Town of Pecos City

SS4A Comprehensive Safety Action Plan

Appendices

April 2026



APPENDIX CONTENTS

Appendix A: Public Engagement Memo 3

Appendix B: Safety Analysis Memo 22

Appendix C: Policy and Program Memo 51

Appendix D: Countermeasures Memo 68

APPENDIX A: PUBLIC ENGAGEMENT MEMO

Table of Contents

Public Engagement Goals 3

Components of Outreach for the SS4A Plan 4

Stakeholder Committee 4
Public Outreach Meetings 6
Project Website 10
Surveys 10

Survey Results Summary 11

Survey 1: Street Safety Feedback 11
Survey 2: Public Support for the Proposed Solutions 16

Public Engagement Goals

It is our goal to have significant public participation in the SS4A planning process. In addition to providing information, we also seek to empower and improve opportunities for the public to voice their ideas and values regarding transportation.

Goal 1 – Inform and Educate the Public

It is our responsibility to make information easily accessible to the public in a timely way. We will provide information that is accurate, understandable, and pertinent using a variety of communication tools.

Goal 2 – Engage the Public and Encourage Participation

We encourage public participation by ensuring a meaningful engagement process. This includes providing various ways to engage and communicate with the public, responding to all comments and questions in a timely manner, presenting a clear process for incorporating public input into the SS4A plan, and providing other opportunities for further engagement and education.

Goal 3 – Use Input to Shape Policies, Plans, and Programs

We documented and reviewed all input received from the public. The process of incorporating public input into the SS4A plan is transparent and open to the public.

Goal 4 – Reach and Gather Input from a Broad Spectrum of Audiences

The main way that a public participation process can be successful is to include a broad spectrum of the community. This includes people of varying:

- Ages
- Socioeconomic backgrounds
- Educational attainment
- Ability statuses
- Accessibility of transportation options

In terms of the public participation process, we made a concerted effort to provide educational and feedback opportunities to all communities in Pecos. The public meeting location is in a neutral location that is frequented by community members in target areas such as City buildings, community centers, or libraries. The location is ADA-accessible.

Components of Outreach for the SS4A Plan

The SS4A planning effort lasted for approximately six (6) months. To meet our engagement goals, we used the following tools:

- Stakeholder Committee
- Public Outreach Meetings
- Project Website
- Surveys
- Targeted Outreach

Stakeholder Committee

A stakeholder committee allows a broad cross-section of the City of Pecos to be informed and engaged. The stakeholder committee for this effort included members of various county and city governmental agencies, interest groups, and elected officials. The stakeholder committee met five times during the study period:

- November 10th, 2025
- January 7th, 2026
- February 4th, 2026
- March 4th, 2026
- April 1st, 2026

Meetings were held at the Annex II building, located at 1714 Schmidt Dr. Members of the Stakeholder Committee include:

Town of Pecos City

- Teresa Winkles, Mayor
- Arthur Orona, City Council
- Conrado Saldana, City Council
- Hector Carassco, City Council
- Randy Graham, City Council
- Valerie Trujillo, City Council
- Charles Lino, City Manager
- Heather Ramirez, Assistant City Manager
- Nicole Ferrini, Assistant City Manager
- Griffin Moreland, Assistant to the City Manager
- Lisa Tarango, Police Chief
- Holly Jarocki, Community Development Director
- Savannah Woodward, Director of Convention and Visitors Bureau
- Edward De Leon, Communications and Public Affairs Director
- Clarissa Millan, Communications and Public Affairs Specialist
- Bonnie Dominguez, Pecos Municipal Court
- Bianca Lujan, Streets Supervisor
- Chrystal Morris, GIS Specialist
- Lucas Chavez, GIS Specialist
- Wendy Lujan, City Secretary
- Krystal Urteaga, Pecos Public Works Admin
- Pedro Morales, Pecos Landfill Supervisor

Pecos Emergency Services

- Brian Fuentes, Fire Chief
- Robert Snyder, Assistant Chief of Fire Services
- Ronald Lee, Emergency Services Chief
- Michael Authement, Assistant Chief of EMS

Pecos - Barstow - Toyah Independent School District (PBTISD)

- Brent Jaco, Superintendent
- Nydia Natividad, Communications Director
- Gloria Natividad, Transportation Director
- Adriel Carrasco, Communications Specialist

Pecos Economic Development Corporation

- Jimmy Dutchover, Director

Reeves County

- Israel Campos, County Commissioner
- Louise Moore, County Commissioner
- Paul Hinojos, County Commissioner
- Leo Hung, County Judge
- Ernesto Lazcano, Chief Deputy, Sherrif's Department
- Jerry Bullard, Director of Emergency Management
- Curtis Wilson, County Engineer

- Cesario "Cesar" Urias, Constable Pct. 4
- Jackie Hernandez, Constable Pct. 1
- Jerry Matta, Constable Pct. 2
- Brenda McKinney, Reeves Regional Health Chief Executive Officer
- Yvette Riker, Reeves Regional Health Chief Operations Officer

Public Outreach Meetings

Public engagement needs to be timely and aligned with information to be effective. For this study, four (4) public information meetings were scheduled to collect input. The meetings were scheduled at the Reeves County Civic Center (1500 S Cedar St, Pecos, TX):

- February 3rd, 2026
  - Session 1: 11:30 AM -1:00 PM
  - Session 2: 5:00 PM - 7:00 PM
- March 31st, 2026
  - Session 1: 11:30 AM -1:00 PM
  - Session 2: 5:00 PM - 7:00 PM

Meetings were manned by consultant staff with appropriate materials to walk through the phase and the information and feedback for each phase.

Public Meeting 1

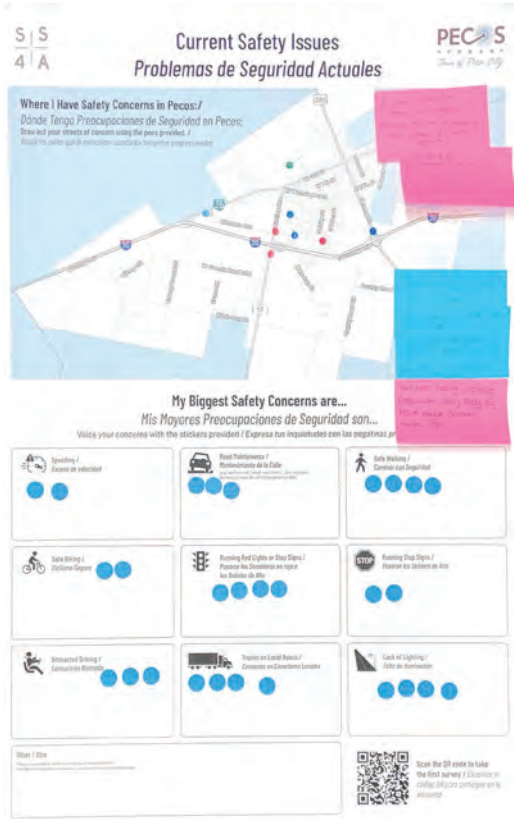
Feedback for public meeting 1 (February 3rd) was gathered via handwritten sticky notes and sticker voting. The locations identified on each sticky note were cross referenced with an existing list of high crash locations in the county. Several of these locations deemed to be areas of high safety concern were analyzed during field work on February 3rd.

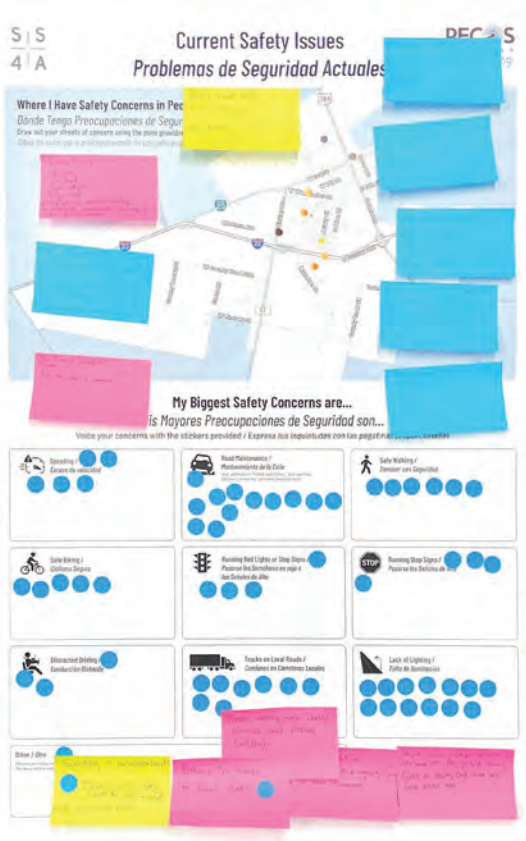
Corridors Identified by Public:

- 1st St
- 3rd St
- Arlington Ave
- Beachamp Ave
- Highway 17 (Bickley Ave)
- Cedar St (US 285)
- Eddy St
- Elm St
- FM 1216
- S Frontage Rd
- Texas St
- W 5th St
- W F St
- Washington St

Intersections Identified by Public:

- Highway 17 / CR 201
- Cedar St (US 285) / 7th St
- Pinehurst/Cedar
- Texas St / Washington St
- Texas St/ Stafford
- Walthall St/Plum St





The residents expressed their safety concerns from multiple perspectives and gave suggestions. Road maintenance was one of the biggest concerns, and one sticky-note comment from a resident suggested setting up a road maintenance portal for residents to report road issues and concerns. Residents also have concerns about commercial trucks on the local roads, especially the risk of rolling over curbs and corners and hitting buildings. Additionally, walking, biking, and a lack of lighting are public safety concerns. The figures below show the public safety concerns for both sessions.

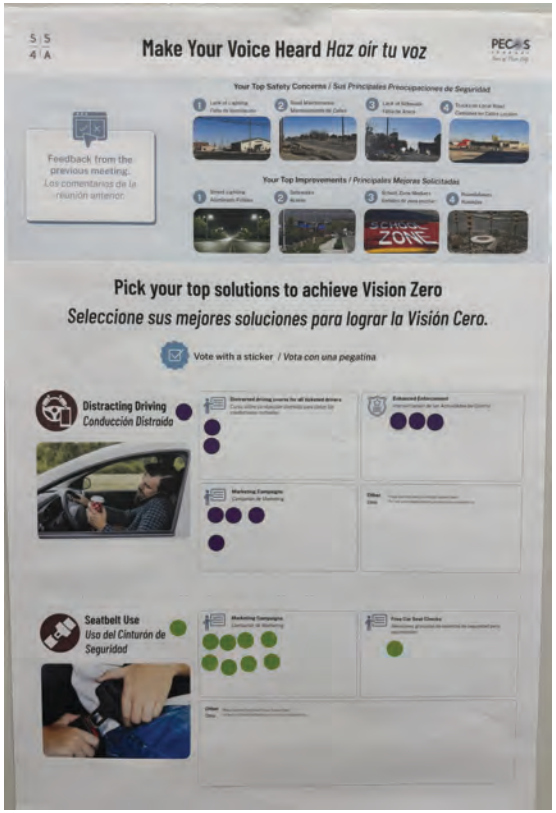
Public Meeting 1 also took the opportunity to survey preferred future physical improvements. All the listed improvements are supported by the public, especially streetlights, sidewalks, high-visibility crosswalks, school zone markings, and speed feedback signs. Residents also commented requesting bike routes and speed-control treatments (traffic calming) around parks and schools. The figures below show the public input for future improvements for both sessions.

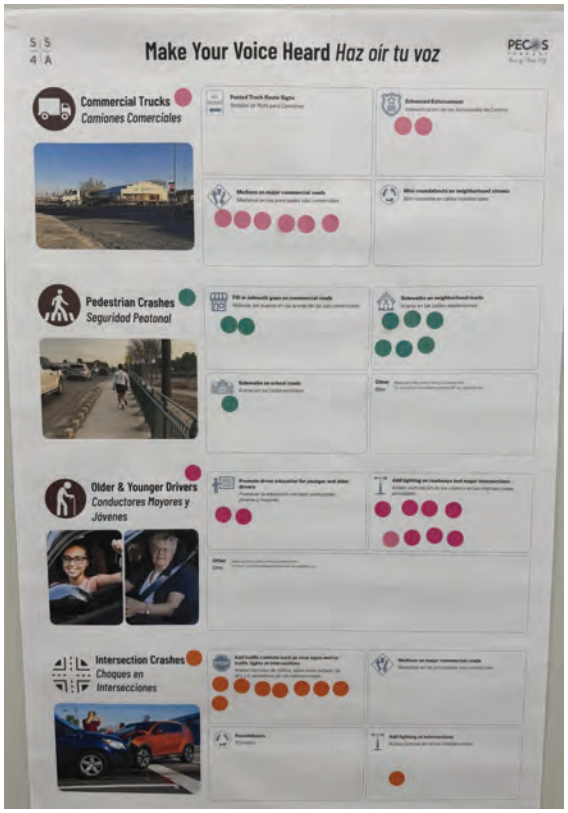




Public Meeting 2

Public meeting 2 was held over two sessions on Tuesday, March 31st in the same location as public meeting 1. Feedback was given verbally and written via sticky notes and stickers on interactive poster boards. The objective of this second public meeting was to receive input on potential policy, education and enforcement recommendations for the Safety Action Plan. After reviewing boards that defined policy and education tools and what they are used for, the public had the chance to answer which tools they thought could best help Pecos reach Vision Zero.





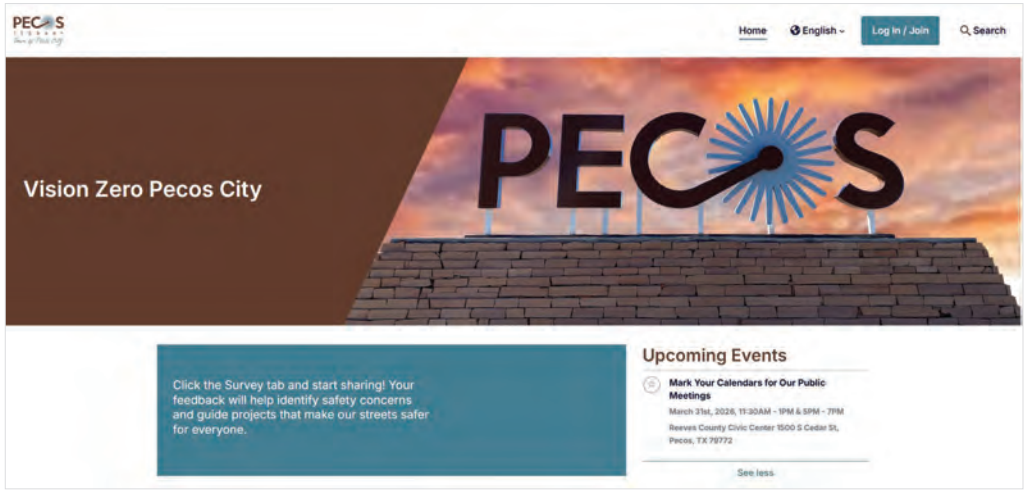
Potential solutions were given for top crash trends in Pecos: distracted driving, seatbelt use, commercial truck crashes, pedestrian crashes, older & younger driver crashes, and intersection crashes. Categories with the most votes include marketing campaigns for seatbelt use, adding street lighting on roadways and major intersections, and adding additional traffic controls such as stop signs and stop lights at intersections. Outside of the most voted for categories on the interactive boards, residents requested better roadway maintenance such as striping and enhanced enforcement to counteract poor driving behavior.

Project Website

"Vision Zero Pecos City" website was established as a primary hub during the entire planning process for the community to learn about the Comprehensive Safety Action Plan with 24/7 access. The website was launched on October 17, 2025, and promoted via stakeholder committee meetings and public meetings. The website provided visitors with access to Safety Action Plan resources, including data, project timelines, public meeting announcements, and background documents. The website also served as an extension of the outreach effort, allowing the public and stakeholders to visit the site and take surveys at their convenience. Approximately 1,300 unique users accessed the website, with a total of 2,837 page views through April 20, 2026. The website is accessible at https://pecosvisionzero.com/.

Surveys

Surveys are an effective mechanism for gathering information from the public. Surveys were available on the "Vision Zero Pecos City" website and distributed through existing marketing channels. Two surveys were distributed during the engagement process. Survey 1 asked about residents' general safety feelings in different modes of transportation; Survey 2 asked about the support of proposed CSAP recommendations.



Survey Results Summary

Survey 1: Street Safety Feedback

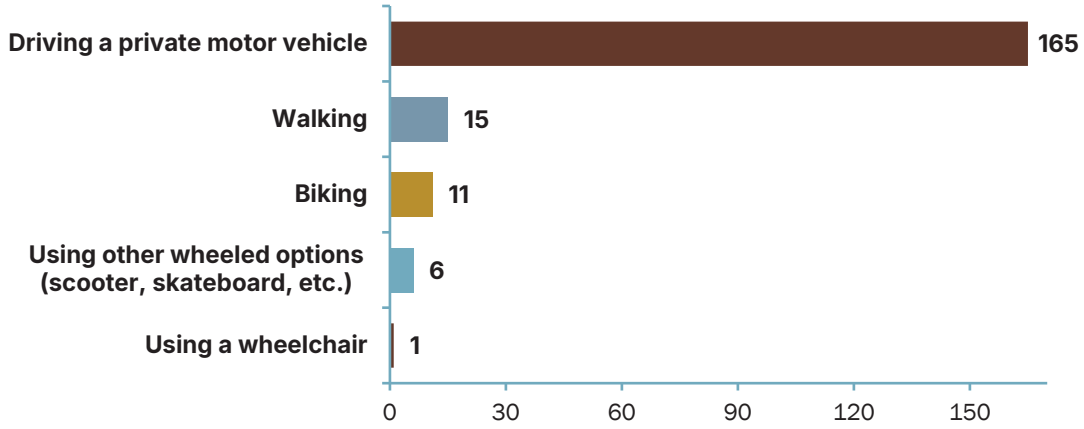
Survey 1 was distributed throughout the visioning and strategies phases of the planning process. The purpose of Survey 1 is to understand residents' safety concerns in Pecos City relating to mode of travel and specific intersections and roadways. Resident feedback combined with data-driven crash analysis help the project team determine which street corridors and intersections in the County are the most dangerous. Survey 1 also describes residents' concerns regarding behavioral driving choices in the city allowing the project team to come up with education and enforcement recommendations to improve roadway safety.

Respondent Demography

169 survey responses were collected over a one-month period. The age of respondents was diverse with nearly 40% of respondents between 26 and 40. The group with the second highest level of survey participation was 41-55 years of age (28%). 23% of respondents were 55+, and 3% were between the ages of 18 and 25.

Question 1 asked respondents about their primary mode of travel in the city. A large majority of respondents, 165, indicated that they drive a private motor vehicle as their primary mode of travel.

