High Injury Network (HIN) is a tool used to identify specific roads and intersections within a community where severe and fatal traffic crashes occur most frequently. By analyzing crash data, transportation authorities can pinpoint areas that pose the greatest risk to all road users, including pedestrians, cyclists, and motorists. This targeted approach allows for the allocation of resources and implementation of safety measures where they are needed most, ultimately aiming to reduce serious injuries and fatalities on the road. The HIN for Franklin County is mapped below in Figure 5. Franklin County's HIN consists of 12 roadway segments and 2 spot locations.

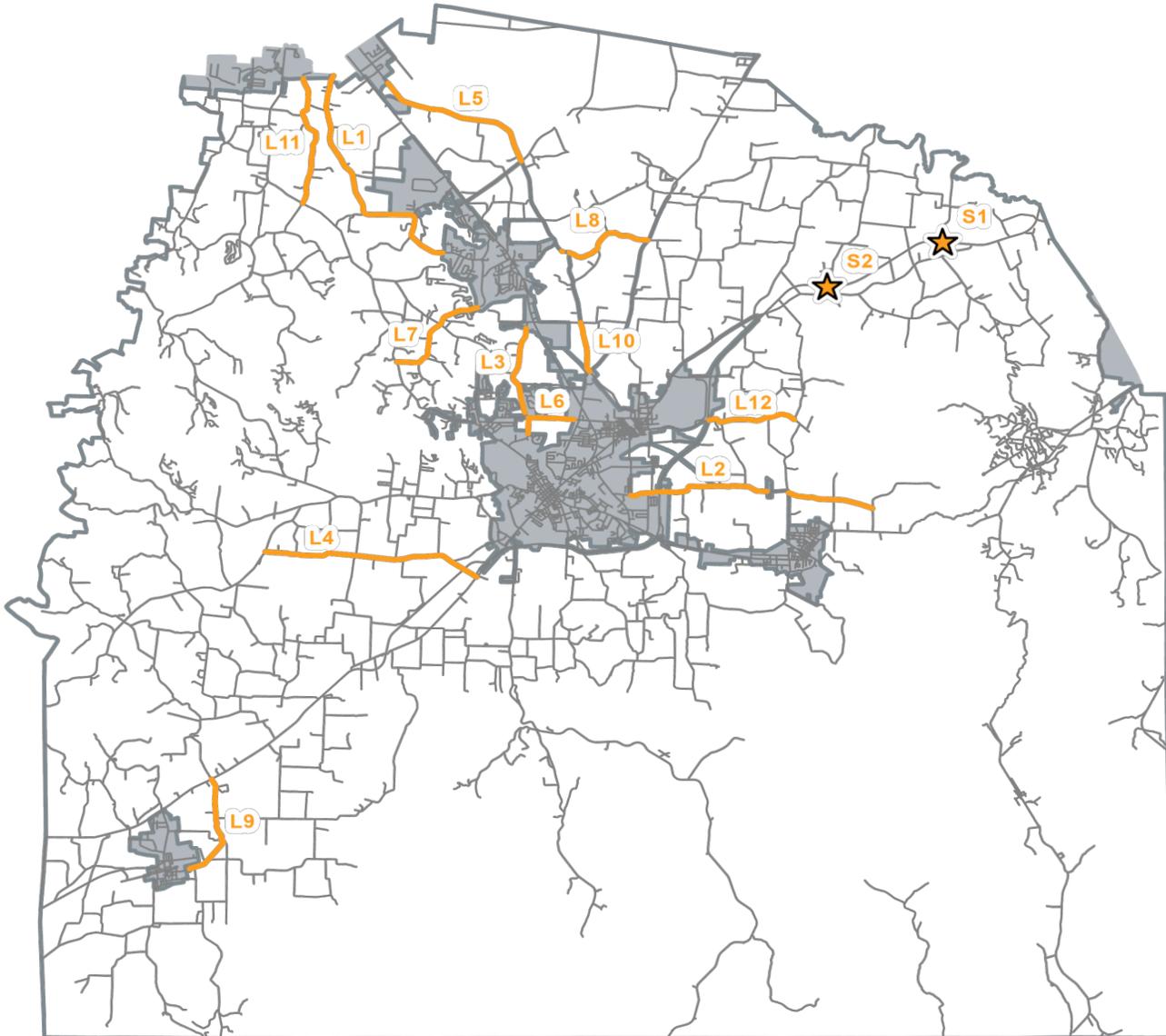


Figure 5: Franklin County HIN

Map Label	Road Name	Total Crashes	Fatalities	Incapacitating Injuries	Posted Speed Limit (MPH)	AADT
L-1	Rock Creek Rd	30	1	5	45	526.4
L-2	Georgia Crossing Rd	27	0	3	40	1154
L-3	Old Estill Springs Rd	23	1	2	30	-
L-4	Mingo Rd	17	0	2	-	838
L-5	Spring Creek Rd	16	0	3	45	-
L-6	Bible Crossing Rd	14	0	1	40	2523
L-7	Eastbrook Rd	14	0	1	35	1840
L-8	Paynes Church Rd	14	0	1	45	-
L-9	Beans Creek Rd	13	2	0	35	554
L-10	Decherd Estill Rd	13	0	2	45	826
L-11	Blue Creek Rd	12	1	1	30	576
L-12	Blue Spring Rd	10	1	1	30	1357
S-1	SR050 & Rutledge Ford Rd	5	0	4	-	-
S-2	SR050 & Oak Grove Rd	3	0	1	-	-

SUPPLEMENTARY ISSUES OF CONCERN

In addition to crashes, Franklin County faces supplementary safety issues that affect residents daily.

Blue Spring Road

Blue Spring Road is a local rural two-lane road with limited pavement markings that is on the county's HIN. There have been 10 reported crashes on this road from 2020-2024 and it has caused concern amongst many of the road users for safety issues beyond reported crashes. Residents have raised concerns about slick pavement during wet weather conditions, often requesting more signage and other safety enhancements such as rumble strips, guardrail upgrades, and pavement rehabilitation. The following FHWA safety countermeasures are proposed at this location:

FHWA Safety Countermeasure	Safety Benefits
Pavement Friction Management	High Friction Surface Treatment (HFST) consists of a layer of durable, anti-abrasion, and polish-resistant aggregate over a thermosetting polymer resin binder that locks the aggregate in place to restore or enhance friction and skid resistance. HFST can reduce crashes up to 63% for injury crashes at ramps, 48% for injury crashes at horizontal curves, and 20% for total crashes at intersections.
Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	There are several benefits to systemically applying multiple low-cost countermeasures at stop-controlled intersections, including low-cost and highly effective treatments, with an average benefit-cost ratio of 12:1.
Roadside Design Improvements at Curves	Since not all roadside hazards can be removed, relocated, or redesigned at curves, installing roadside barriers to shield unmovable objects or steep embankments may be an appropriate treatment. In cases where a vehicle leaves the roadway, having strategic roadside design elements, including an added or widened shoulder, flattened side slopes, or a widened clear zone can provide drivers with an opportunity to regain control and re-enter the roadway in their lane or come to a safe stop before rolling over or encountering a fixed object.
Enhanced Delineation for Horizontal Curves	Enhanced delineation treatments can alert drivers to upcoming curves, the direction and sharpness of the curve, and appropriate operating speed.
Local Road Safety Plans	A local road safety plan (LRSP) provides a framework for identifying, analyzing, and prioritizing roadway safety improvements on local roads. The LRSP development process and content are tailored to local issues and needs.

Railroad crossing at Mountain Avenue & Sherwood Road

For many years, residents in Franklin County have raised concerns about the railroad crossing at Mountain Avenue W and Sherwood Road. This crossing is located at a train passing siding—a section of track where trains pull over and wait for an oncoming train to pass before continuing. While this is necessary for rail operations, it has created serious problems for the community.

When a train is stopped at the siding, the crossing can be blocked for hours at a time. This leaves drivers stuck waiting and has led to dangerous situations where pedestrians, including school children, have climbed over or crawled under the stopped train to get across. Although there have not been any reported injuries yet, the risk is clear.

The crossing is also the only way for emergency vehicles to reach the church and several homes located west of the tracks. If the crossing is blocked, fire trucks, ambulances, or police cars are delayed, time that could make all the difference in an emergency.

A Safer, Smarter Solution

To improve safety and provide a reliable alternative, we recommend building a new roadway connection that links **Spring Street S or Mountain Avenue W to No Business Road**. This road would serve as a second way in and out for residents and first responders when the crossing is blocked.

Here's what that would involve:

- **Short New Roadway**

The new road would be less than a mile long, making it a relatively small project with a big impact.

- **Crossing Youngs Creek**

The road would require one bridge or culvert crossing at Youngs Creek. With the right design, this can be built to handle both traffic and environmental needs.

- **Working Together**

Building the connection would mean working closely with property owners and Tennessee Southern Railroad to make sure the roadway fits within the community and rail operations.

Why This Matters

- **Emergency Access:** Ensures fire, police, and medical responders can always reach residents and the church west of the tracks.
- **Community Safety:** Reduces the risk of children and adults crossing between rail cars.
- **Less Frustration:** Cuts down on long delays and daily disruptions for residents, school buses, and commuters.
- **Peace of Mind:** Provides a dependable second option for getting in and out of the neighborhood

Moving Forward

Even though no one has been hurt yet, the risks at this crossing are too high to ignore. By taking a proactive approach now, Franklin County can improve safety, reduce delays, and give residents confidence that emergency vehicles will always have a way through. This project is about more than just building a road—it's about protecting people, saving time, and keeping our community connected.

GUARDRAIL SAFETY ISSUES

Designed to prevent vehicles from leaving the roadway and encountering dangerous obstacles like cliffs, steep embankments, or fixed objects (such as trees, poles, or bridge supports), guardrails are critical components of roadside safety. However, guardrails themselves can become significant hazards if they are outdated, improperly maintained, or incorrectly installed. Franklin County aspires to ensure that guardrails do not become hazards themselves and can continue to provide safer roads for all. Through consistent attention and investment in roadside infrastructure, the county can significantly reduce the risks of roadway departures and make sure guardrails fulfill their intended role of saving lives.

Inadequate Guardrail Height and Structure

A key issue that can turn a guardrail into a hazard is its height or structural condition. Guardrails that do not meet current Federal Highway Administration (FHWA) standards—such as those less than 24 inches in height—are classified as non-functional. These low barriers are no longer capable of safely redirecting vehicles back onto the road. Particularly for larger or taller vehicles, low guardrails may cause the vehicle to vault over the top or slide beneath the rail, leading to rollovers, serious crashes, or even falls into dangerous off-road areas. Additionally, the increase in heavy trucks and the rise of electric vehicles throughout the Franklin County could impact guardrail durability and maintenance.