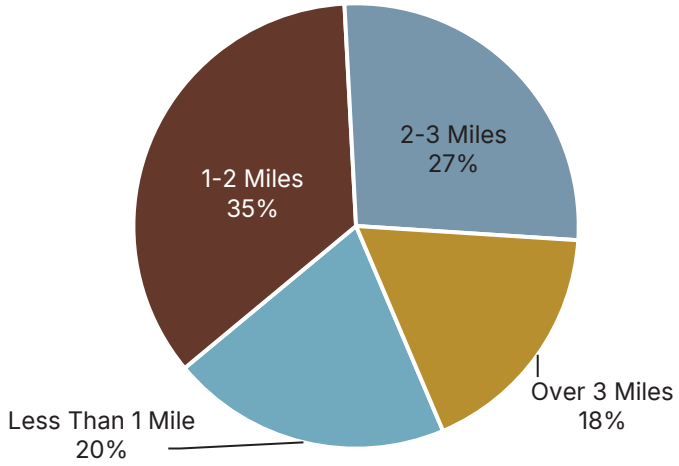
Question 2 asked respondents about the approximate distance from their home to their own or their children's school. Of the 108 respondents who have school-aged children in Pecos, the largest group of respondents who commute to school regularly is those who travel 1-2 miles to their schools, accounting for 35% of the total. The graph below shows a detailed breakdown of the 108 respondents' commute distance to school.



Safety Concerns Across Travel Modes

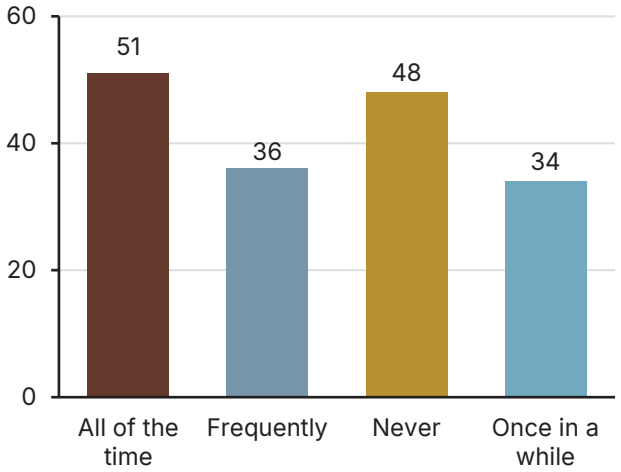
When asked how often street safety factors into their decision on which mode of travel to use, 30% of respondents stated that it affects their decision "all of the time" and 29%

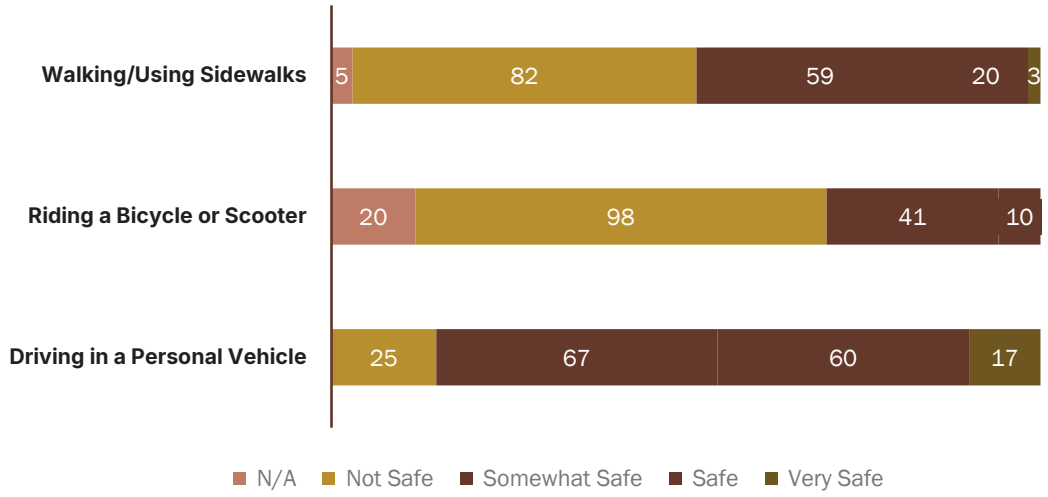
of respondents stated that it never affects their choice. For those that indicated that street safety does factor in their decision on which mode of transportation to use, road hazards were a major concern. One resident said: "A lot of it has to do with the conditions of the roads some of them are horrible…filled with potholes and hazards." Other residents commented that people in the city drive recklessly.

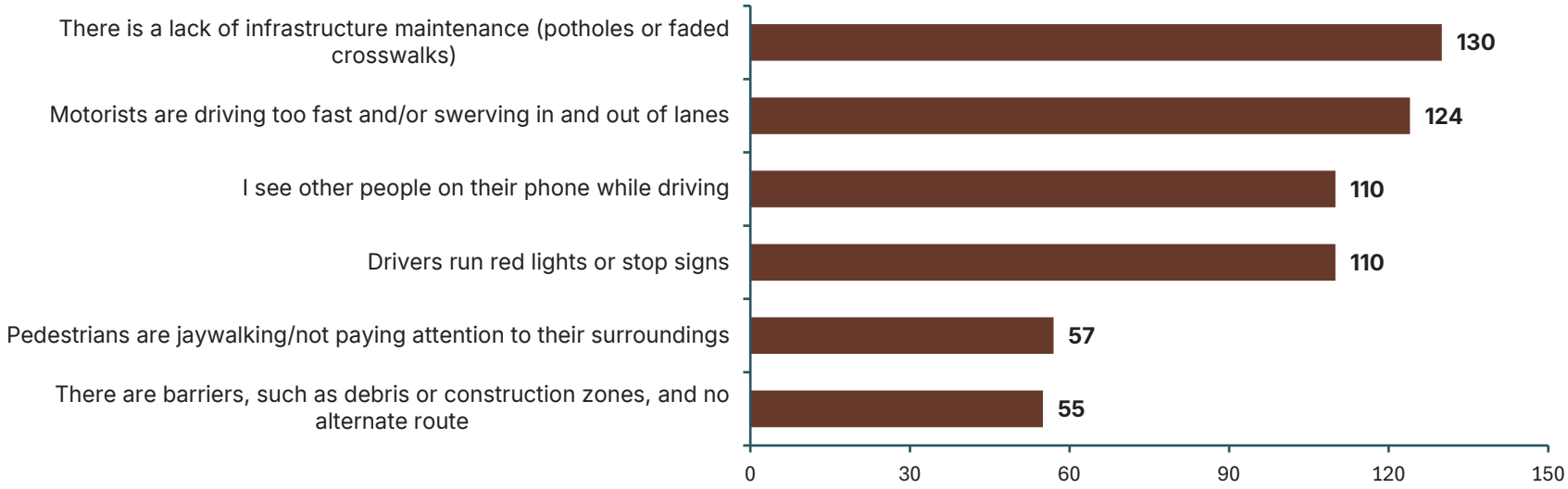


Overall, respondents have moderate confidence in the safety of travelling in a private motor vehicle and less confidence in walking or riding a bicycle/scooter. 36% of individuals feel safe driving in a personal vehicle, 12% of individuals feel safe walking, and 6% of individuals feel safe riding a bike/scooter. The data indicates a need for infrastructural and behavioral changes in Pecos City. The graph below shows a comparison of safety perceptions across common modes of transportation in Pecos.

The main safety concerns raised by the respondents are inadequate infrastructure maintenance and drivers' speeding. Additionally, other behavior issues, such as phone use and running red lights or stop signs, are also of concern to the public. The graph below shows the number of respondents who voted on each safety concern.




Walking/Using Sidewalks
5
82
59
20
3
Riding a Bicycle or Scooter
20
98
41
10
Driving in a Personal Vehicle
25
67
60
17
N/A
Not Safe
Somewhat Safe
Safe
Very Safe

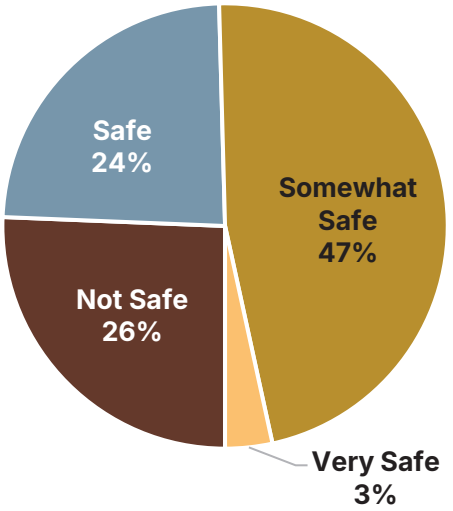

There is a lack of infrastructure maintenance (potholes or faded crosswalks)
130
Motorists are driving too fast and/or swerving in and out of lanes
124
I see other people on their phone while driving
110
Drivers run red lights or stop signs
110
Pedestrians are jaywalking/not paying attention to their surroundings
57
There are barriers, such as debris or construction zones, and no alternate route
55
0
30
60
90
120
150

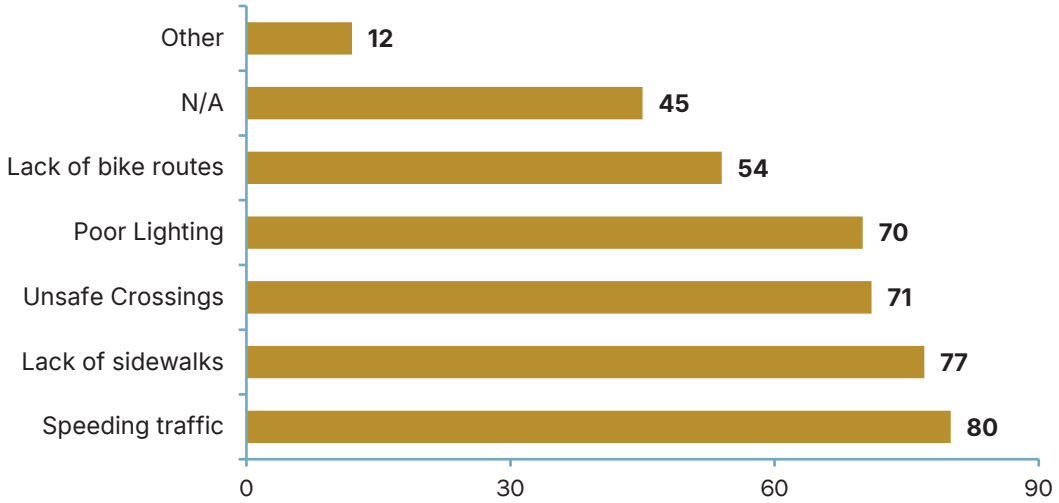
Safety Concerns for School Children

In addition to questions about the mode of travel in Pecos City, survey takers were asked how safe they feel their child's route to school is. Of the 108 respondents who have school-aged children in Pecos, 26% do not feel that their child's walking or biking route to school is safe.

Speeding and a lack of sidewalks were a major concern for route-to-school safety, according to the respondents. The respondents also acknowledged that they feel unsafe crossings are what make their child's route to school the most dangerous. The graph below shows the number of respondents who voted on each safety concern for the school commute.

Survey data indicates that the speeding problem is exacerbated by low enforcement in and outside of school zones: "We have a police department and sheriff's office. Need to utilize them more around school zones." and "Need more officers patrolling and stopping cars." Another commenter stated that school zone signs are not appropriately placed.



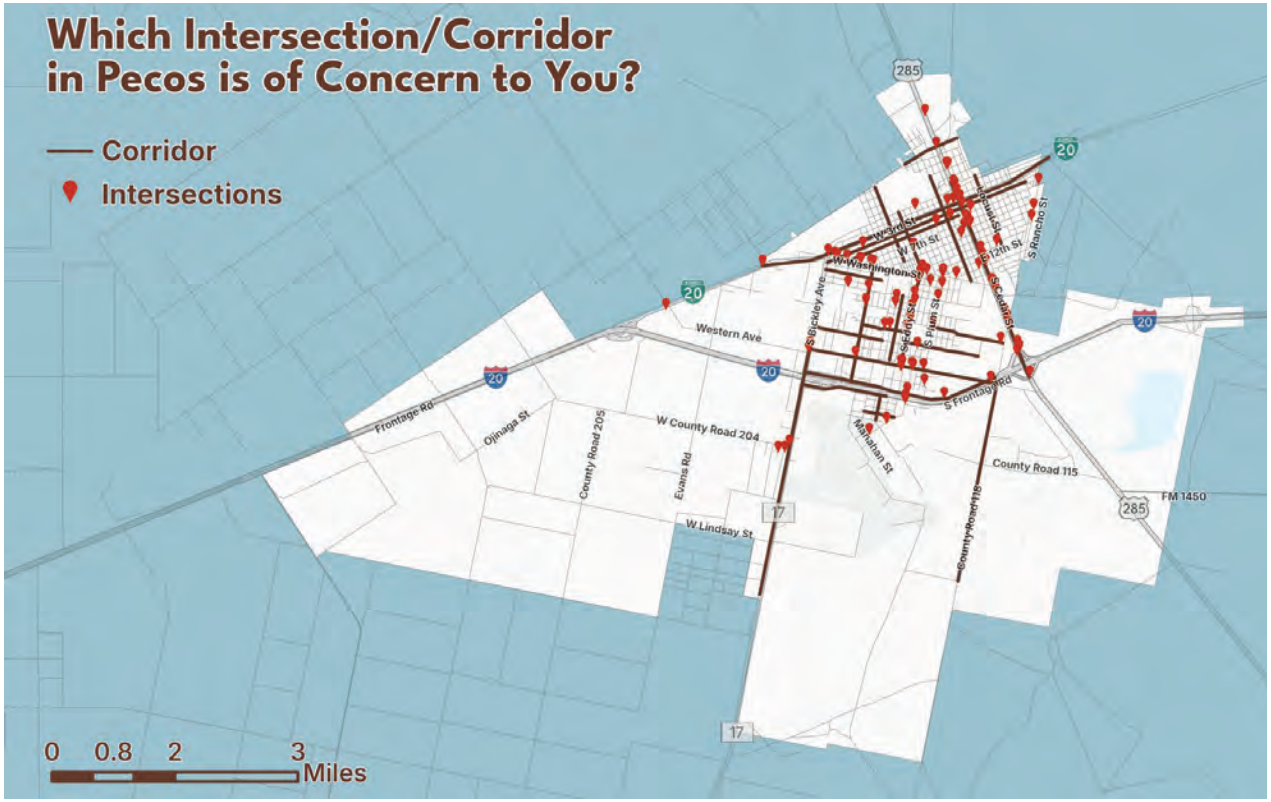


Unsafe Streets and Intersections

On a map in Survey 1, respondents identified a wide range of intersections and corridors throughout Pecos that raise safety concerns, most commonly in the more densely populated portion of the city. The map below shows the survey responses where residents feel are unsafe.

People described these locations as unsafe because of high traffic volumes, timing of traffic signals, commercial truck traffic, and speeding. Others noted sight visibility issues, failure to yield, debris in road, and lack of complete stops at stop signs. The railroad adds another layer of concern to transportation safety in the area. Multiple comments site the railroad crossing on N. Cedar St. as dangerous.

In several instances, residents pointed to locations with limited pedestrian facilities, a lack of crosswalks, or no safe way to walk or bike along the roadway. Overall, the feedback indicates that unsafe driver behavior, roadway design challenges, and the absence of pedestrian or bicycle infrastructure contribute to widespread concern across many intersections and corridors in the city.



Additional Safety Concerns

Beyond the issues covered in the structured survey questions, many respondents highlighted several broader safety concerns affecting daily travel. In addition to comments emphasizing the need for a greater presence of law enforcement in school zones, many comments emphasize a need for a higher level of enforcement citywide. Several respondents stressed that roadway and sidewalk lighting is inadequate, making nighttime travel feel unsafe. Others mentioned the lack of pedestrian infrastructure, such as sidewalks, in city neighborhoods and on public streets. Additional concerns included poor roadway maintenance (e.g. debris, potholes, and poor striping) and lack of traffic calming features. There were multiple requests for roundabouts and traffic calming techniques on residential streets in the city. Overall, these comments reflect a desire for improved enforcement, safer school-zone design, and consistent upkeep of infrastructure.

Survey 2: Public Support for the Proposed Solutions

Survey 2 was designed and distributed during the Review Phase of the planning process. The purpose of survey 2 was to collect feedback on proposed solutions for traffic safety issues in Pecos. The survey asked about roadway improvements for various roadway types in the city and about driving behaviors the city should focus on. 32 survey responses were collected over a time period of 1 month.

Road Safety Issues

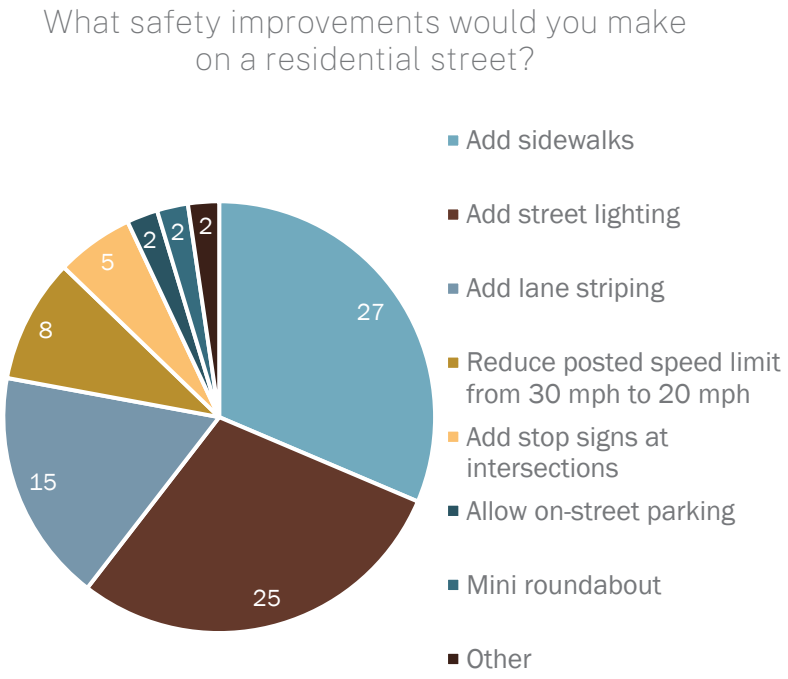
When asked which road safety issues are most important, 78% of survey takers answered, “safety at intersections”. 68% of survey takers answered, “speeding on city streets” and 65% answered “safety around schools”.