Outdated Guardrail Designs

Beyond height issues, outdated guardrail designs pose significant risks. Some older designs are less effective at absorbing or dissipating the energy from vehicle collisions compared to newer models. For instance, some guardrail end treatments designed decades ago have been linked to fatal crashes. A widely used guardrail end terminal, the ET-Plus, has sparked controversy for its role in crashes where the rail failed to crumble properly on impact. Instead of absorbing crash energy, it could impale vehicles, leading to life-threatening injuries.

Improper Guardrail Placement

Another issue arises when guardrails are installed in inappropriate locations or too close to the road's edge. Improper placement can increase risks for drivers, such as when guardrails are positioned along road sections with minimal chances of vehicle departure. In such cases, the guardrail may become a more dangerous obstacle than the natural surroundings. If a driver swerves to avoid an obstacle but instead strikes an improperly placed guardrail, the collision could cause more damage than if no guardrail were present. The strategic placement of guardrails is essential in balancing their protective function against the risks they may pose.

Damaged or Deteriorating Guardrails

Guardrails that have sustained damage—whether from previous crashes, weathering, or general wear and tear—can also become hazards. Bent, broken, or misaligned rails may lack the structural integrity to stop or redirect a vehicle in a collision effectively. According to FHWA guidelines, if a guardrail is pushed more than 18 inches out of alignment or if three or more posts are damaged or detached from the rail, it is no longer functional. In such cases, the guardrail may collapse upon impact, allowing the vehicle to break through and collide with the obstacles it was designed to protect against.

Defective Guardrail End Treatments

Guardrail end treatments—designed to terminate safely and absorb crash impact—are another area where guardrails can become hazardous. These end sections soften the impact of a vehicle hitting the end of the guardrail, preventing a collision with a rigid, immovable object. However, when these treatments are outdated, poorly installed, or damaged, they may fail to function correctly. Some older models have been known to “spear” vehicles upon impact, drastically increasing the risk of fatalities or severe injuries. Ensuring that all end treatments meet safety standards and are correctly installed is vital to reducing harm. Priority should be given to replacing end treatments that no longer meet safety standards, especially in high-traffic or high-risk areas.

Inconsistent Guardrail Coverage and Gaps

Inconsistent guardrail coverage or gaps in guardrail systems can also pose serious hazards. Large gaps in guardrail coverage can leave sections of the road unprotected, allowing drivers to swerve into these unguarded areas and encounter dangerous roadside hazards. Additionally, inconsistent coverage can confuse drivers, undermining their sense of protection. A continuous, well-maintained guardrail system is essential for ensuring that drivers remain shielded from off-road dangers.

Prioritizing Inspection and Replacement

Addressing these concerns requires a comprehensive approach that prioritizes the regular inspection, repair, and replacement of guardrails. For Franklin County, the Transportation Safety Action Plan (TSAP) serves as a reminder of the importance of inspecting and addressing potential guardrail hazards and ensuring compliance.

SAFETY ENHANCEMENT SUGGESTIONS

The FHWA has published a list of 28 countermeasures and strategies that have proven to be effective in reducing roadway fatalities and incapacitating injuries throughout the United States. The countermeasure categories include the following safety focus areas: speed management, intersections, roadway departures, or pedestrians/bicyclists, and crosscutting.

In mitigating the impacts of roadway departure crashes, which are the main source of crashes throughout Franklin County, the following countermeasures have been outlined:

- **Enhanced Delineation for Horizontal Curves:** Improved and enhanced signage and marking strategies specifically designed for curves to enhance visibility and driver awareness, reducing the risk of crashes.
- **Longitudinal Rumble Strips and Stripes on Two-Lane Roads:** Installation of rumble strips along the centerline of two-lane roads to alert drivers who may inadvertently drift across lanes, improving safety by preventing head-on collisions.
- **Roadside Design Improvements at Curves:** Implementation of safety measures such as clear zones, guardrails, and improved roadside grading to mitigate the risk of run-off-the-road crashes at curves, ensuring safer road conditions.
- **SafetyEdgeSM:** A pavement edge treatment that creates a safer transition between the road surface and the shoulder, reducing the likelihood of vehicles overturning or losing control if they leave the roadway.
- **Wider Edge Lines:** Application of wider, more visible edge lines along road shoulders to improve delineation and guide drivers, reducing the incidence of run-off-the-road crashes and improving overall road safety.

Franklin County has an ambitious goal of implementing more safety throughout each location on the HIN. In addition to the project specific recommendations made by Franklin County, the following county-wide solutions should be implemented to enhance the safety of roadways on the HIN and throughout the county regardless of their inclusion in the HIN.

Based on the community feedback received, the crash data analysis, and the HIN, Franklin County believes that these roadway safety enhancements will yield a safer transportation system by managing vehicle speeds, sight visibility, warning signs, and creating a safe space for vulnerable users.

STRATEGY AND MEASURING PROGRESS

To maintain transparency on the progress of this TSAP, Franklin County will publish accessible traffic crash data online. This information will allow the public to explore safety trends and project data, providing a clear view of our progress toward achieving Vision Zero goals and the steps taken to address safety concerns. Such transparency will hold us accountable in our bold approach to improving street safety and supporting equitable, healthy mobility for everyone.

Franklin County is committed to involving communities throughout the implementation of the TSAP's strategies and actions. This approach will include partnerships with transportation advocates and community-based organizations, especially those serving vulnerable populations, as well as residents and businesses. By working with these groups, we will gather ongoing feedback on safety priorities to guide our Vision Zero projects. We are dedicated to fostering strong community relationships and conducting inclusive outreach at each stage of the planning process. We look forward to collaborating with the community to achieve our Vision Zero goal.