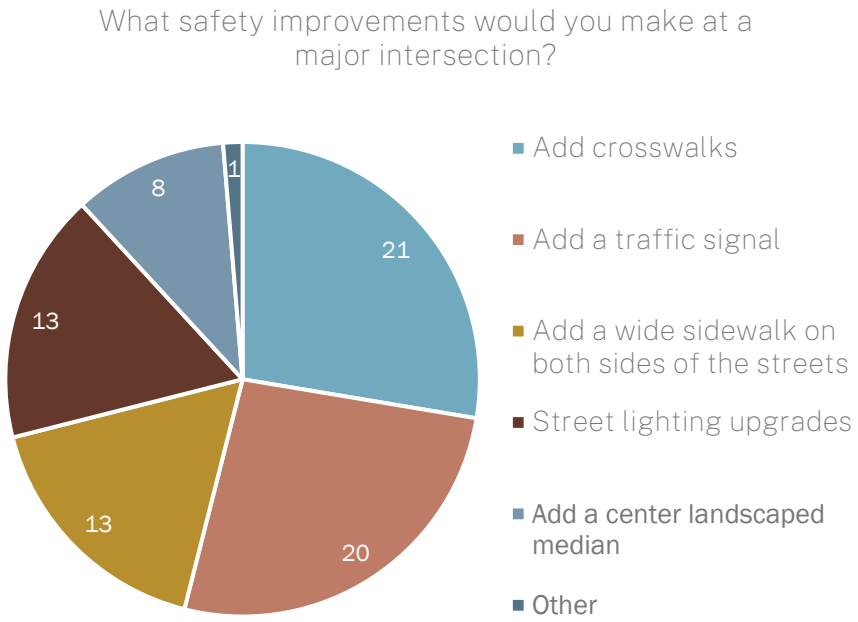
Safety Improvements on residential streets

Question 2 asked respondents what safety improvements they would like to see on residential streets in Pecos. 84% of respondents indicated that they would like sidewalks on residential streets. 78% want street lighting and 47% want lane striping.

Safety Improvements at major intersections

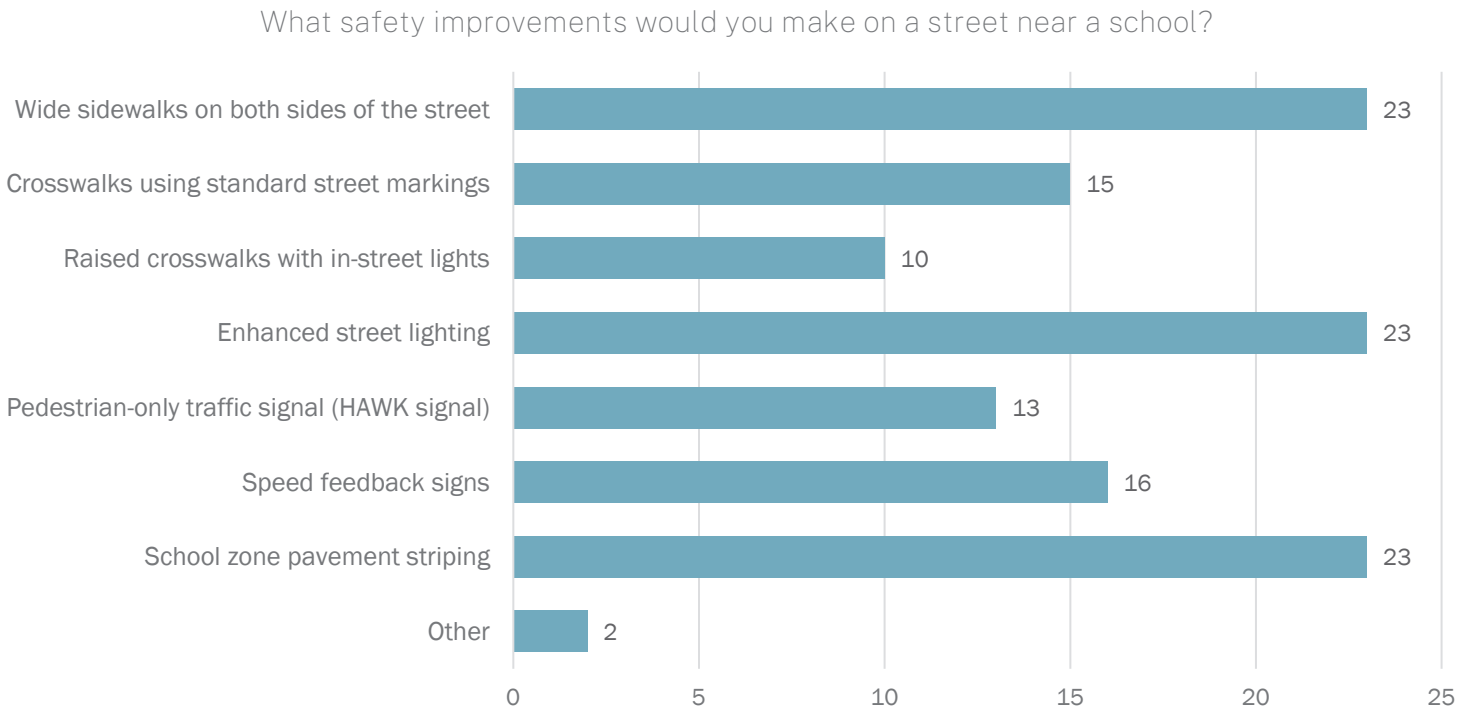
At major intersections, 65% of respondents indicated that they would like crosswalks and 63% indicated that they would like traffic signals.





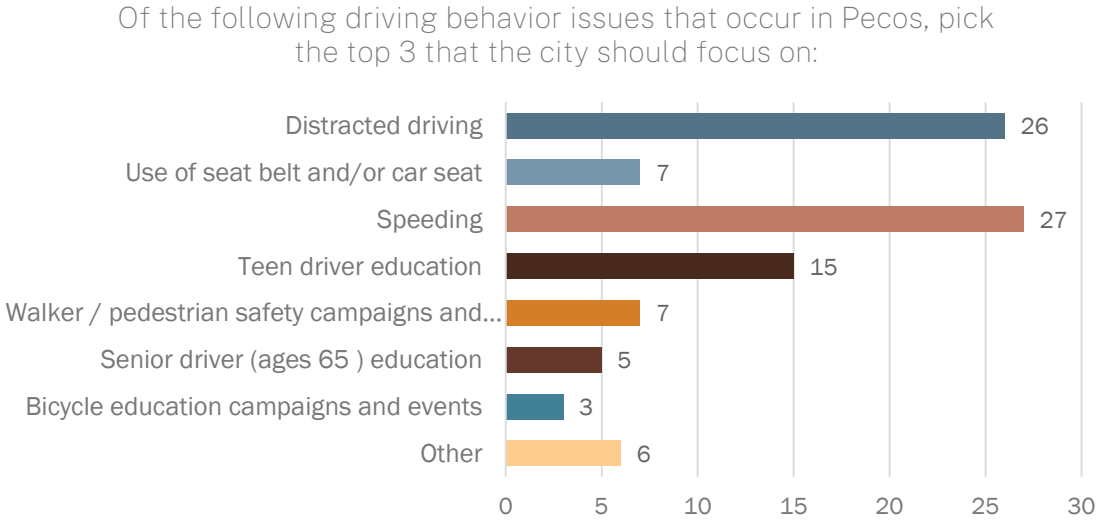
Safety improvements on school area streets

On streets surrounding schools, 72% of respondents indicated that they would like to see wider sidewalks on both sides of the street, enhanced street lighting, and school zone pavement striping. 50% of respondents think that speed feedback signs could be a useful safety tool and 47% think that crosswalks could be a useful safety tool, as well. Respondents were less interested in the idea of raised crosswalks and pedestrian-only traffic signals.



Driving Behavioral Issues

This question focused on driver behavior in the city. Survey takers were asked to pick three driving behavior issues that they believed the city should focus on finding a solution for. 85% of respondents indicated that speeding was a top concern. 81% indicated that distracted driving was a top concern and 47% indicated that teen driver education should be a point of focus. Distracted driving and young driver crashes were top safety trends from the project team's collected data, as well.



Additional Safety Comments

Overall, there is a desire for more frequent roadway maintenance and restriping on main thoroughfares as well as residential roads. Other comments match survey question results: people are concerned about speeding and other unsafe driving behaviors and request more enforcement, young driver education, and safety infrastructure for pedestrians such as sidewalks. One comment highlights most of these concerns: "Safety around all schools, especially the High School, since more teen drivers and pedestrians are moving through that area. Striping on major streets seems to fade quickly so there is a need to increase the restriping rotations. With increased bikes, both traditional and electric, as well as scooters, maybe a need for education campaigns". Another comment specifically addresses the desire for more enforcement in the city: "Many motorists do not obey the posted traffic signs; we need more police enforcement. from failure to reduce speed, use turn signal, and not making complete stops".

APPENDIX B: SAFETY ANALYSIS MEMO

Table of Contents

Introduction **3**

Demographics 3

General Safety Data **7**

Explanation of Data 7

Types of Crashes 7

Safety Analysis **8**

Crash Types 8

Crash Severity 15

Crash Trends by Month, Day, and Time 17

Crash Trend by Road User Characteristics 20

Candidate High Injury Network Analysis **26**

Introduction

Pecos, Texas, is the largest city in Reeves County and the county seat. It sits in the Trans-Pecos region, just south of the New Mexico border along the west bank of the Pecos River and the eastern edge of the Chihuahua Desert. The Town of Pecos City grew out of its unique position as a crossroads along major cattle and wagon trails, including the Butterfield Overland Mail Route and the historic Loving-Goodnight Trail.

Today, Pecos benefits from its prime location at the crossroad of I-20 and U.S. 285, connecting the city to east to Dallas-Fort Worth, west El Paso, north to New Mexico, and south towards Big Bend National Park. Pecos is well known for the existing oil and gas industry, but the city is growing its hospitality industry and investing in education, healthcare, logistics, and regional entertainment.

Demographics

The following demographics information utilizes 5-year U.S. Census American Community Survey data from 2015, 2020, and 2023, the latest available data. The data is from Reeves County and Pecos City (Census Tracts 9502, 9503, and 9504). Census Tract 9504 reaches beyond the city but the majority of the population lives within the city boundaries, making this the most representative data available.

Key demographic takeaways

Population: Pecos is growing more rapidly than Reeves County. From 2015 to 2023 Pecos saw a 14% increase in population while Reeves County saw a 7% drop in population. In 2023, 76% of residents in Reeves County lived in Pecos. (Figure 1). It should be noted that transient employees for the oil and gas industry, among other emerging industries, are not reflected in the census figures for Pecos. Residents and officials of Pecos and Reeves County often remark that the city provides services to thousands of transient workers who are counted by the census as residents elsewhere in the state or country.

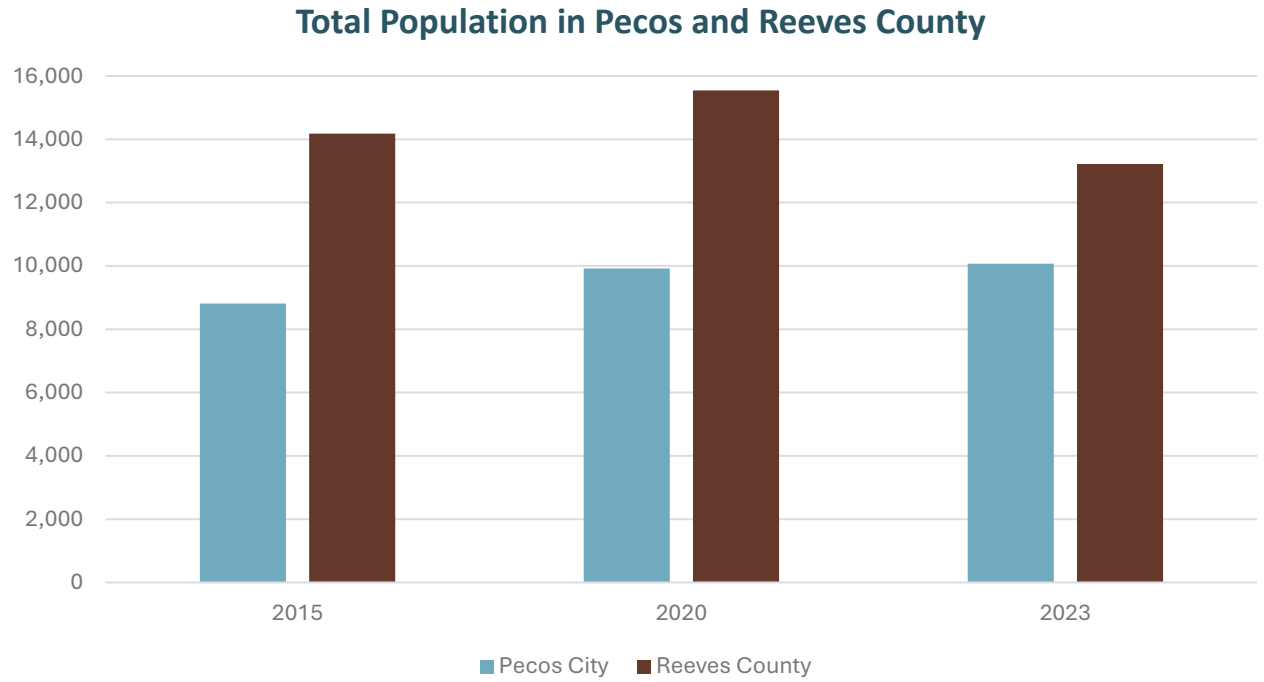


Figure 1: Total Population in Pecos and Reeves County per the US Census

Age: Pecos's population skews young and is increasingly growing in the 18 to 34 age group. (Figure 2)

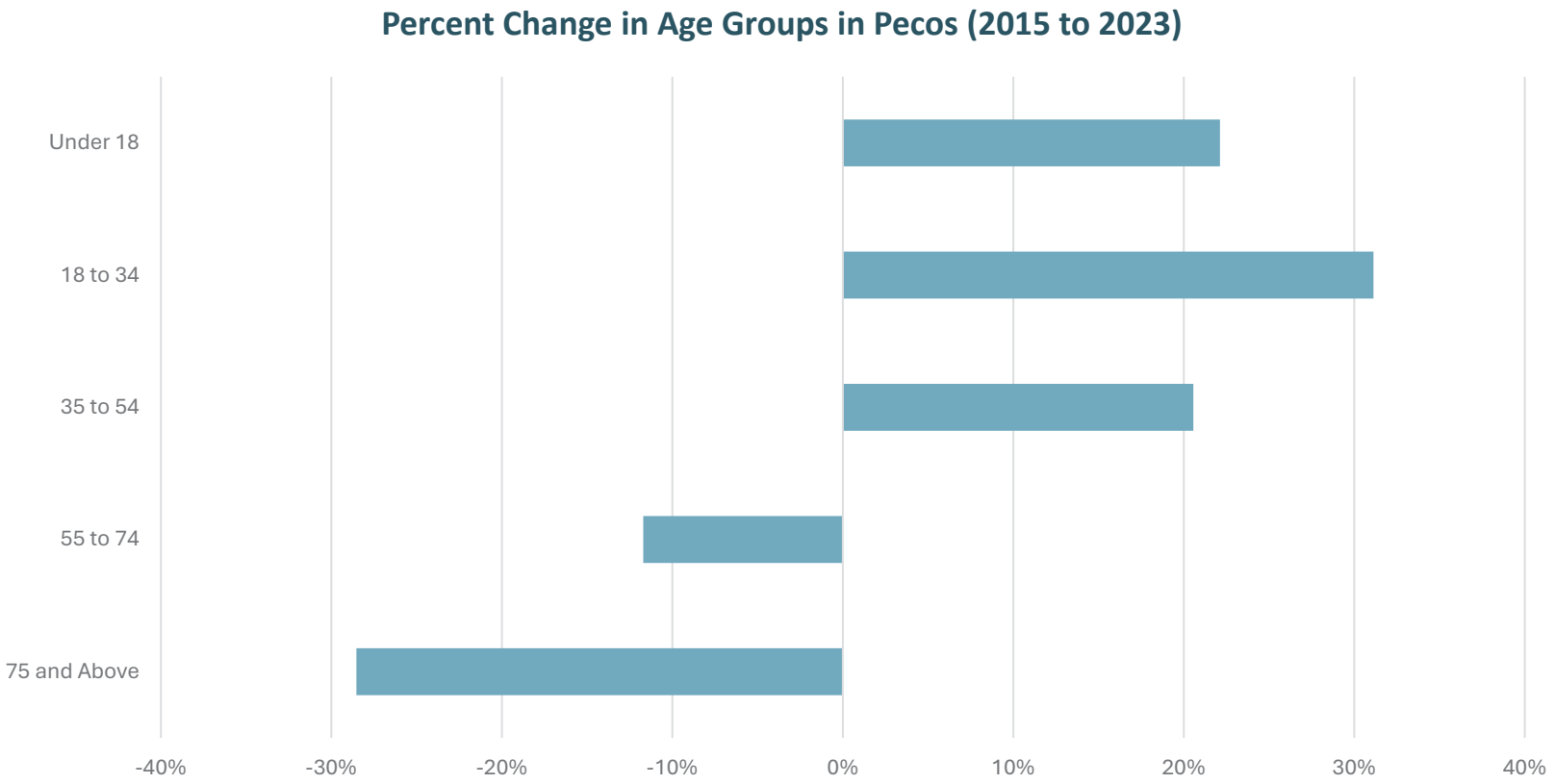


Figure 2: Percent Change in Age Groups (2015 to 2023)

Means of Transportation: Of the people who do not work at home, the large majority (85%) drive alone to work and 12% carpool. Only 1.8% walked or used another means of travel.

Commute time: Of the 98% of people who do not work at home, the majority of them spend less than 20 minutes commuting, and many of those under 10 minutes. (Figure 3)

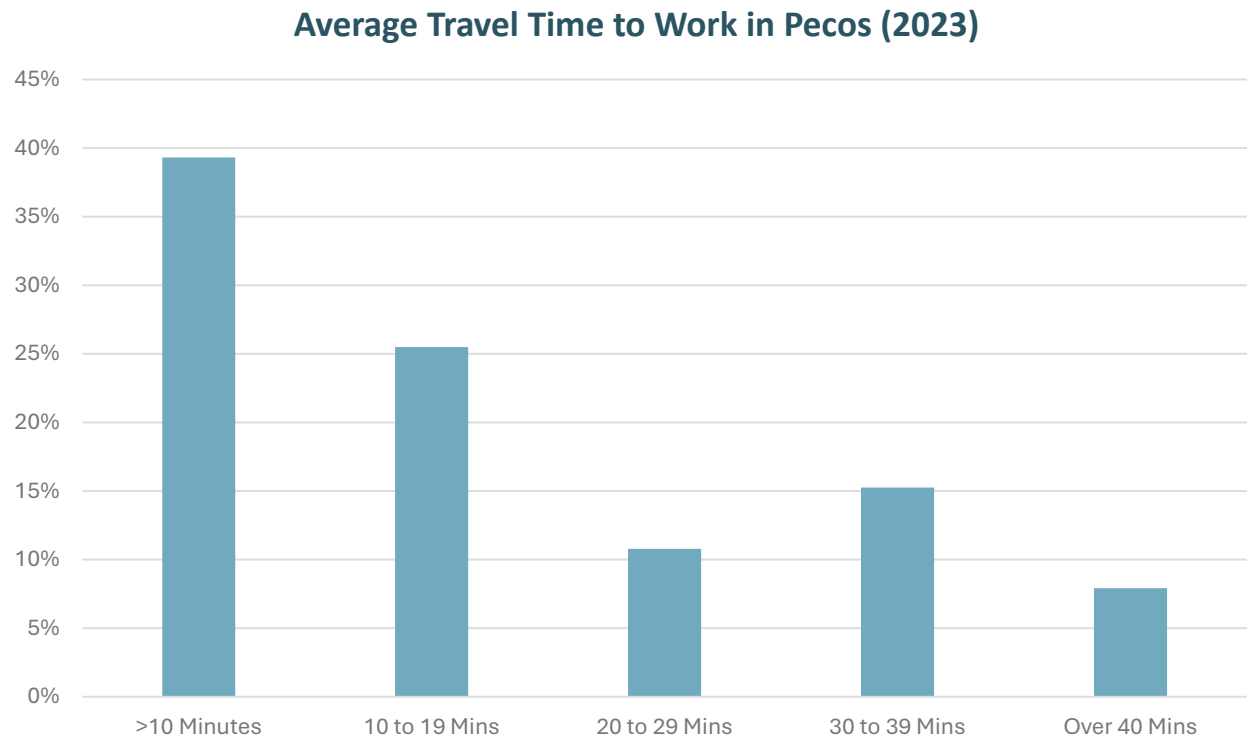


Figure 3: Travel Time to Work (2023)

General Safety Data

Explanation of Data

The Texas Department of Transportation Crash Records Information System (CRIS), years 2021-2025, is the dataset used in this report. This memo reflects crash data up to December 31, 2025, and exclude crashes on the interstate system.

The dataset used in this report includes a total of 886 recorded crashes in the Pecos during this time period. Each record contains information on the crash date, time, severity (categorized by the KABCO scale), manner of collision, and other descriptive elements. The KABCO system is defined as:

- **K** – Fatal Injury
- **A** – Suspected Serious Injury
- **B** – Suspected Minor Injury
- **C** – Possible Injury
- **O** – Not Injured

The data spans 5 years and provides the basis for evaluating crash trends by time, severity, and crash type. Through this analysis, high-priority safety concerns can be addressed with targeted interventions.

Please note that all maps shown in this appendix reflect the city boundaries that were current at the time this plan initiated in October 2025.

Types of Crashes

Analysis of the "Manner of Collision" field reveals common crash types such as:

- **Angle Collisions**: Often occur at intersections when vehicles traveling in perpendicular directions collide.
- **Head-On Collisions**: Involve vehicles traveling in opposite directions colliding front-to-front, typically on undivided roadways.

- **Rear-End Collisions**: Happen when a vehicle crashes into the one in front of it, commonly due to sudden stops or following too closely.
- **Sideswipe Collisions (Same Direction)**: Occur when two vehicles traveling parallel in the same direction make contact, often during lane changes.
- **Sideswipe Collisions (Opposite Direction)**: Involve vehicles traveling in opposite directions brushing against each other, usually on narrow roads.
- **Not a Collision with Motor Vehicle** – Includes single-vehicle crashes such as those involving fixed objects (e.g., poles, trees, barriers), pedestrians, animals, parked vehicles, or roadside features.

Safety Analysis

Total crashes in Pecos fluctuated slightly from 2021 to 2024 and dipped lower in 2025. The annual crash trend shown in Figure 4 peaked in 2023 at 210, which marked a 10% increase from 2022. Since then, crash totals decreased to 205 in 2024 and then dipped further to 170 in 2025. These shifts may reflect changes in traffic volume, enforcement practices, and road user behavior.

Severe and fatal crashes, defined as incidents resulting in fatal or incapacitating injuries, have also varied over the five years. (Figure 4) They began at 13 in 2021, dropped to 6 in 2022, and peaked in 2023 at 14 crashes. Since then, the severe and fatal crash trend has declined slightly every year in 2024 and 2025.

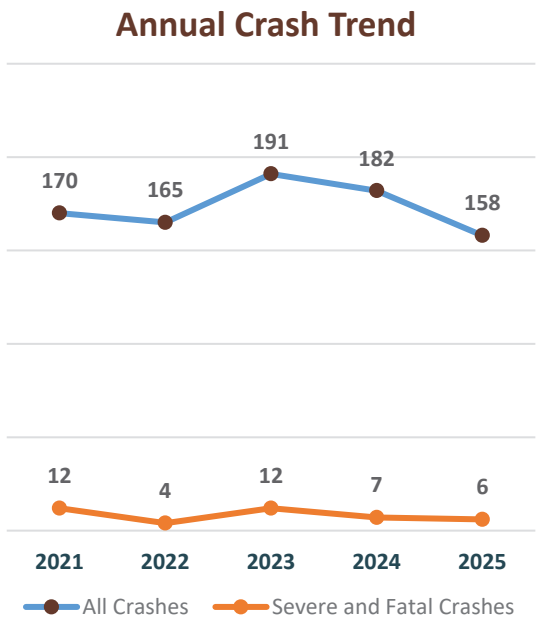


Figure 4 Manner of Collision (2021- 2025)

Crash Types

A more detailed crash analysis reveals trends related to specific driver behaviors, manners of collision, and road conditions that are a leading cause of

collisions. The crash data indicates several common themes that can help diagnose safety problems and develop targeted, effective countermeasures to prevent future incidents.

Angle crashes are the most frequent types of crashes, accounting for 39% of all types of crashes (Figure 5). Angle crashes occur when the front end of one vehicle strikes the side of another vehicle. The driver might turn when not seeing the other vehicle coming, might travel at full speed, or might accelerate through an intersection and strike a turning vehicle.

Another frequent crash type in Pecos is single-vehicle collisions, or "not a collision with a vehicle", accounting for 28% of all crashes, and 39% of severe and fatal crashes. More than half of this type of collisions occurred when the vehicle hit fixed objects, indicating the roadway visibility should be enhanced as a recommendation (Figure 6).

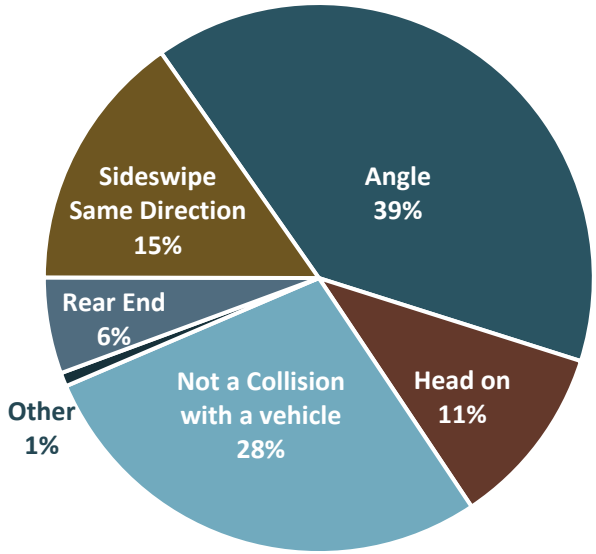


Figure 5 Manner of Collision (2021- 2025)

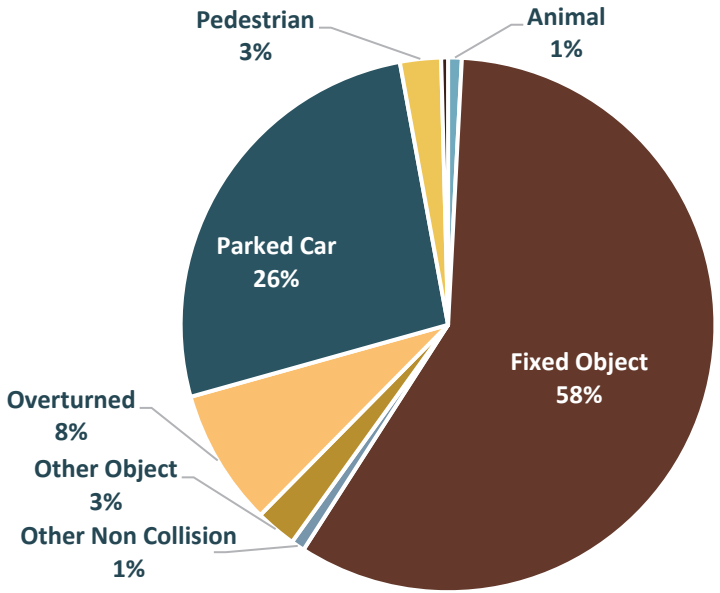


Figure 6 First Harmful Event - Single Motor Vehicle Collision

In addition, intersections are the most frequent roadway part in which crashes occur (45%), 36% of crashes occurred because of a failure to yield, and 35% of crashes were stop sign related (Figure 7). Those contributing factors also show the same level of significance in severe and fatal crashes. Engineering interventions should be prioritized that target some of these common issues.

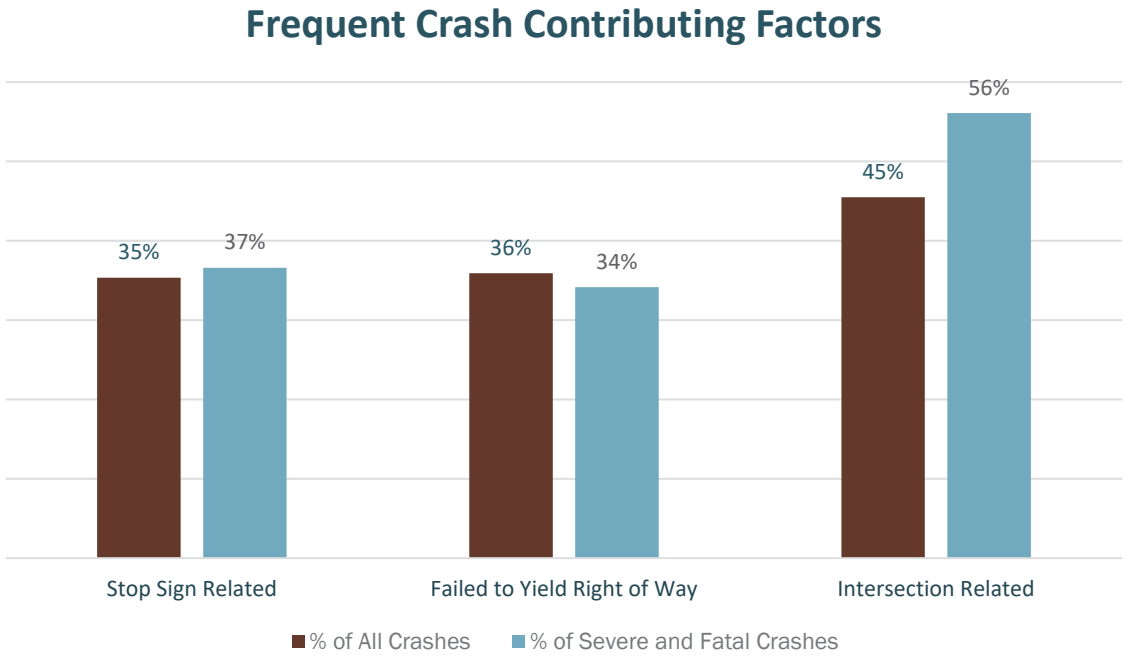


Figure 7 Frequent Crash Contributing Factors

Commercial Motor Vehicles (CMV), including trucks and trailers, contributed 30.6% of severe and fatal crashes while they only accounted for 16% of total crashes. Of all the fatal crashes from 2021 to 2025, 4 out of 7 involved CMVs. Figure 8 maps the locations The disproportionate frequency of CMV in severe and fatal crashes calls for a targeted management plan. Figures 9 through 11 are maps showing the concentration of crashes involving single vehicles, failure to yield, and crashes located at intersections. These maps highlight the consistent geographic location of crash types, particularly along US 285.