Roadway Lighting

This will enhance visibility and safety for both drivers and vulnerable users, such as cyclists and pedestrians. Inadequate street lighting was expressed by Franklin County community members and supported by the crash data. It also posed a safety concern on many of the roads in the HIN.

Longitudinal Rumble Strips and Stripes

Rumble strips and stripes are designed to address roadway departure crashes by alerting distracted, drowsy, or otherwise inattentive drivers who drift from their lane. They are most effective when deployed systemically.

Intersection Signalization

This will provide exact indications for roadway users to advance their travels. It will also prevent uncertainty amongst drivers on what movements should be prioritized.

Pavement Markings

Refreshing existing pavement markings and adding them in areas where they are lacking will reduce driver and vulnerable user confusion and clearly define lanes, increasing guidance on the road.

Widening Lanes

Many of the roads on the HIN provide inadequate space for both drivers and other road users. Widening the travel lanes and widening/creating shoulder lanes will provide adequate safety without affecting traffic flow.

Flashing Beacons/Other Warning Signs

These are important to provide drivers and other road users with adequate warning to prepare for the road conditions they will be presented with.

High Visibility Stop Bars

Adding this will notify drivers more efficiently that there is a stop ahead. This can potentially reduce collisions with other vehicles and roadway users.

Guardrail Installation

Increasing the amount of guardrails in high risk areas that include sharp curves, ditches, and culverts, will provide drivers with a physical barrier to redirect vehicles and/or prevent major collisions.

Removal of Roadway Vegetation and other Obstructions

Removing overgrown vegetation and other roadway obstructions on or near the road will improve driver visibility and reduce the risk of crashes. Vegetation removal can also improve and lower the costs of infrastructure maintenance.

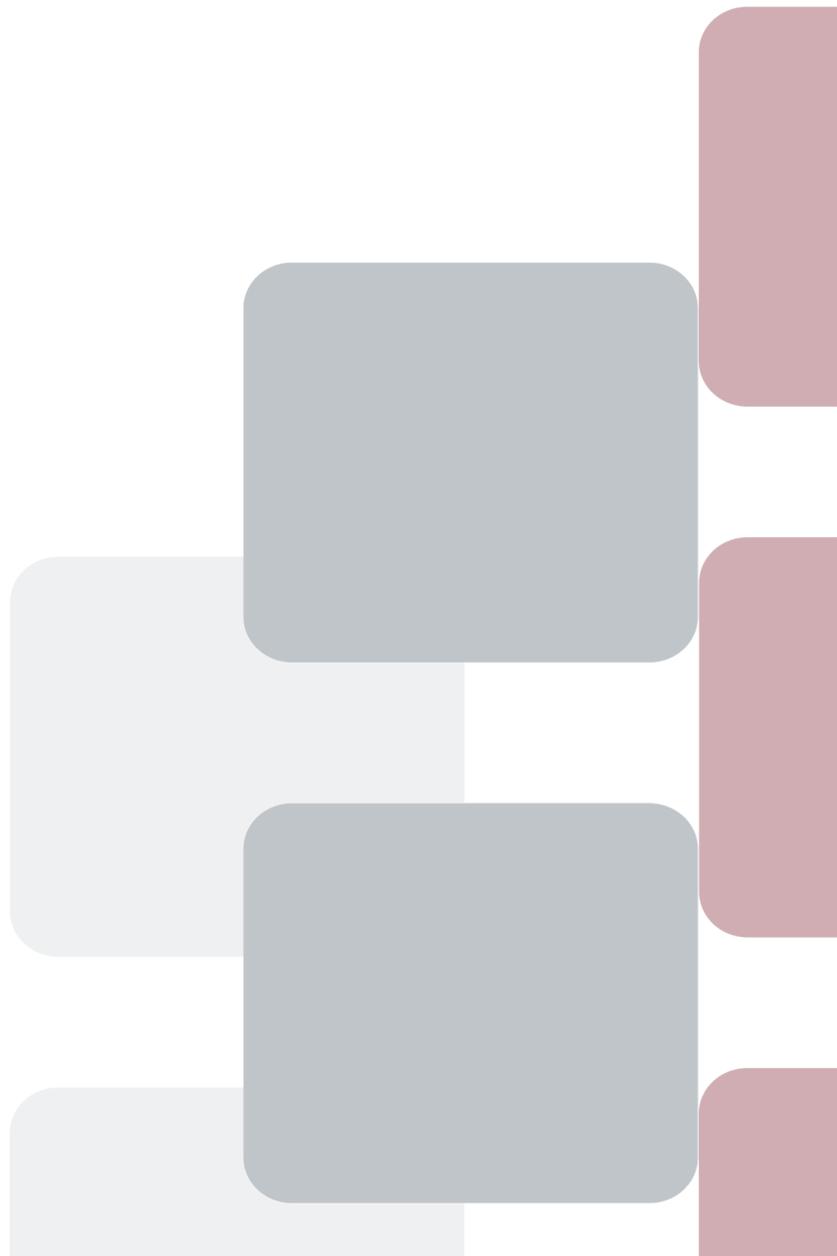
REFERENCES

Elvik, R. (2005). Speed and Road Safety: Synthesis of Evidence from Evaluation Studies. *Transportation Research Record*, 1908(1), 59-69. <https://doi.org/10.1177/0361198105190800108> (Original work published 2005)