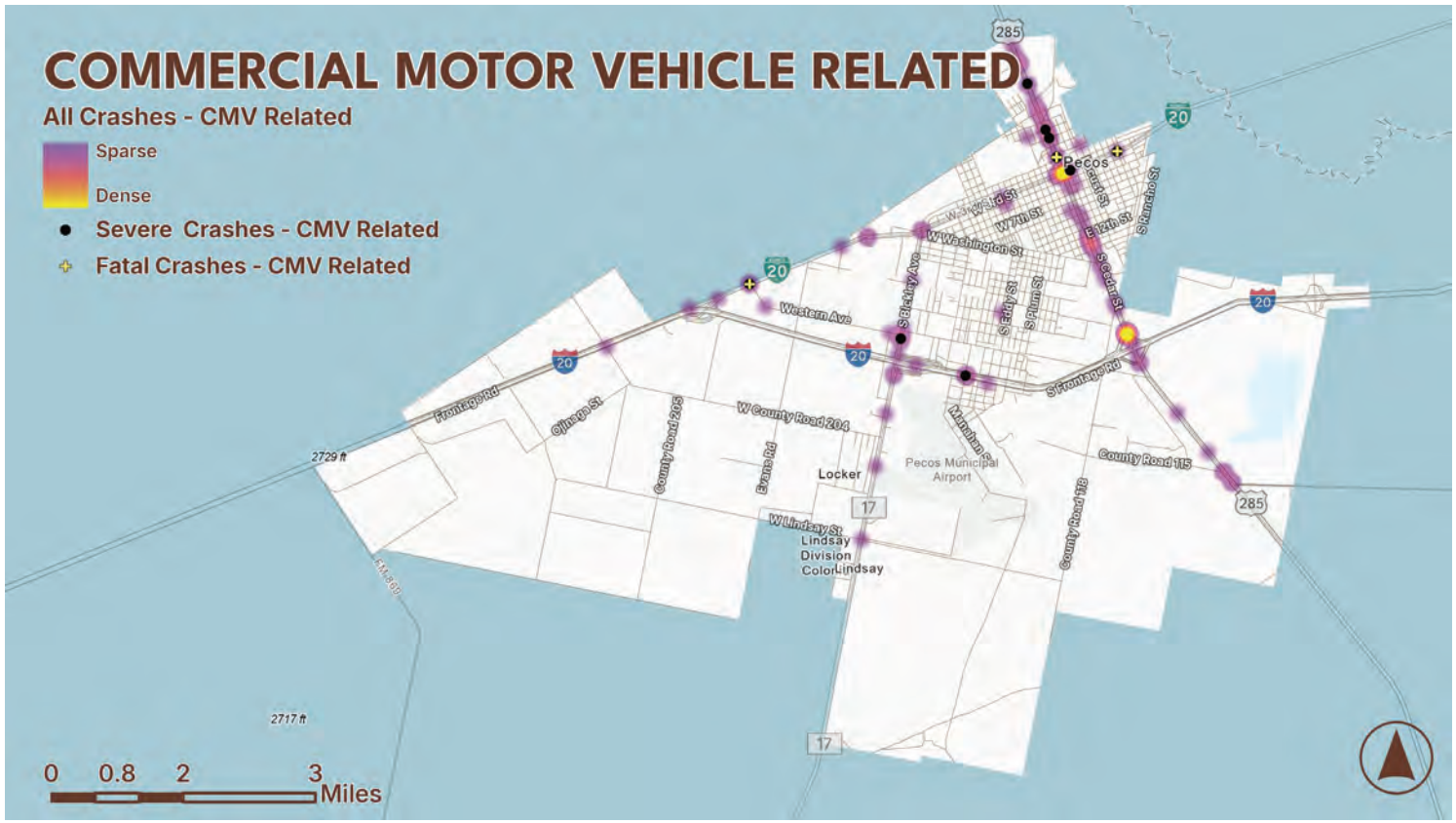


Figure 8: Commercial Motor Vehicle Crashes

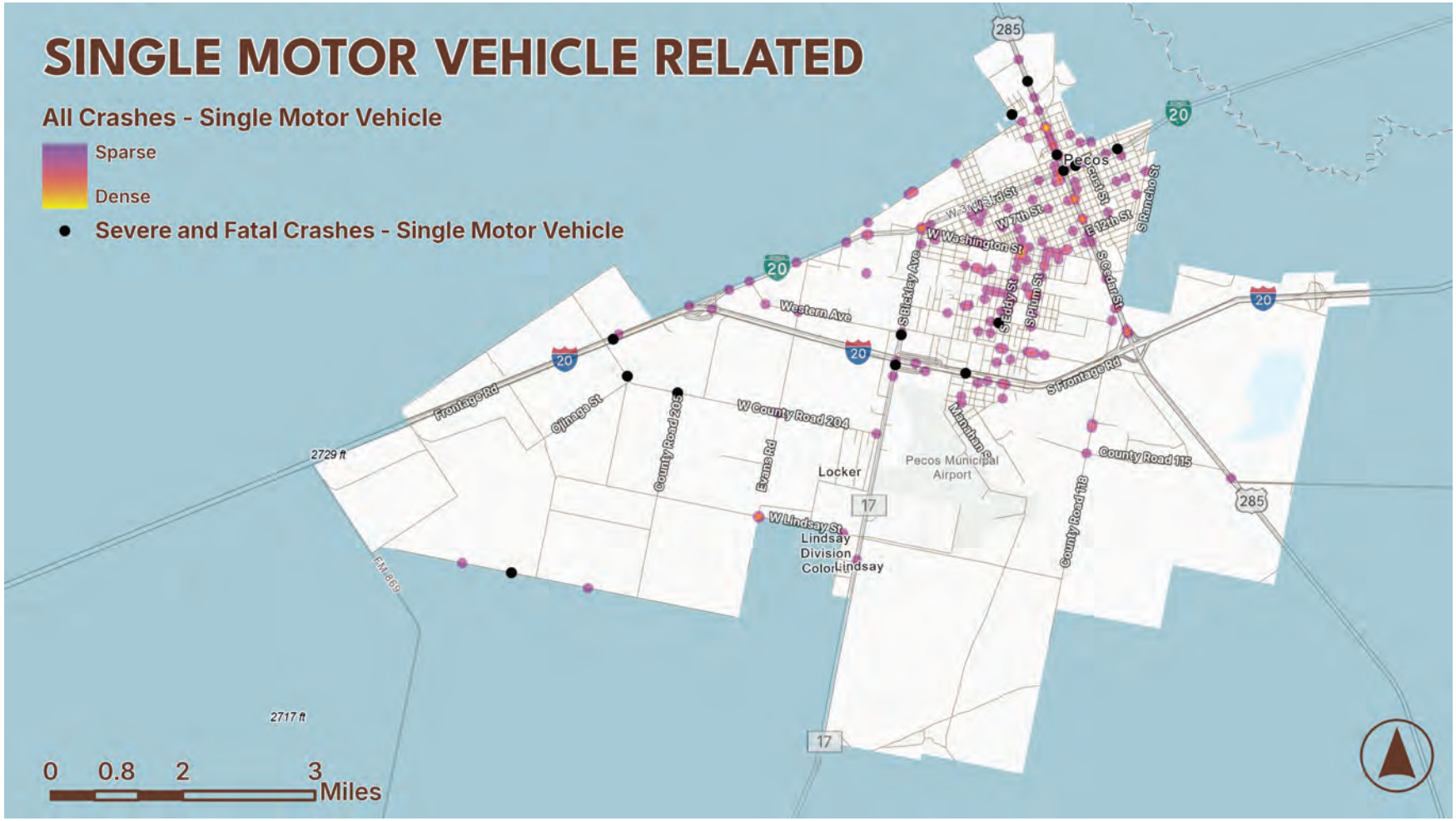


Figure 9: Single Motor Vehicle Crashes

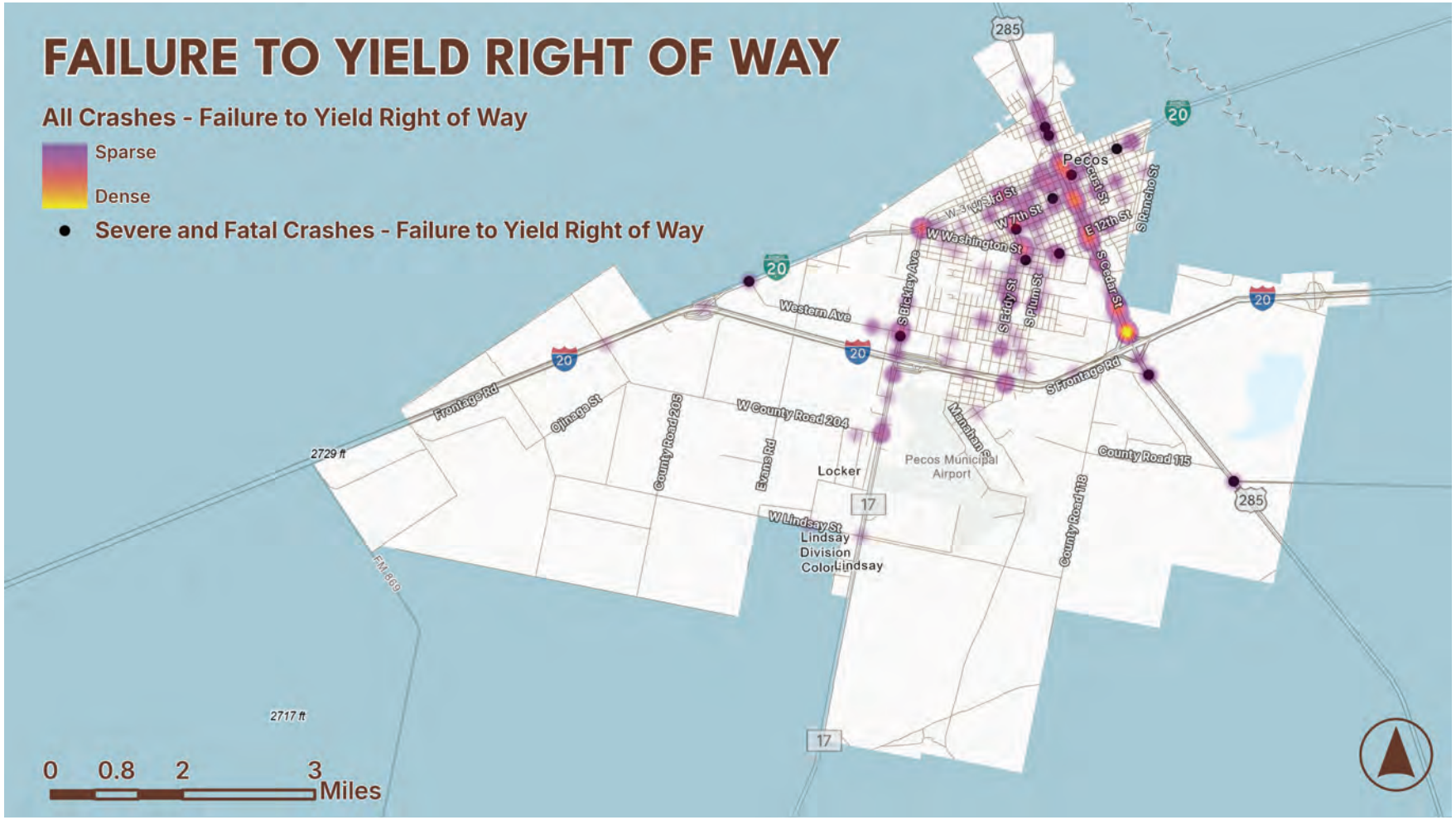


Figure 10: Map of Crashes Involving Driver Failure to Yield

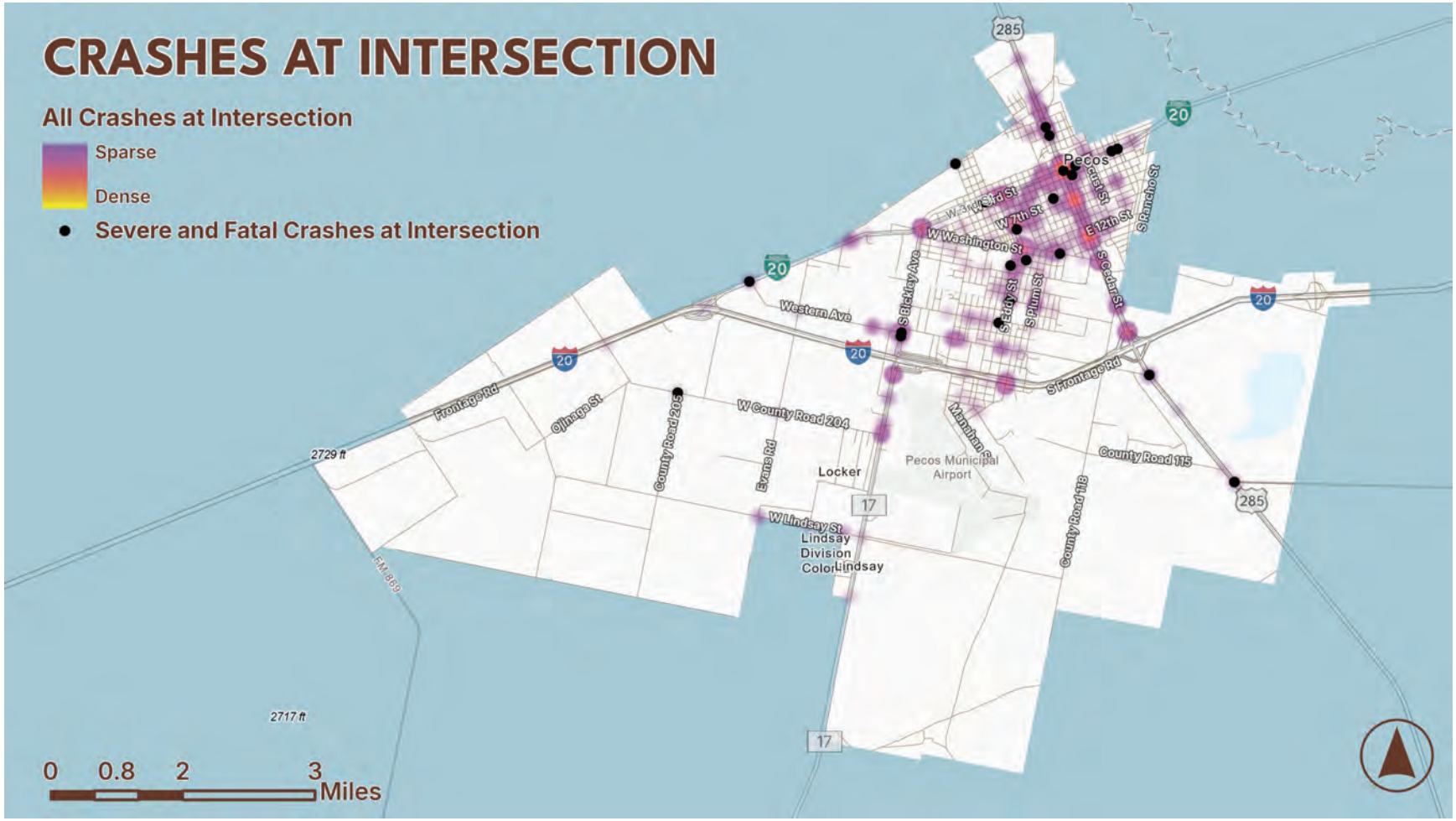


Figure 11: Map of Crashes Located at Intersections

Crash Severity

Crash severity is one of the most important data points to track for reaching Vision Zero, especially the crashes that are fatal (K) and serious (A). The distribution of crash severity for all crashes is illustrated in Figure 11. The majority of crashes in Pecos were classified as Property Damage Only (O), indicating lower injury risk. Fatal and serious crashes represent 4% of the total crashes. (Figure 12).

Breakdown by severity:

- K (Fatal Injury): 4
- A (Serious Injury): 37
- B (Minor Injury): 120
- C (Possible Injury: 100
- O (Property Damage): 585
- unknown : 20

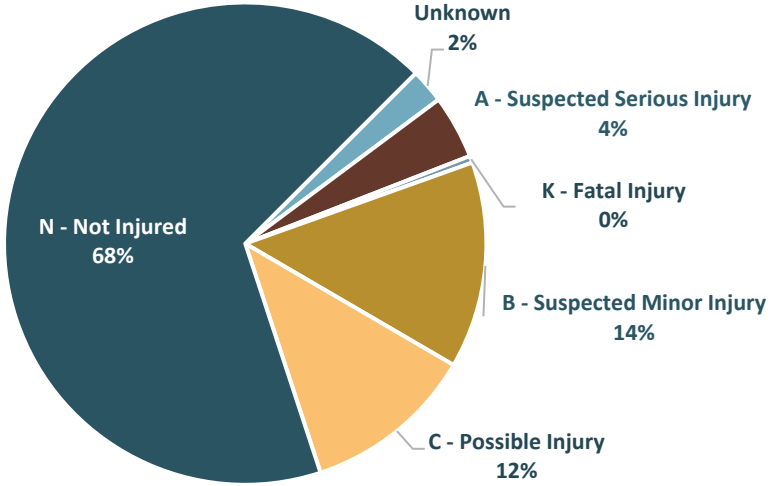


Figure 12 Crash Severity (2021-2025)

Fatal and Serious Crashes

Fatalities only account for less than 1% of crashes, but they carry the highest societal cost. Serious crashes account for 4% of the total crashes. They have fluctuated year by year with the most in 2021 and 2023 (Figure 13). Tractor or semi-trailers are the most common type of Commercial Motor Vehicle(CMV) involved in both fatal and serious crashes (64.7%). In addition, 56% of fatal and serious crashes occurred at intersections. Locations with recurring fatal and serious incidents should be prioritized for intervention.

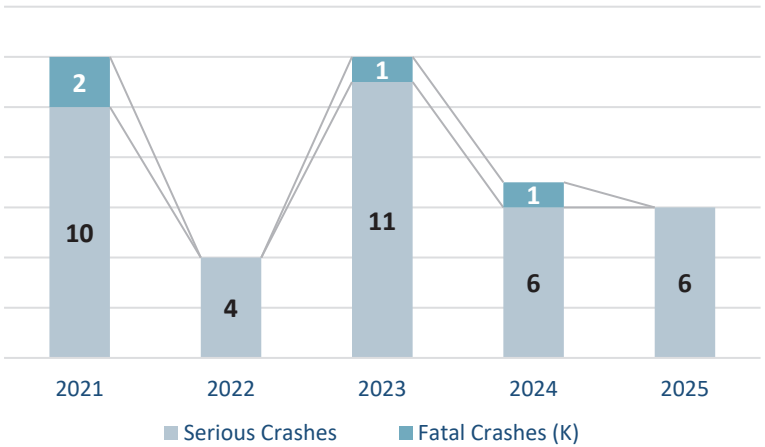


Figure 13 Fatal and Serious Crashes



Figure 14 Map of All Crashes (2021 -2025)

Crash Trends by Month, Day, and Time

Reviewing crash trends by month, hour, and day of week in Pecos helps identify consistent patterns when crashes are most likely to occur, such as seasonal peaks, commute-hour surges, or weekend-related increases. This insight supports targeted safety strategies, enforcement scheduling, and resource allocation during the highest-risk periods.

Crash Trend by Month

Crashes are relatively steady throughout the year, with the highest activity occurring in August and September, while February and December show noticeably lower crash counts (Figure 15). Higher crashes in late summer may reflect increased travel, vacations, and more vehicles on the road. Seasonal spikes could also relate to school schedules, holiday travel, or weather patterns.

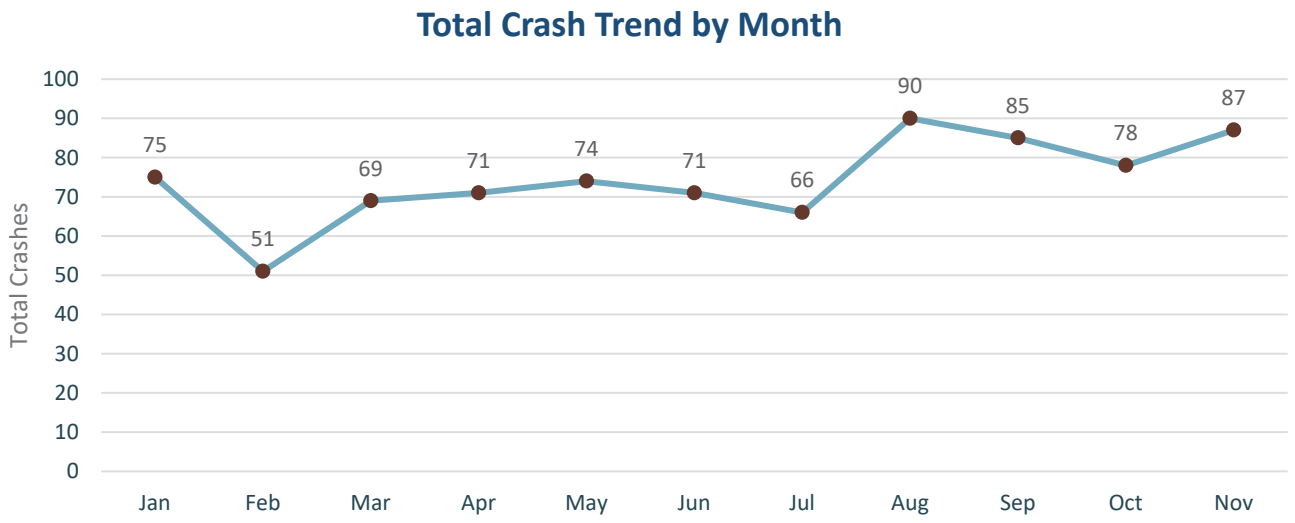


Figure 15 Crash Trend by Month (Combined 2021-2025)

Crash Trend by Day of Week

Crash frequency throughout the week is similar, but is highest mid-week, with Wednesday showing the most crashes. Weekends experience fewer crashes overall, with Saturday and Sunday having the lowest crash totals. (Figure 16) Mid-week crashes may reflect regular work-week traffic volumes, errands, and consistent travel behavior. Lower weekend crash counts likely indicate fewer daily commuters, though weekend crashes can be more influenced by recreational trips or nighttime driving.

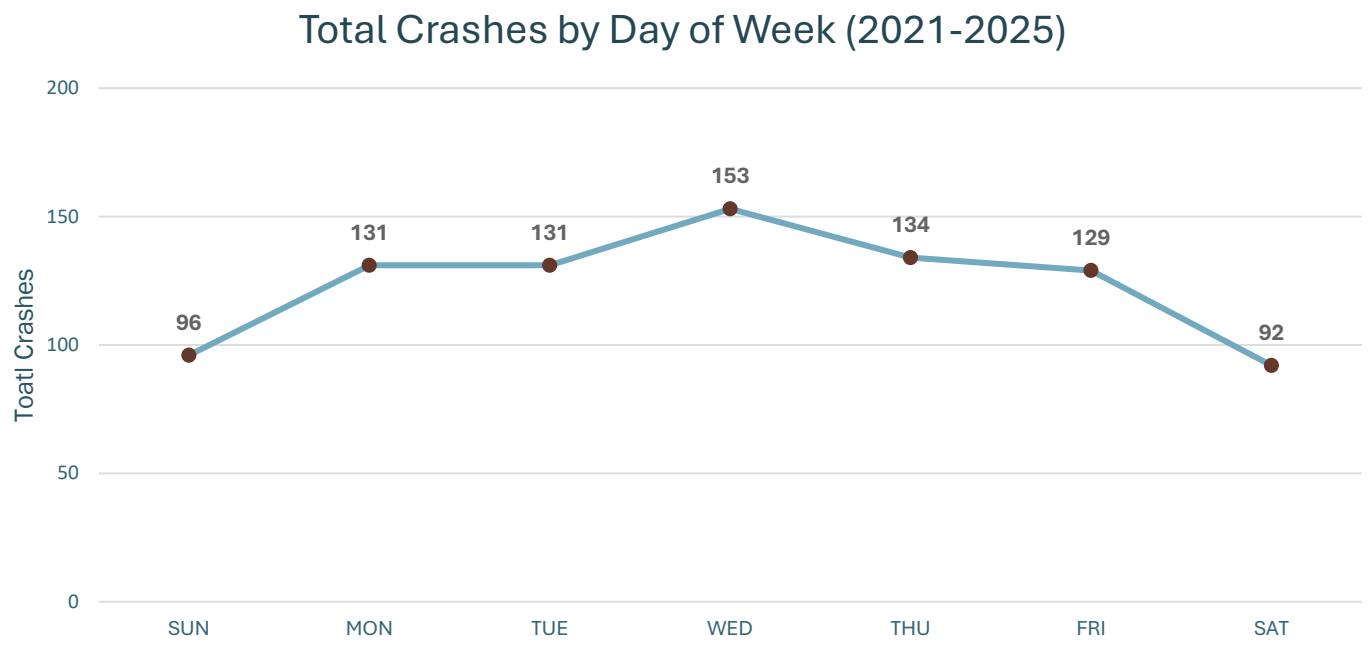


Figure 16 Crashes by Day of the Week (Combined 2021-2025)

Crash Trends by Hour of Day

Crashes are lowest during the early morning hours, then spike sharply between 6 and 8 AM, likely reflecting morning commute traffic. Another peak appears in the late afternoon to early evening, from 3 to 6 PM, aligning with the evening commute period, followed by a decline later at night. (Figure 17) Morning and evening peaks align with commuter traffic, school drop-off/pick-up periods, and higher roadway congestion. Lower nighttime and early-morning crashes suggest fewer vehicles on the road, though crashes in late evening may be more severe due to fatigue or impairment.

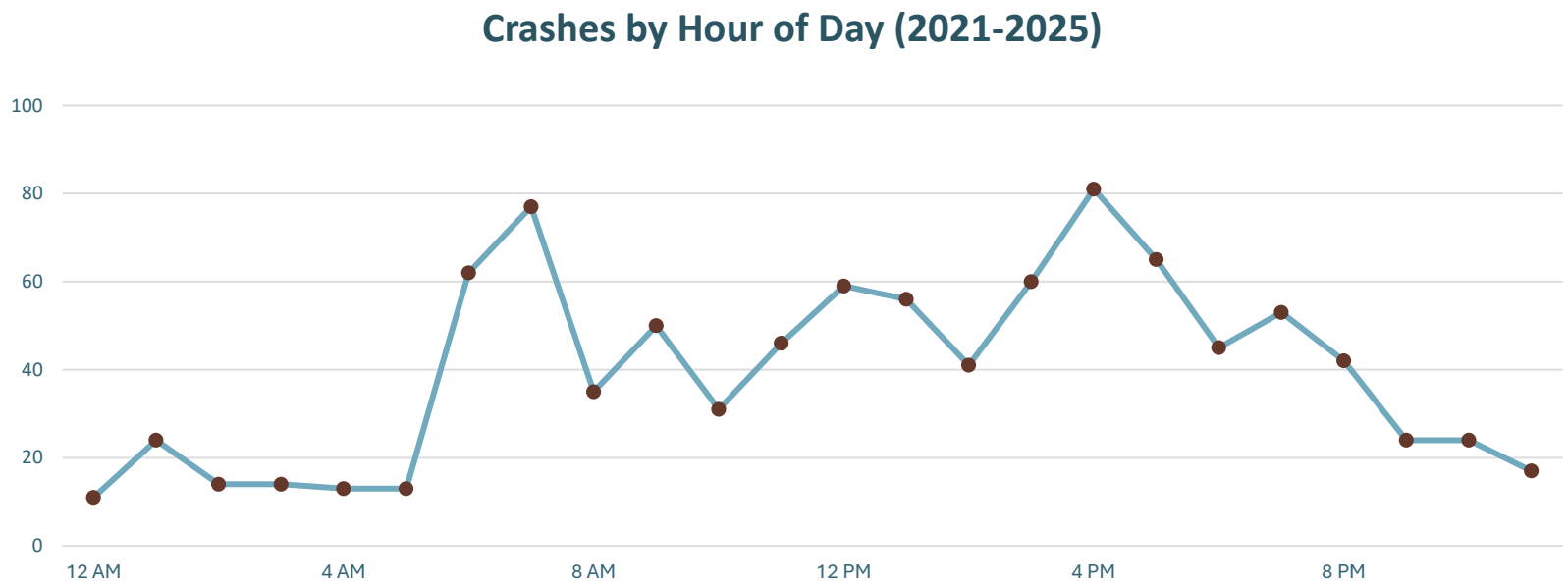


Figure 17: Crash Trends by Hour of Day

Crash Trend by Road User Characteristics

Road User Behaviors

Risky driving behaviors are unsafe driving actions that significantly increase the risk of crashes and crash severity. These include but are not limited to behaviors like speeding, distracted driving, impaired driving, and improper occupant protection (seatbelt use).

In Pecos, distraction plays a major role in both crash frequency and injury outcomes. Distracted driving is the leading behavioral factor, contributing to 38% of all crashes and 34% of fatal and severe (K+A) crashes from 2021 to 2025. Figure 18 maps these crash locations.

While improper occupant protection accounts for only 4.7% of total crashes, it is strongly linked to severity—42.9% of fatal crashes and over one-quarter (26%) of severe crashes involve improper restraint use. Despite being less common, this behavior

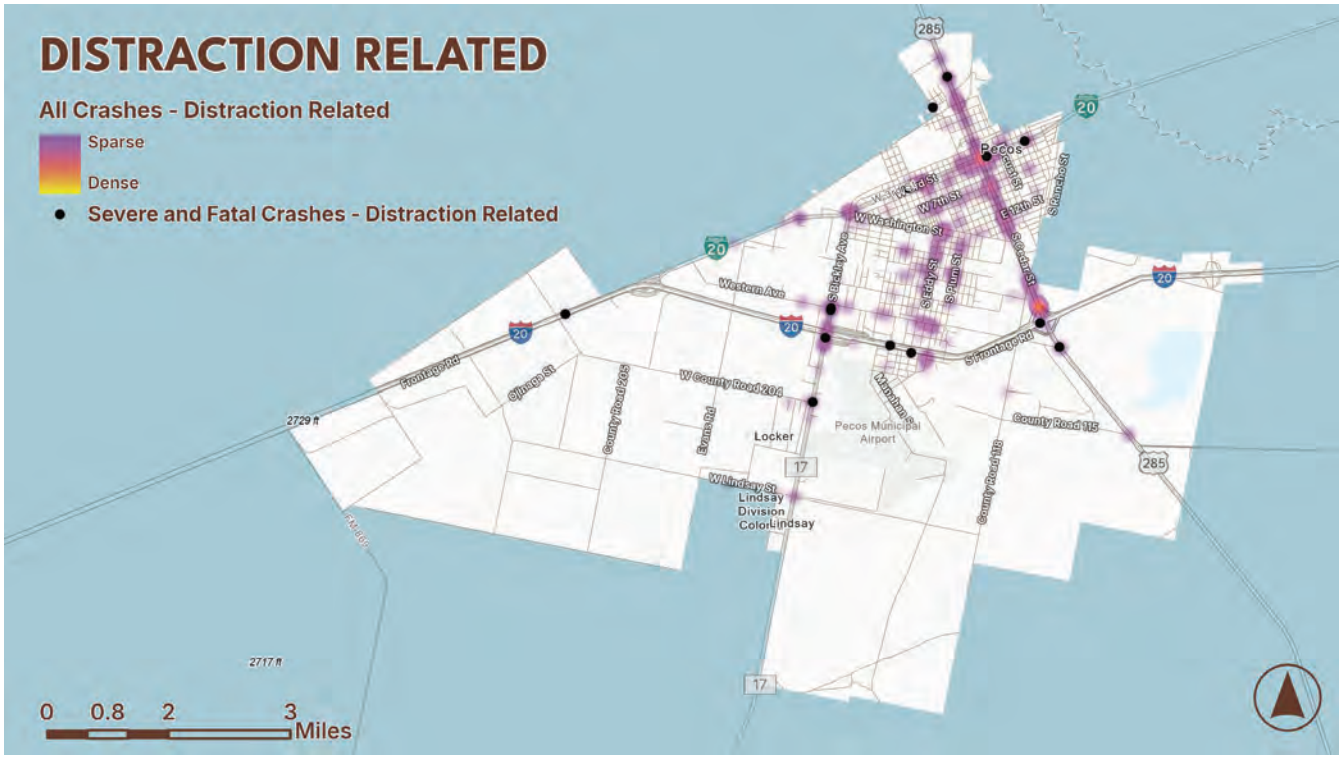


Figure 18: Map of Crashes involving Distracted Driving

significantly increases the likelihood of serious or fatal injury. Figure 19 maps the location of crashes involving improper occupant protection.

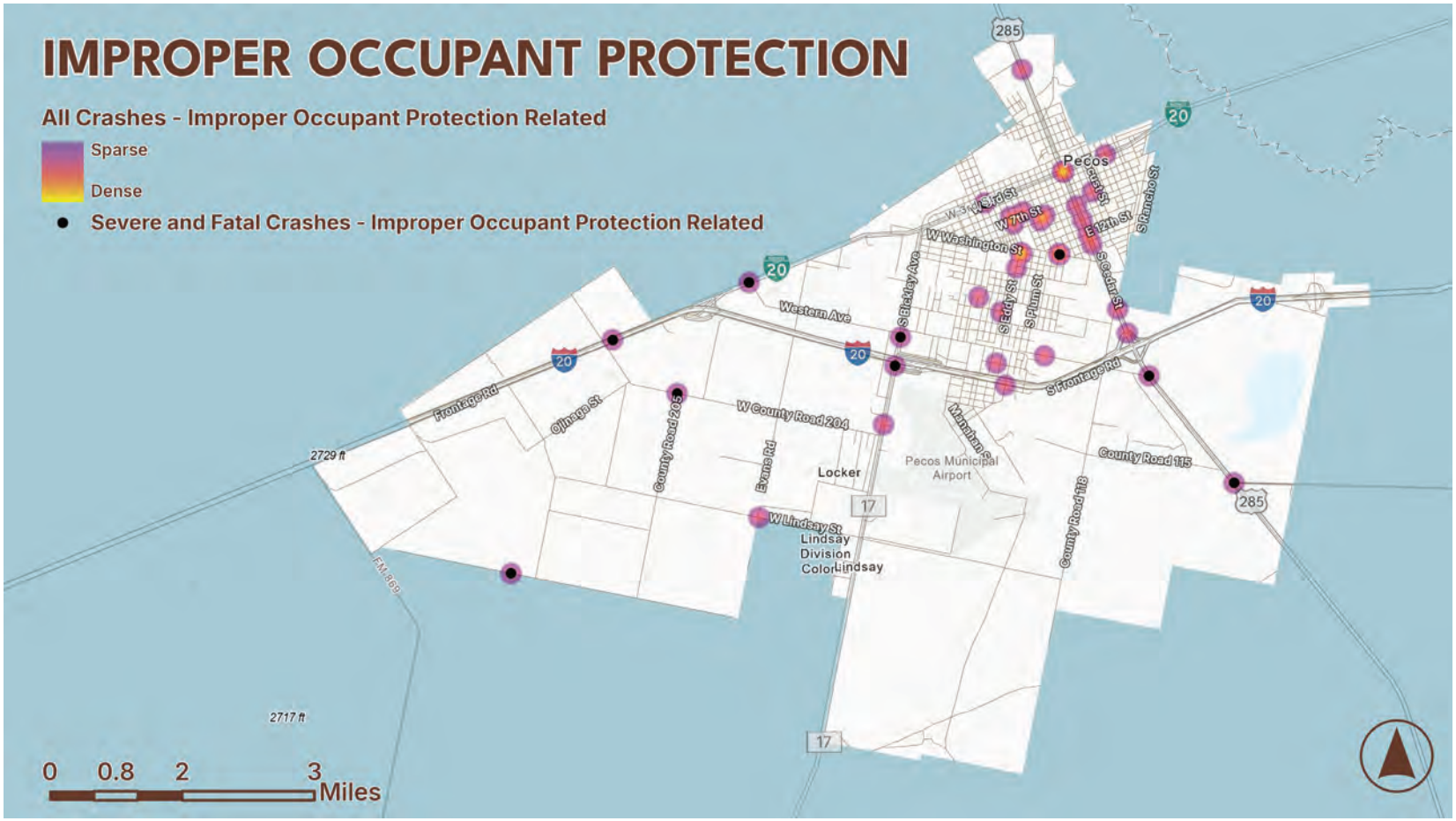
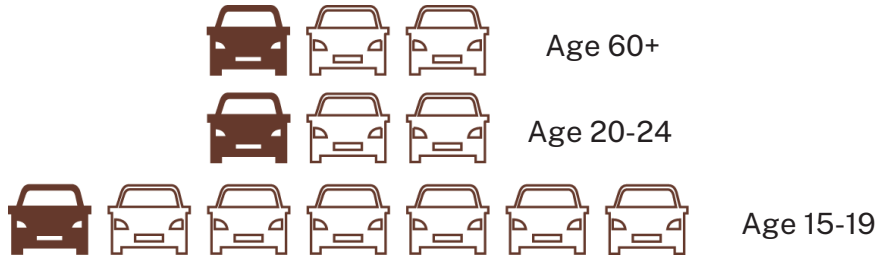


Figure 19 Map of Improper Occupant Protection Related Crashes

Driver Age Group:

The average age of drivers involved in all crashes in Pecos is 35.6 years, yet both older and younger drivers show elevated safety concerns. From 2021 to 2025, approximately 1 in 3 crashes involved drivers aged 60 and older, even though only about 1 in 5 people are over 60 years of age in Pecos (Figure 20). These crashes may be influenced by age-related factors such as reduced reaction time, limited visibility, and challenges maneuvering through complex roadway environments.

Frequency of Crashes Involving Drivers in Targeted Age Groups



Icons represent the proportion of total crashes involving drivers in targeted age groups. The visualization illustrates the approximate "1 in X" frequency of crash involvement for each group.

Figure 20: Frequency of Crashes Involving Targeted Age Groups

Crashes involved with older drivers were concentrated on Cedar Street, Eddy Street and the 3rd Street (Figure 21).

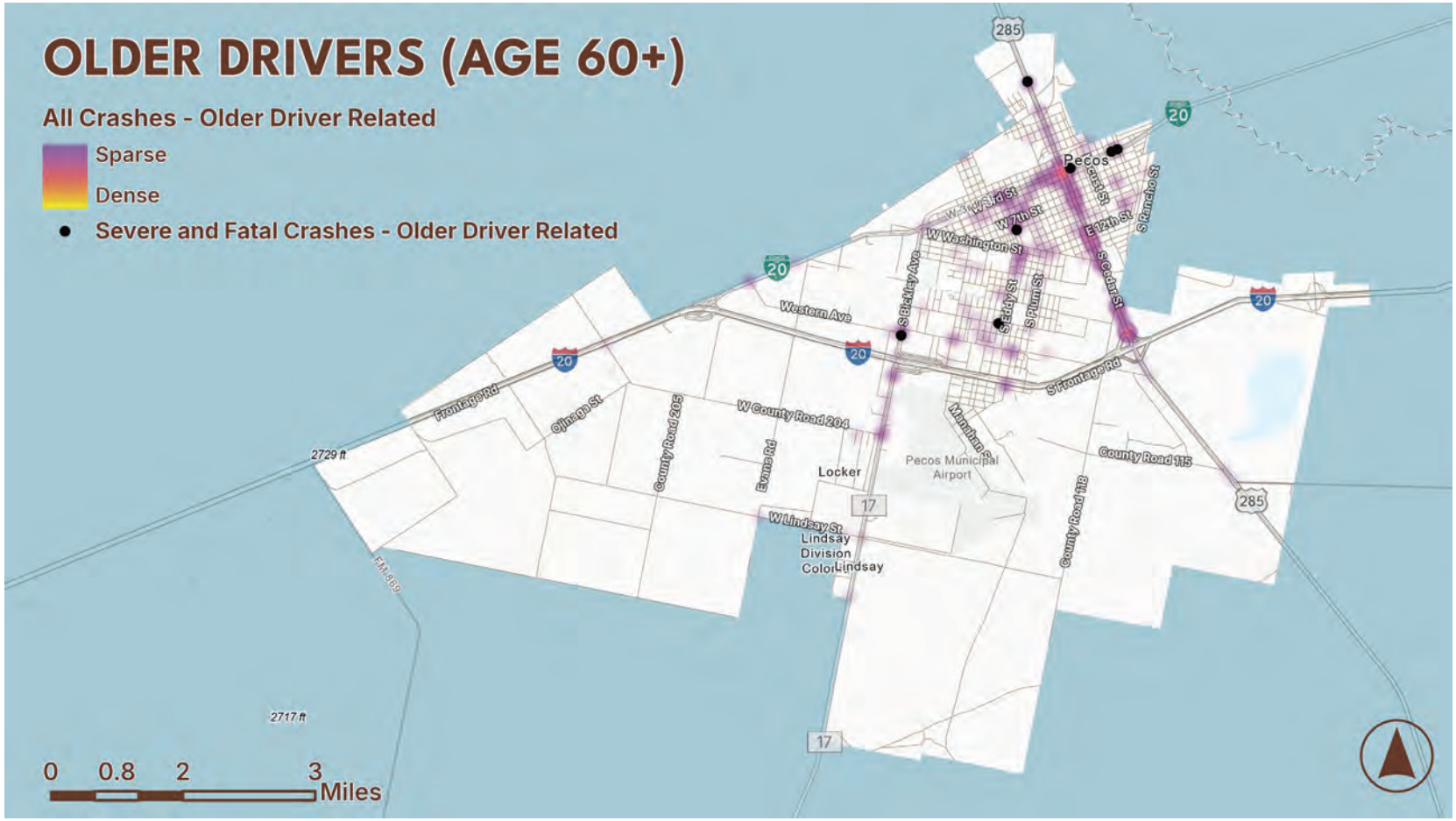


Figure 21: Map of Crash Frequency for Older Drivers (60+)

Crashes involving young adult drivers (ages 20 to 24) are particularly prominent in Pecos. Nearly 1 in 3 crashes during the 2021 to 2025 time period involved this group, even though only about 1 in 14 people are between 20 and 24 years of age in Pecos. Crash risk for younger adult drivers is often associated with inexperience, speed, distraction, and higher exposure during busy travel periods. Crashes involved with young adult drivers were concentrated on Frontage Rd, Washington St, Cedar Street, Eddy Street, Bickley Avenue, and the 3rd Street (Figure 22).

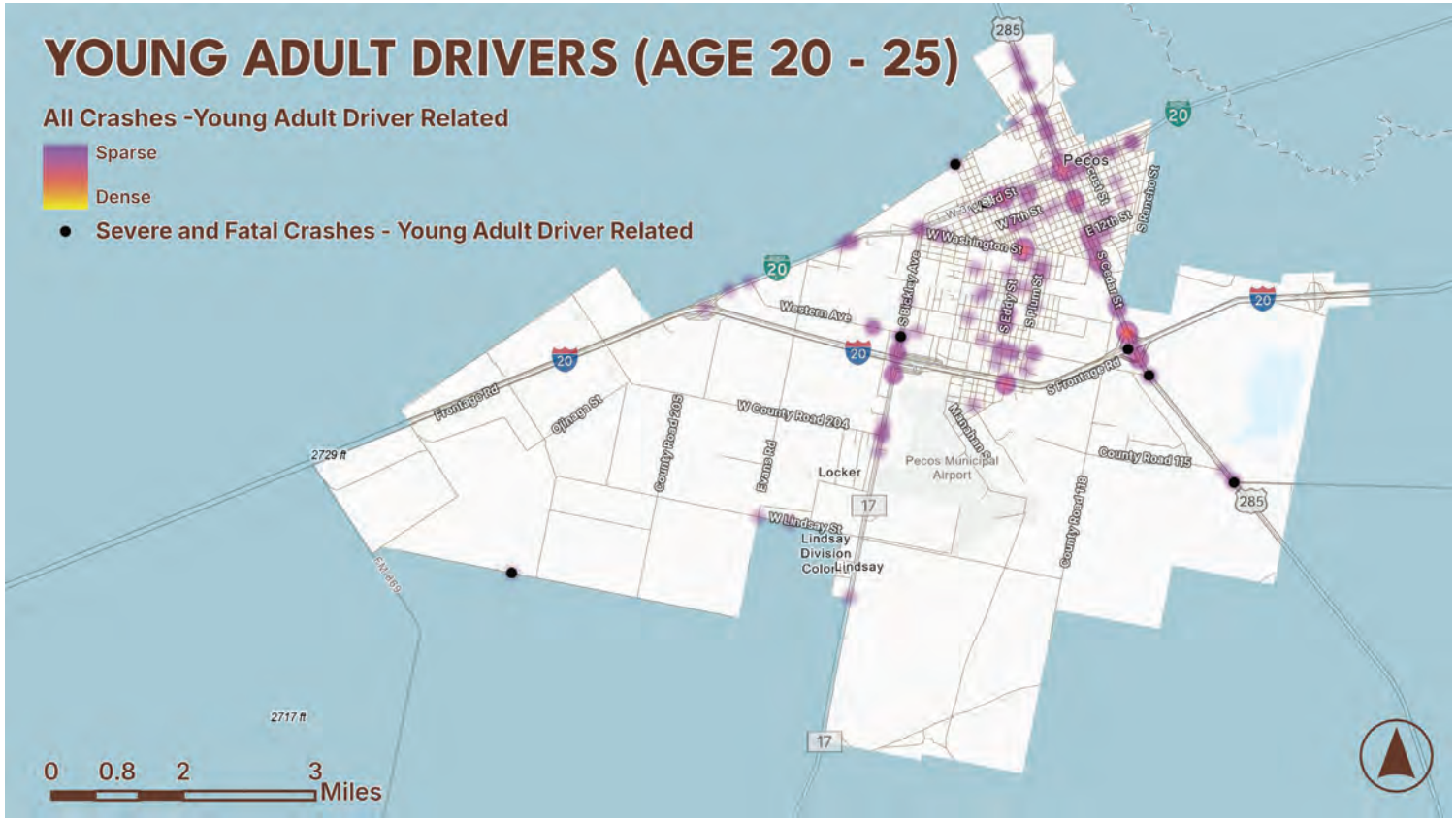


Figure 22: Map of Crash Frequency for Young Adult Drivers

Similarly, young drivers (ages 15 to19) accounted for 1 in 7 crashes in Pecos, even though about 1 in 10 people are between 15 and 19 years of age. Early driving years often come with limited driving experience and greater susceptibility to risky decisions, reinforcing the need for continued focus on teen driver education and safety programs. Crashes involved with young adult drivers were concentrated on Washington St, Cedar Street, Eddy Street, Bickley Avenue (Figure 23).