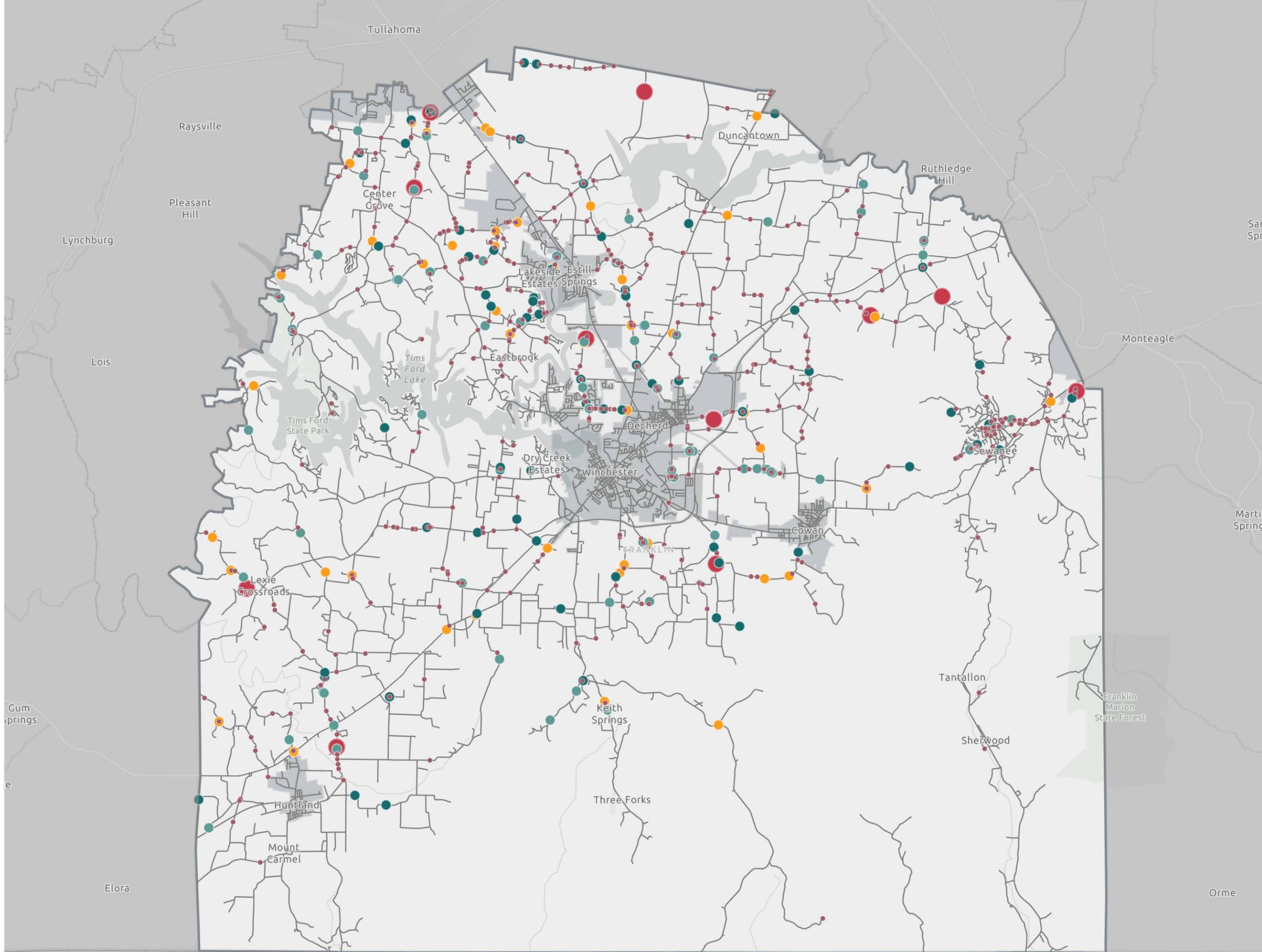
Fact sheet: Vulnerable road users | National Road Safety Strategy

National Highway Traffic Safety Administration (NHTSA) National Motor Vehicle Crash Causation Survey. U.S Department of Transportation; Washington, DC, USA: 2008. [Google Scholar]

APPENDIX A



All crashes
on Franklin County
maintained roads
2020 to 2024



Franklin County

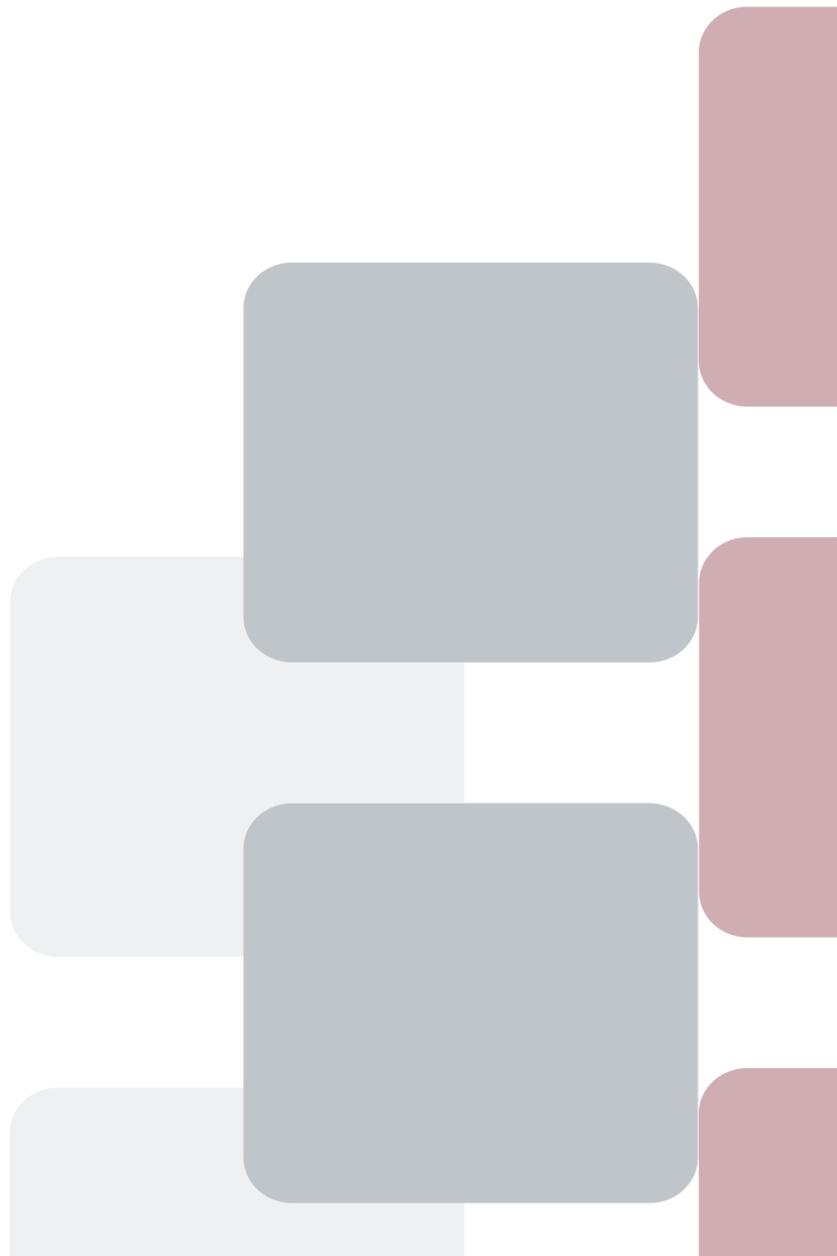
Type of Crash

- Fatal
- Suspected Serious Injury
- Suspected Minor Injury
- Possible Injury
- Property Damage