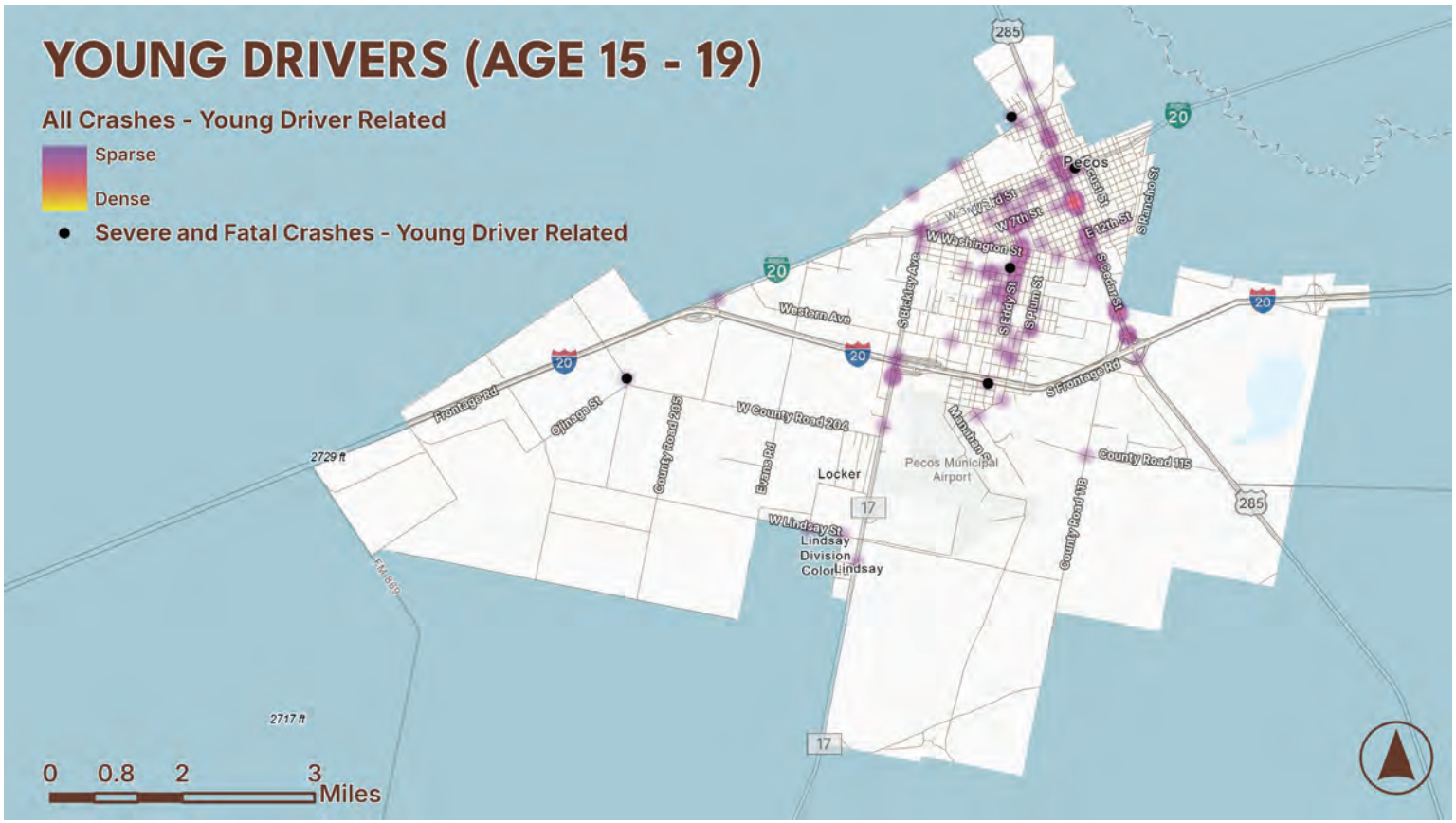


Figure 23: Crash Frequency for Younger Drivers

Candidate High Injury Network Analysis

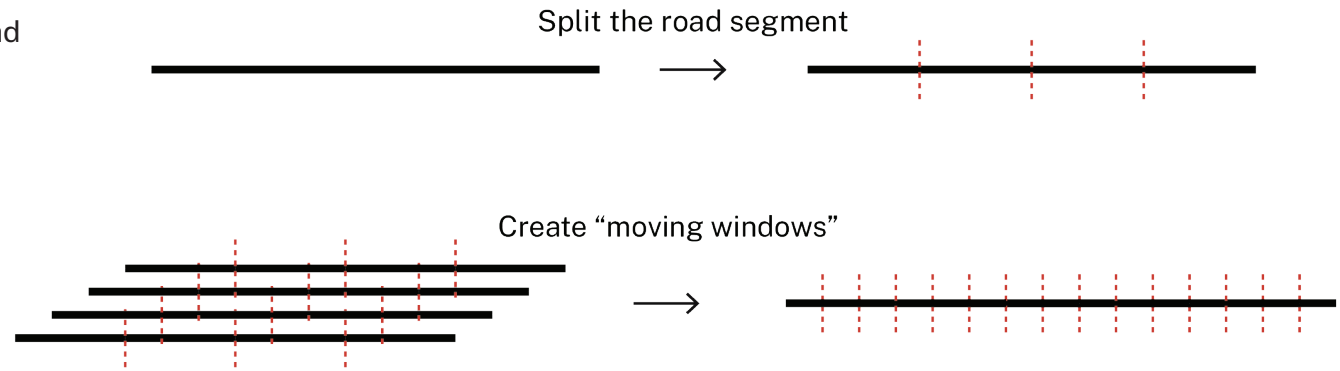
Pecos's candidate High Injury Network (HIN) was developed to identify roads and intersections with the highest concentration of serious injuries and fatalities. This analysis helps create high priority targets for recommendations to ensure they have the greatest impact. To create the HIN, the team used a six-step methodology outlined below.

Step 1: Input data and road segments

- **Import and clean data:** Imported the road segments and crash data into GIS and ensured the data was accurate and crashes data overlapped with the segments data. Combined the east- and west-bound lanes of I-20 into one segment to avoid duplication.

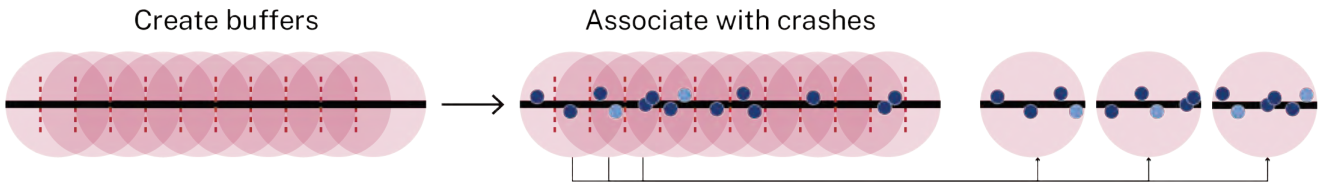
Step 2: Quarter Mile Segments and Moving Window

- **Split road segments:** Split the roadways into quarter-mile road segments.
- **Create "moving windows":** Generated points along each roadway at 0.1-mile intervals (528 ft). Created overlapping "windows" that extend for a quarter mile but overlap every tenth of a mile.



Step 3: Create Buffer and Join Crashes

- **Create buffers:** Create 60-foot buffers around overlapping segments.
- **Associate crashes to segments:** Select the crashes that fall within the 60-foot buffer and "join" or associate the crashes with each segment. A crash can be associated with multiple segments. This intentional double counting allows creates the most accurate representation of crash severity moving down the corridor.



Step 4: Calculate Weighted Collision Score (HIN Score)

- **Calculate score:** Using the crashes associated with each segment, a weighted collision score is calculated that gives priority to areas with more sever crashes. In Pecos, there are relatively low severe fatalities, so these were weighed slightly higher. The calculation gave 75% weight to the severity of crashes, and the remaining 25% to the frequency.



Step 5: Develop Final Network

- **Select high-risk segments:** The weighted scores were distributed on a bell curve. Any segment with an above-average score is part of the High Injury Network.
- **Finalize:** The final selected segments are combined. Any segments that are less than a quarter mile apart are connected. Segments are extended to their closest intersection. Figures 24 and 25 map the Pecos HIN.

HIGH INJURY NETWORK



Figure 24: High Injury Network (Full Map)

HIGH INJURY NETWORK

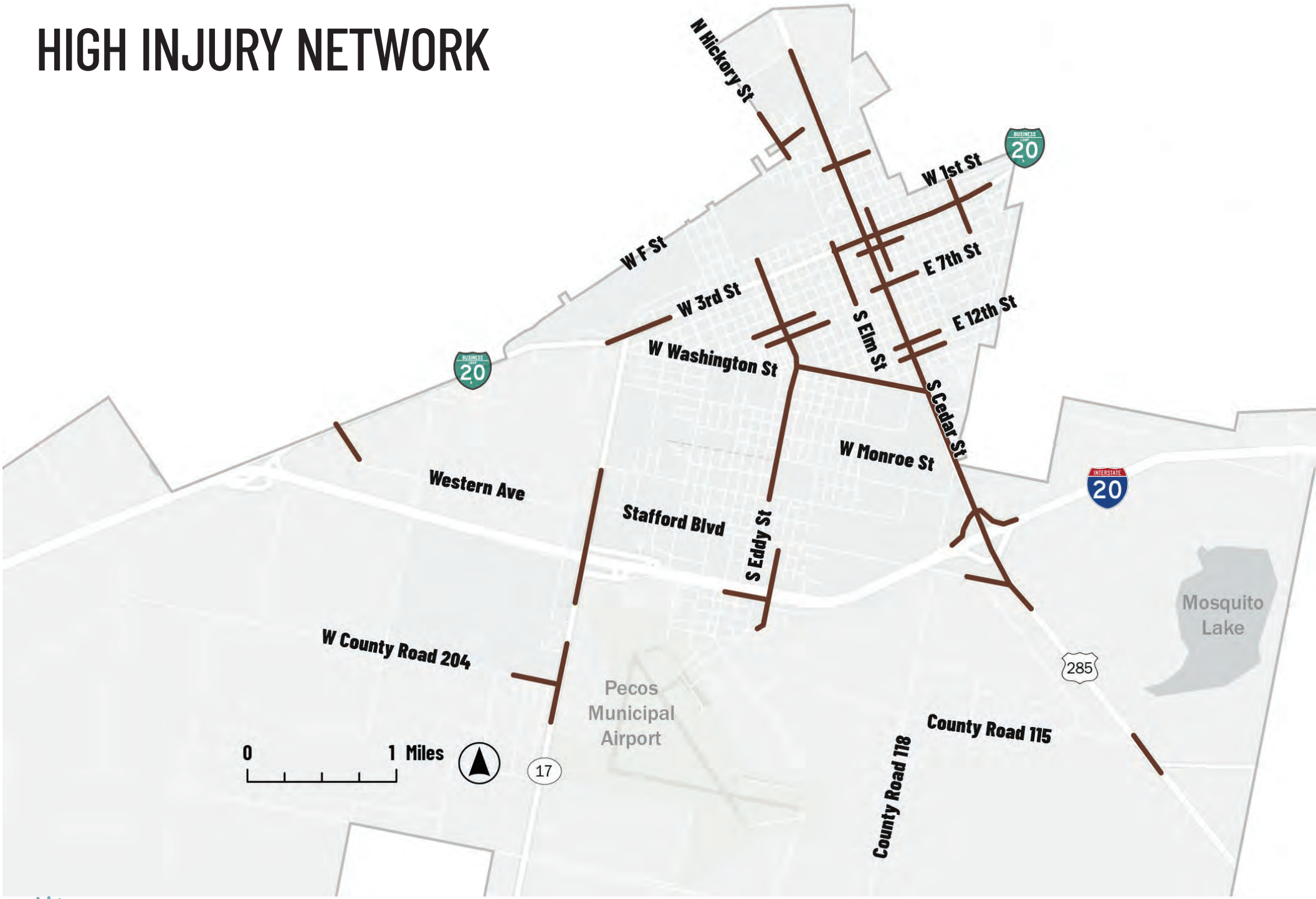


Figure 25: High Injury Network (Zoom)

APPENDIX C: POLICY AND PROGRAM MEMO

Table of Contents

Introduction **3**

Safety Policies: Adopted Planning Documents **3**

Reeves County Safety Action Plan 3

Permian Basin Safety Action Plan 5

Pecos Comprehensive Plan (2020) 6

Permian Basin Regionally Coordinated Transportation Plan (2022) 7

Permian Basin Freight and Energy Sector Transportation Plan (2020) 9

Texas Strategic Highway Safety Plan (2022) 10

Summary of Safety Policy Recommendations from Adopted Plans 12

Safety Policies: Adopted Ordinances **12**

Pecos City Ordinance Recommendations 13

Safety Education / Enforcement: Critical Safety Issues **14**

Distracted Driving Education/Enforcement Recommendations 14

Improper Occupant Protection Education/Enforcement Recommendations 15

Young Driver (Ages 20-24) Education / Enforcement Recommendations 15

Older Driver (Ages 60+) Education/Enforcement Recommendations 16

Bike/Pedestrian Education/Enforcement Recommendations 16

Introduction

The purpose of this technical report is threefold:

- Summarize the transportation safety policies contained in the study area's adopted planning documents.
- Summarize the safety-related ordinances, policies, and practices upheld by the local jurisdictions within the study area; and
- Highlight safety-related policies and best practices adopted by other jurisdictions nationwide that have resulted in measurable improvements to their transportation system.

Following the summary of each document's policy review is a recommendation for the inclusion of safety-related policies and practice updates to consider during future planning efforts.

Safety Policies: Adopted Planning Documents

Each of the following plans was reviewed and summarized for this task:

- Reeves County Safety Action Plan (2025)
- Permian Basin Safety Action Plan (2025)
- Pecos Comprehensive Plan (2020)
- Permian Basin Regionally Coordinated Transportation Plan (2022)
- Permian Basin Freight and Energy Sector Transportation Plan (2020)
- Texas Strategic Highway Safety Plan (2022)

Reeves County Safety Action Plan

The Reeves County Safety Action Plan was written to equip city and county staff to make informed decisions on traffic safety projects in their respective jurisdictions. Since 2019, total crashes have declined in Reeves County. Aside from a spike in 2022, fatal and serious injury crashes have also declined. To continue this downward trend, the plan's safety recommendations are tailored to the location where crashes are still happening the most and to the types of crashes that are most prevalent at these hot spots.

Data Overview:

- Four out of six high crash locations are in the Town of Pecos City

- Four out of six pedestrian and bicyclist crash hot spots are in Pecos City, but pedestrian and cyclist crashes only account for 0.05% of all crashes in the county
- Freight and motorcycle related crashes are dispersed evenly on major roadways throughout the county
- The top contributing factor of crashes in the county is speeding. Driver inattention is the second highest contributing factor.
- The top manner of collision was one motor vehicle going straight which refers to a roadway or lane departure

The above analysis contributed to the creation of the county's High Injury in part II of the plan and respective safety recommendations in part III. Recommended countermeasures for corridors on the High Injury Network (HIN) include bike lanes, corridor access management, high contrast lane markings, raised medians, roadway reconfigurations, longitudinal rumble strips, safety edges, sidewalks, speed feedback signs, and wider edge lines. Recommended countermeasures for intersections on the HIN include improved signing & visibility at signals, rectangular rapid flashing beacon, retroreflective backplates, roundabouts, transverse rumble strips, and systemic countermeasures at stop-controlled intersections.

Nearly 50% of corridors on the HIN are within Town of Pecos City boundaries so, although the Reeves County Safety Action Plan does not directly apply recommended countermeasures to individual corridors and intersections, many of the recommendations can be strategically applied to high crash locations within the city pending further analysis by the project team.

In addition to recommended engineering improvements, the Reeves County Safety Action Plan outlines education, encouragement, enforcement and policy strategies for reducing crashes in Reeves County using the Six Es of Safety Approach. (The Six Es of Safety refers to a thought-framework to improve safety consisting of Education, Encouragement, Engineering, Enforcement, Evaluation, and Equity). Examples of education strategies listed in the plan include disbursing TxDOT educational materials at locations targeted to reach vulnerable age groups (children and elderly), partnering with TxDOT to place safety billboards at more locations throughout the county, and partnering with the Permian Road Safety Coalition to expand on safety training and education for professionals in the oil and gas industry.

Examples of encouragement strategies listed in the plan include encouraging local insurance groups to advertise or establish safe driving discounts for customers and encouraging local freight companies to establish a "How's My Driving" contact on their vehicles. Examples of enforcement strategies include partnering with local Texas legislative representatives to encourage the legalization of sobriety checkpoints in Texas and partnering with DPS to develop best practices for officers to enforce the texting and driving ban at traffic stops.

Examples of policy strategies include revising county roadway design standards to enhance the use of rumble strips, widened shoulders, and more frequent striping maintenance practices and adopting impact/street maintenance fees to share the responsibilities of roadway maintenance with developments that create a larger stress on the network.