0 1 2 Miles

APPENDIX B



Map Label	Road Name	Total Crashes	Total Fatalities	Total Incapacitating Injuries	Posted Speed Limit (MPH)	AADT	Weather Conditions	Light Conditions	Driver Actions	Driver Conditions	Manner of Collision	Roadway Enhancement Recommendations
L-1	ROCK CREEK RD.	30	1	5	45	526.4	Clear- 19 Unknown- 4 Rain- 3 Cloudy- 2 Fog- 1 Snow-1	Dark-Not Lighted- 14 Daylight- 12 Unknown- 3	No Contributing Actions- 13 Careless Erratic Driving- 4 Lane Departure- 4 Unknown Action- 3 Over Correcting- 2 Driving Left of Center- 1 Failure to Obey Traffic Controls- 1 Failure to Yield Right of Way- 1 Swerved or Avoided- 1	Unknown Condition- 8 Appeared Normal- 18 Had Been Drinking- 3 Illegal Drug Use- 1	No Collision W/ Vehicle- 21 Unknown- 3 Rear-End- 3 Angle- 2 Sideswipe- 1	Widen Lanes Widen Shoulders Increase street lighting
L-2	GEORGIA CROSSING RD.	27	0	3	40	1154	Clear- 14 Rain- 8 Cloudy- 4 Unknown- 1	Daylight- 19 Dark-Not Lighted- 7 Unknown- 1	No Contributing Actions- 14 Unknown Action- 4 Careless Erratic Driving- 2 Lane Departure- 2 Reckless Negligent Driving- 2 Failure to Obey Traffic Controls- 1 Following Improperly- 1 Over Correcting- 1	Appeared Normal- 21 Unknown Condition- 4 Had Been Drinking- 2	No Collision W/ Vehicle- 18 Sideswipe- 4 Angle- 3 Unknown- 1 Rear-End- 1	Widen Lanes Widen Shoulders Increase street lighting
L-3	OLD ESTILL SPRINGS RD.	23	1	2	30	-	Clear- 17 Cloudy- 2 Rain- 2 Unknown- 2	Unknown- 2 Dark-Lighted- 1 Dark-Not Lighted- 7 Dark-Unknown Lighting- 2 Daylight- 10 Dusk- 1	No Contributing Actions- 7 Unknown Action- 6 Lane Departure- 2 Reckless Negligent Driving- 2 Driver Distracted- 1 Failure To Obey Traffic Controls- 1 Failure To Yield Right Of Way- 1 Inattentive (Eating, Reading, Talking, Etc.)- 1 Operator Inexperience- 1 Speed Too Fast For Conditions- 1	Appeared Normal- 18 Unknown Condition- 2 Emotional (Depressed, Angry, Disturbed)- 1 Had Been Drinking- 1 Illegal Drug Use- 1	No Collision W/ Vehicle- 15 Sideswipe- 3 Unknown- 1 Angle- 1 Head-On- 1 Rear To Side- 1 Rear-End- 1	Widen Lanes Widen Shoulders Increase street lighting
L-4	MINGO RD.	17	0	2	-	838	Clear- 9 Cloudy- 4 Rain- 2 Blowing Snow- 1 Fog- 1	Daylight- 10 Dark-Not Lighted- 7	No Contributing Actions- 10 Unknown Action- 3 Swerved Or Avoided- 2 Failure To Yield Right Of Way- 1 Following Improperly- 1	Appeared Normal- 16 Unknown Condition- 1	No Collision W/ Vehicle- 14 Angle- 1 Other- 1 Sideswipe- 1	Widen Lanes Widen Shoulders Increase street lighting Excess vegetation removal
L-5	SPRING CREEK RD.	16	0	3	45	-	Clear- 11 Unknown- 2 Cloudy- 2 Rain- 1	Daylight- 9 Dark-Not Lighted- 5 Unknown- 2	Unknown Action- 2 Failure To Yield Right Of Way- 1 Lane Departure- 1 No Contributing Actions- 11 Over Correcting- 1	Appeared Normal- 8 Unknown Condition- 5 Had Been Drinking- 2 Apparently Fatigued- 1	No Collision W/ Vehicle- 11 Unknown- 2 Angle- 2 Sideswipe- 1	Widen lanes Widen Shoulder
L-6	BIBLE CROSSING RD.	14	0	1	40	2523	Clear- 7 Cloudy- 3 Rain- 3 Unknown- 1	Daylight- 10 Dark-Not Lighted- 3 Unknown- 1	No Contributing Actions- 6 Unknown Action- 6 Driving Left Of Center- 1 Inattentive (Eating, Reading, Talking, Etc.)- 1	Appeared Normal- 12 Unknown Condition- 1 Had Been Drinking- 1	No Collision W/ Vehicle- 7 Rear-End- 4 Unknown- 1 Angle- 1 Head-On- 1	Widen lane Widen shoulder
L-7	EASTBROOK RD.	14	0	1	35	1840	Clear- 10 Cloudy- 3 Unknown- 1	Daylight- 7 Dark-Not Lighted- 3 Dusk- 3 Unknown- 1	No Contributing Actions- 10 Lane Departure- 3 Failure To Yield Right Of Way- 1	Appeared Normal- 10 Unknown Condition- 2 Had Been Drinking- 1 Ill (Sick)- 1	No Collision W/ Vehicle- 9 Angle- 2 Sideswipe- 2 Unknown- 1	Widen Lanes Widen Shoulders Upgrade guardrail end terminals
L-8	PAYNES CHURCH RD.	14	0	1	45	-	Clear- 5 Rain- 5 Cloudy- 4	Daylight- 8 Dark-Not Lighted- 5 Unknown- 1	Lane Departure- 4 Unknown Action- 3 No Contributing Actions- 2 Speed Too Fast For Conditions- 2 Improper Backing- 1 Operator Inexperience- 1 Over Correcting- 1	Unknown Condition- 2 Appeared Normal- 8 Had Been Drinking- 3 Illegal Drug Use- 1	No Collision W/ Vehicle- 12 Rear-End- 1 Sideswipe, Same Dir- 1	Widen lanes Widen Shoulders
L-9	BEANS CREEK RD.	13	2	0	35	554	Clear- 8 Cloudy- 2 Rain- 2 Fog- 1	Daylight- 7 Dark-Not Lighted- 6	No Contributing Actions- 8 Unknown- 3 Failure To Obey Traffic Controls- 1 Vision Obstructed- 1	Appeared Normal- 10 Unknown Conditions- 3	No Collision W/ Vehicle- 8 Rear-End- 3 Angle- 1 Sideswipe- 1	Widen Lanes Widen shoulders
L-10	DECHERD ESTILL RD.	13	0	2	45	826	Clear- 9 Rain- 2 Unknown- 1 Cloudy- 1	Daylight- 7 Dark-Not Lighted- 3 Dawn- 2 Other- 1	No Contributing Actions- 5 Lane Departure- 3 Unknown Action- 3 Careless Erratic Driving- 1 Driver Distracted- 1	Appeared Normal- 11 Had Been Drinking- 1 Illegal Drug Use- 1	No Collision W/ Vehicle- 8 Rear-End- 3 Head-On- 2	Widen Lanes Widen shoulders Repave roadway
L-11	BLUE CREEK RD.	12	1	1	30	576	Clear- 6 Cloudy- 4 Rain- 1 Unknown- 1	Daylight- 8 Dark-Not Lighted- 1 Dawn- 1 Dusk- 1 Unknown- 1	Lane Departure- 5 Unknown Action- 4 No Contributing Actions- 3	Appeared Normal- 9 Unknown Condition- 3	No Collision W/ Vehicle- 11 Rear-End- 1	Widen Lanes Widen Shoulders Increase street lighting
L-12	BLUE SPRING RD.	10	1	1	30	1357	Clear- 5 Cloudy- 3 Unknown- 1 Snow- 1	Daylight- 6 Dark-Not Lighted- 3 Unknown- 1	No Contributing Actions- 5 Lane Departure- 4 Swerved Or Avoided- 1	Appeared Normal- 9 Unknown Condition- 1	No Collision W/ Vehicle- 9 Unknown- 1	Widen lanes Widen shoulders

Map Label	Location	Total Crashes	Total Fatalities	Total Incapacitating Injuries
S-1	SR050 & RUTLEDGE FORD RD.	5	0	4
S-2	SR050 & OAK GROVE RD.	3	0	1

Safety Countermeasure	Location	CMF	CMF ID	CMF Description	Applicability	Prior Condition Requirement	Volume Requirements
Rumble Strips and stripes	Centerline	0.56	3358	Install centerline rumble strips	All crashes besides property damage	No centerline rumble strips	Not Specified
Rumble Strips and stripes	Edgeline	0.67	3394	Install edgeline rumble strips	Run off road crashes. Applies to K (fatal),A (serious injury),B (minor injury),C (possible injury)	No Prior Condition(s)	Minimum of 180 to Maximum of 12776 Average Daily Traffic (ADT)
Chevron Signs at curves	Horizontal curves	0.82	2431	Install chevron signs on horizontal curves	All crashes besides property damage	No existing sign or sign without fluorescent sheeting	Minimum of 895 to Maximum of 20479 Annual Average Daily Traffic (AADT)
Chevron Signs at curves	Horizontal curves	0.84	2438	Install chevron signs on horizontal curves	All crashes besides property damage	No existing signs	Minimum of 261 to Maximum of 14790 Annual Average Daily Traffic (AADT)
Flatten sideslope from 1V:3H to 1V:4H	Roadside	0.92	4627	Flatten sideslope from 1V:3H to 1V:4H	Single Vehicle Crashes	No Prior Condition(s)	Not Specified
Flatten sideslope from 1V:4H to 1V:6H	Roadside	0.88	4632	Flatten sideslope from 1V:4H to 1V:6H	Single Vehicle Crashes	No Prior Condition(s)	Not Specified
Speed Safety Cameras	Urban Locations	0.632	7718	Installation of automated speed enforcement system. Determines average speed of vehicle over a long distance.	All crashes besides property damage	No Point-to-Point Automated Section Speed Enforcement System	Not Specified
Provide intersection illumination	Intersection	0.58	436	Provide intersection illumination	Nighttime, Vehicle/pedestrian. Applies to A (serious injury),B (minor injury),C (possible injury) crashes	No Prior Condition(s)	Not Specified
Provide intersection illumination	Intersection	0.62	433	Provide intersection illumination	Nighttime crashes, Applies to A (serious injury),B (minor injury),C (possible injury) crashes	No Prior Condition(s)	Not Specified
Provide highway lighting	Intersection	0.72	192	Provide highway lighting	Nighttime crashes, Applies to A (serious injury),B (minor injury),C (possible injury) crashes	No Prior Condition(s)	Not Specified
Provide intersection illumination	Intersection	0.67	2376	Provide intersection illumination	Angled Crashes	Rural 2-lane intersection with no lighting.	Major Road Traffic Volume: Minimum of 420 to Maximum of 15200 Minor Road Traffic Volume: Minimum of 80 to Maximum of 10400
Install safety edge treatment	Shoulder	0.892	9205	The safety edge is a low-cost treatment that is implemented in conjunction with pavement resurfacing and is intended to help minimize drop-off-related crashes.	K (fatal),A (serious injury),B (minor injury) crashes	Drop-off pavement edge	Minimum of 10 to Maximum of 18600 Annual Average Daily Traffic (AADT)
Install safety edge treatment	Shoulder	0.79	9211	The safety edge is a low-cost treatment that is implemented in conjunction with pavement resurfacing and is intended to help minimize drop-off-related crashes.	Run off road crashes	Drop-off pavement edge	Minimum of 10 to Maximum of 18600 Annual Average Daily Traffic (AADT)
Install safety edge treatment	Shoulder	0.813	9217	The safety edge is a low-cost treatment that is implemented in conjunction with pavement resurfacing and is intended to help minimize drop-off-related crashes.	Head on crashes. Excludes intersection-related crashes and animal-related crashes.	Drop-off pavement edge	Minimum of 10 to Maximum of 18600 Annual Average Daily Traffic (AADT)
Introduce TWLTL (two-way left turn lanes) on rural two lane roads	Roadway	0.64	583	Introduce TWLTL (two-way left turn lanes) on rural two lane roads	All crashes	No Prior Condition(s)	Not Specified
Set posted speed limit 5 mph below engineering recommendations	Roadway	0.43	10250	Set posted speed limit 5 mph below engineering recommendations	Property Damage crashes only	Posted speed limit set equal to engineering recommendations	Not Specified
Installation of fixed speed cameras	Roadside	0.78	8183	Installation of fixed speed cameras on arterials limited access freeways	All crashes besides property damage	No speed camera present	8419 Annual Average Daily Traffic (AADT)
Install dynamic speed feedback sign	Roadside	0.78	10265	System consisting of a speed measuring device and a message sign that displays feedback to those drivers who exceed a predetermined threshold. It may be the actual speed, a message such as SLOW DOWN, or activation of a warning device, such as beacons or a curve warning sign	Crash Type: Other	No dynamic speed feedback sign present	Not Specified
Install a traffic signal	Intersection	0.56	325	Install a traffic signal	All crashes	Stop controlled intersection	Major Road Traffic Volume: Minimum of 3261 to Maximum of 29926 Annual Average Daily Traffic (AADT) Minor Road Traffic Volume: Minimum of 101 to Maximum of 10300 Annual Average Daily Traffic (AADT)
Install a traffic signal	Intersection	0.23	326	Install a traffic signal	Angled Crashes	No Prior Condition(s)	Major Road Traffic Volume: Minimum of 3261 to Maximum of 29926 Annual Average Daily Traffic (AADT) Minor Road Traffic Volume: Minimum of 101 to Maximum of 10300 Annual Average Daily Traffic (AADT)
Install a traffic signal	Intersection	0.4	327	Install a traffic signal	Left-turn crashes	No Prior Condition(s)	Major Road Traffic Volume: Minimum of 3261 to Maximum of 29926 Annual Average Daily Traffic (AADT) Minor Road Traffic Volume: Minimum of 101 to Maximum of 10300 Annual Average Daily Traffic (AADT)
Install lighting	Roadway	0.46	2870	Install lighting	All nighttime crashes with severity levels: A (serious injury),B (minor injury),C (possible injury)	Unlit roads	Not Specified
Provide 2-ft paved shoulders (both sides)	Shoulder	0.88	10398	Provide 2-ft paved shoulders on both sides of 2-lane rural roads	All run off road crashes	No Prior Condition(s)	Minimum of 30 to Maximum of 15900 Annual Average Daily Traffic (AADT)