Safety Policy Recommendations

The Reeves County Safety Action Plan is a useful summary of crash trends and recommendations for safety improvement, but recommended countermeasures are not given for every corridor and intersection on the High Injury Network. Future county and local Safety Action Plans should provide localized recommendations for corridors and intersections that have a high history of crashes but that were not directly addressed. It may also be beneficial for writers of future plans to conduct a risk assessment for roadways in Reeves County. Many of the same countermeasures can be applied to both High Injury Network and High Risk Network (HRN) intersections/corridors.

Permian Basin Safety Action Plan

The Permian Basin Regional Planning Commission Comprehensive Safety Action Plan (PBCSAP) addresses traffic safety concerns for the Permian Basin region in Texas. Counties under the purview of the Permian Basin Regional Planning Commission include Gaines, Dawson, Borden, Andrews, Martin, Loving, Winkler, Glasscock, Reeves, Ward, Crane, Upton, Pecos, and Terrell. The Permian Basin CSAP excludes Midland County and Reeves County as these two counties have existing comprehensive safety action plans. The PBCSAP still provides a strong high-level overview of crash data in the PBRPC area.

Data Overview:

- The top contributing factor of crashes in the region is Speeding. Failure to drive in a single lane is the second highest contributing factor. Unlike the Reeves County plan, this plan did not list distracted driving as a top contributing factor to crashes in the past five years.
- Like Reeves County, the top manner of collision in the region was one motor vehicle going straight
- A majority of high crash locations were in Ector County, Texas. Freight crashes, pedestrian crashes, and cyclist crashes occurred in more even pockets throughout the region

After discussion of the High Injury Network, the PBCSAP identified a High Risk Network (HRN) in the region. Risk was determined through an analysis of focus crash types and focus facilities. Focus crash types for each county were chosen by looking at the

percentage of fatal, severe, and minor injury crashes associated with each emphasis area listed in the plan. Focus facilities are described as roadways in which more than 50% of focus crashes in the county occurred on. Key characteristics of focus facilities in the Permian Basin include rural, 2-lane roadways with high speed limits and no shoulder; urban, 2-lane roadways with stop-controlled intersections and heavy traffic volume; etc. Characteristics with a high correlation to crashes were given more points and characteristics with less correlation to crashes were given less points. Focus facility segments with a risk score of over 50% or a risk score greater than the county average were added to the HRN.

Suggested countermeasures in the PBCSAP were chosen to reflect issues along the HIN and the HRN. These suggestions include leading pedestrian intervals, appropriate speed limits, wider edge lines and more. Like the Reeves County Safety Action Plan, this plan used the Six E's of Safety to develop action items for education, encouragement, enforcement, and policy. Recommendations include creating an online education resource hub connecting member agencies to existing TxDOT and National Highway Traffic Safety Administration (NHTSA) materials; creating an example policy document for municipal or other publicly purchased vehicles to meet higher safety standards; enhancing funding opportunities for projects submitted to PBRPC that fall on the region's high-injury or high-risk networks; and more.

Specific policy recommendations are given for roadway and lane departures, intersection safety, occupant protection, distracted driving, impaired driving, and speed, but only some roadways on the HIN and HRN are given specific countermeasure recommendations. That is a task that county-level and local Safety Action Plans can tackle.

Safety Policy Recommendations

This plan is a great tool for counties in the Permian Basin Region to use as they prioritize local street safety projects and policy changes. This document, along with the Reeves County Safety Action Plan and Pecos Safety Action Plan, can be leveraged to garner state and federal support for city and county safety initiatives. There are no further recommendations for this document.

Pecos Comprehensive Plan (2020)

The Pecos Comprehensive Plan documents long-term community objectives for land use, housing, the economy, the transportation system, and the water supply. The document begins with a community vision statement that describes how residents would like Pecos to be for each of these planning categories by 2030. The transportation component of the community vision statement is as follows: "In 2030, Pecos will be an affordable, residential community that provides excellent services and attractive amenities. The city will be characterized by a multimodal

transportation system that will prioritize safety while accommodating heavy industrial traffic."

As a means of seeing this shared vision come to life, the Pecos community indicated that they would like to improve connectivity across I-20, increase funding from TxDOT for transportation improvements that address oil/gas development, and increase connectivity to development in west Pecos. They would also like to secure funding for multimodal infrastructure, fix potholes/poor road conditions, and create and enforce truck routes to limit wear and safety hazards on local roads.

Chapter 7 of the Pecos Comprehensive Plan, the Thoroughfares Study, is an analysis of how well the city's transportation system is currently functioning. This analysis informs relevant parties of what needs to be accomplished for the city to reach its shared transportation goals. The top thoroughfare system problems identified in Pecos were wear and tear on roads due to heavy truck traffic, unsafe conditions for vulnerable road users due to heavy truck traffic, limited transportation choices, and the length of blocks dictated in the subdivision ordinance. Recommended solutions include updating traffic control infrastructure, improving connectivity, and improving thoroughfare accessibility and appeal.

To improve connectivity, Pecos can coordinate transportation and land use goals, update subdivision policies to support high connectivity in new development, increase road network connectivity in existing neighborhoods, and prioritize pedestrian and bicycle infrastructure to address network gaps. A list of detailed recommendations pertaining to traffic control infrastructure and thoroughfare accessibility can be found in chapter 7, pages 17-32.

Safety Policy Recommendations

No recommendations are suggested for future iterations of the city's comprehensive plan.

Permian Basin Regionally Coordination Transportation Plan (2022)

The Regionally Coordinated Transportation Plan (RCTP) is a five-year plan consisting of an inventory of transportation resources and a comprehensive needs assessment for counties within the Permian Basin Regional Planning Commission purview. Performance measures are given as tools to measure the progress of transportation initiative implementation.

Inventory of transportation resources:

Pecos, Texas has limited public transit options.

- A van service run by TRAX operates in the city on a per call basis. Reservations must be made at least a day in advance.

- Greyhound buses provide intercity transportation.
- West Texas VA Health Care - Veteran Transportation Service (VTS) provides transportation to and from VA medical centers for qualified veterans (the nearest VA medical center to Pecos is in Big Springs, TX).

There is no on demand transit system that provides intracity transportation in Pecos. Private transit services that operate in the city include:

- Limited client transport by the Family Crisis Center of the Big Bend to access services such as medical care.
- Demand-response transportation for Pecos residents 60 years of age or older run by the Reeves County Senior Center.
- Corporate, airport, and charter shuttle services run by Midland Shuttle Services, Inc.

Comprehensive Needs Assessment:

Stakeholder and community input was collected to identify transportation needs for the Permian Basin region. Stakeholder input was gathered from entities that provide transportation/mobility services to residents. Most of this input is not county or city specific. Results provide a general picture of transportation needs in the region but may not provide the insight needed for more localized solutions. Community input, gathered in the form of surveys and workshops, is similarly general with the exception of one or two graphs. Only one survey response was returned for Reeves County and Pecos City so it is not recommended that this community data be used to influence city level decisions at this point in time.

Initiatives for coordination:

Initiatives for coordination that may affect Pecos residents include:

- Investigating income-based ride subsidies for Greyhound trips linking outlying communities with Midland/Odessa/El Paso.
- Redesigning service information materials for TRAX including the website and brochures so that individuals are aware of the public transportation options in their communities.
- Resolving TRAX driver recruitment and retention problems (likely attributable to a combination of low wages and non-traditional work schedules).
- Introducing a single, toll-free number for TRAX ride reservations.
- Encouraging rural communities to provide sidewalks and other bicycle/pedestrian infrastructure to facilitate mobility for those who utilize non-motorized transportation within their home community.

- Creating a one-stop call center covering the 22-county region, inclusive of an online platform where you can view all transportation services available in a county or area.

Safety Policy Recommendations

The 2022-2026 RCTP offers insight into regional transportation trends. There is minimal city or county specific, community-backed data. Constraints aside, the next five-year plan may benefit from a greater amount of community specific input. The 2022 RCTP does provide a more comprehensive description of existing transit options in cities and counties within the region, including Reeves County and Pecos. Transportation services available in other counties and cities in the region that are not presently available in Pecos may be implementable locally, as well. Collaboration between transportation entities in the region is encouraged to promote a shared understanding of what is possible.

Permian Basin Freight and Energy Sector Transportation Plan (2020)

The Permian Basin is the second largest oil and gas producing region in the world. Because of this, freight activity is high. Investment in the region's transportation system, however, has not kept up with the existing level of freight activity. The Permian Basin Freight and Energy Sector Transportation Plan was written to gauge current and future freight movement activity in the Permian Basin and to determine freight transportation challenges and needs. Strategies and an implementation plan are given to address the challenges the region is facing.

One of the top freight transportation challenges the Permian Basin is facing is safety. The estimated annual cost of truck-involved crashes in the region between 2014 and 2018 was $493 million. Beyond cost, serious injuries and fatalities resulting from truck involved crashes have powerful social impacts. Safety needs ratings are given for roadways on the Highway Freight Network on page 135 of the plan. Other freight challenges the region is facing can be reviewed in Section 2 of the Permian Basin Freight and Energy Sector Transportation Plan.

Policy and Programmatic Strategies to Address Safety:

- Develop a regional technology-based freight safety and operations (TSM&O) program using Transportation Systems Management (TSM) and Transportation Demand Management (TDM).
- Develop wayfinding and signage guidelines for urban and rural areas to decrease sudden stops and U-turns.
- Develop a regional Incident Management Program with a focus on commercial vehicles.
- Explore opportunities, regulations, and policies for intraregional mass transit or van-pool programs servicing major employment sites.

Operational and Technology Strategies to Address Safety:

- Conduct a traffic signal timing study for urban arterials on the PBHFN.
- Establish a regional Traffic Management Center with a focus on improving truck safety and mobility.
- Deploy advance warning systems on critical PBHFN routes and at safety hotspots.

Infrastructural Strategies to Address Safety:

- Provide turn lanes, passing lanes, shoulders, or additional lane capacity on rural two-lane roadways.

Safety Policy Recommendations

The Permian Basin Freight Plan summarizes freight logistics at a lower-level scope than the Pecos Comprehensive Plan is capable of. Many categories are touched upon including safety on roadways used by freight traffic. Although implementation strategies in this plan are geared towards state agencies, policy, operational and infrastructural strategies highlighted in the plan can be put in place at a local level. Top considerations for Texas, Pecos, and the Region are as follows:

- The state should work with the MPO, the Permian Basin Freight Advisory Committee, local leaders, and private sector transportation stakeholders to convene a planning session for the first biennial Permian Basin Freight and Energy Sector Transportation Summit.
- The state should coordinate with local planners to assess the feasibility of integrating freight and truck considerations into traffic impact analyses for industrial and commercial developments.
- The state, county, or city should develop and implement driveway separation and consolidation guidelines on PBHN facilities.
- The state should develop a standardized signage program for the Permian Basin to include reference location signs (mile markers) and commercial and leased roads driveway signing.
- The state should develop a comprehensive freight data collection, repository, and reporting program that includes formulated rules, agreements, and guidelines for obtaining, sharing, and using public and private sector data sources.

Texas Strategic Highway Safety Plan (2022)

The Texas Strategic Highway Safety Plan (SHSP) is a multidisciplinary approach to reducing fatalities and serious injuries on state and local roadways. Crash data in the plan was pulled from Texas Department of Transportation's (TxDOT) Crash Records Information System (CRIS) and covers the five-year period between 2017 and

2021. To break down general statistics into meaningful information, emphasis areas were derived from collected crash data.

Key Statistics:

- Between 2017 and 2021, there were 17,562 crashes resulting in fatalities.
- There were 67,316 suspected serious injury crashes during this period.
- Total crash related fatalities equaled 19,384 indicating that, out of the 17,562 fatal crashes, some resulted in more than one fatality.
- Total crash related suspected serious injuries equaled 82,497.

Emphasis Areas:

The emphasis areas featured in this plan are roadway and lane departures; speed related crashes; intersection safety; occupant protection; impaired driving; distracted driving; vulnerable road users; and post-crash care. For each emphasis area, the SHSP establishes countermeasures and strategies for implementation. This technical memo will call attention to strategies for top priority emphasis areas. The rest can be reviewed in the SHSP document.

The emphasis area resulting in the highest number of fatal and serious injury crashes is roadway and lane departures (35% of fatal and serious injury crashes were caused by a roadway or lane departure). 45% of roadway/lane departures occurred on urban roads and 55% occurred on rural roads. Strategies to reduce this crash type are

- Keep vehicles from encroaching on the roadside or opposite lane.
    - E.g. Revise roadway configuration to provide additional paved recovery area.
- Minimize the consequences of vehicles leaving the road.
    - E.g. Implement barriers, median treatments, and forgiving roadside objects.
- Minimize the likelihood of crashing in adverse conditions.
    - E.g. Identify and address locations subject to nighttime and wet-weather run-off-the-road crashes.

The emphasis area resulting in the second highest number of fatal and serious injury crashes is unsafe travel speeds. 32% of fatal and serious injury crashes were speed related. Strategies to reduce this crash type are

- Establish target speed limits and road characteristics to reduce speeding on state, county & local roadways.
    - E.g. Establish and/or disseminate procedures for establishing speed zones (regulatory and/or advisory). Coordinate between city, county, and state networks.

- Improve quality of crash data contributing factors related specifically to speed.
    - E.g. Educate law enforcement on the uses of crash data to highlight the need for accurate and comprehensive reporting with special emphasis on speed related characteristics.
- Leverage data to improve engineering, education, and enforcement.
    - E.g. Develop case studies to document and communicate how cities implement safe design speeds in various settings

Safety Policy Recommendations

The Texas SHSP does not account for the most up to date crash data. Between now (mid- 2026) and the SHSP update in 2028, it is not recommended to rely on the plan's crash statistics. The plan can be used, though, as a source of inspiration for local countermeasures and implementation strategies. Similar implementation plans can be applied to top crash types in Pecos.

Summary of Safety Policy Recommendations from Adopted Plans

- Update subdivision policies to support high connectivity standards at new development. *(Pecos Comp. Plan)*
    - Establish minimum connectivity index scores at new development.
    - Require multiple exits from new residential development, ideally in all directions.
    - Require shorter maximum block lengths (not to exceed 600 ft)
- Develop and implement access management guidelines on Permian Basin Highway Freight Network *(PB Freight Plan)*
- Integrate freight and truck considerations into traffic impact analyses *(PB Freight Plan)*
- Collaborate with regional stakeholders to convene a biennial planning session for freight sector (PB Freight Plan)

Safety Policies: Adopted Ordinances

The Pecos City, Texas Code of Ordinances was reviewed for its incorporation of roadway design safety elements.

Development ordinances and safety policies are ranked on their strength of executing an industry-accepted best practice using a four-tiered ranking system:

Strong: the ordinance clearly articulates the best practice and meets or exceeds the minimum standards

Solid: the minimum standards of the best practice could be met at the discretion of the municipal staff, but are not clearly articulated in the ordinance or policy

Needs Improvement: Either the minimum standard established in the ordinance does not meet the minimum standards of the industry best practice, or the ordinance requirement contradicts a best practice's minimum standards

Not Achieved: No mention of this best practice can be found in the ordinance or policy.

Pecos City Ordinance Recommendations

- Adopt ordinance to require lighting improvements at intersections and crossings during development or significant redevelopment.
- Conduct a lighting survey on the HIN to identify areas that need improvement.
- Adopt minimum standards for distance between driveways. Require shared driveways and inter-parcel connections where possible to extend spacing between access points.
- Update subdivision policies to support high connectivity standards at new development.
    - Establish minimum connectivity index scores at new development.
    - Require multiple exits from new residential development, ideally in all directions.
    - Require shorter maximum block lengths (not to exceed 600 ft)
- Adopt bike rack design standards and require at all redevelopments and significant improvements (i.e. parking lot reconfigurations and building additions).
- Adopt pedestrian ramp requirement that conform with ADA standards.
- Adopt sidewalk design standards for different roadways classifications. Consider requiring construction of sidewalks at all new development.
- Adopt minimum crosswalk and pedestrian signal standards (possibly through Complete Streets Manual adoption) and require during repaving.
- Adopt ordinance to set school zone speed limits to 20 MPH during active hours.
- Adopt ordinance to set speed limits to 25 MPH on public roads surrounding public parks.
- Adopt ordinance to set residential street speed limits to 25 MPH.

- In addition to shrub maintenance at intersections, require that line of sight be unobstructed by obstacles such as signs or walls.
- Adopt a traffic calming policy. Consider requiring minimum standards for spacing of traffic calming countermeasures.
- Adopt roadway shoulder requirements for different roadways classifications.
- Adopt and implement Complete Street Design Guide.
- Adopt annual speed study and add capital improvement line item in budget for safety improvements.
- Adopt a Vision Zero policy. Create a line-item funding source for Vision Zero implementation.

Safety Education / Enforcement: Critical Safety Issues

Distracted Driving Education/Enforcement Recommendations

Distracted driving accounts for 38% of all crashes in Pecos City and 34% of fatal and serious crashes.

Existing Strategies:

Existing programs in Texas to discourage distracted driving include the Impact Texas Drivers (ITD) program and TxDOT's *Talk. Text. Crash* campaign. Impact Texas Drivers, hosted by the Texas Department of Public Safety, is a statewide video module program that features real-life stories to spread awareness about the impacts of distracted driving. The program is required for teen drivers aged 15-17 after the completion of an approved parent-taught or minor driver education course and prior to taking the driving skills test. The program is also required for drivers aged 18-24 who are required to complete an adult driver education course. The program is not required for drivers 25 years or older, but can be required at a local level as a condition of receiving a distracted driving ticket.

Talk. Text. Crash, under the umbrella of the *Drive Like a Texan* safety initiative, is a statewide public awareness campaign on the dangers and risks of distracted driving. The campaign addresses and discourages all forms of distracted driving while simultaneously making drivers aware of relevant Texas laws through traditional paid media, public service announcements, grassroots outreach and partnerships, and digital and social media. Videos, radio promotions, and printed materials are available for disbursement through TxDOT's website.

Future Strategies:

- Local law enforcement can run a high-visibility enforcement campaign

Improper Occupant Protection Education/Enforcement Recommendations

43% of fatal crashes and 26% of serious injury crashes in Pecos City involve improper restraint use.

Existing Strategies:

Other safety campaigns under the umbrella of *Drive Like a Texan* are *Click It or Ticket* and Child Passenger Safety. *Click it or Ticket* is an annual campaign reminding drivers and passengers to buckle up whenever they ride in a car. Like Talk. Text. Crash, this campaign consists of videos, radio promotions, and printed materials that are available for disbursement through TxDOT's website. Materials for all *Drive Like a Texan* campaigns are available in English and Spanish.

In addition to educational materials provided by TxDOT on child passenger safety, each state district office offers free car seat checks for those driving with young children. Inspections are free and conducted by certified technicians who ensure that the chest clip is positioned correctly, harness straps are in the right slot, correct seat belt path is used, and that the safety seat is not installed too loosely.

Future Strategies:

- Local emergency services can conduct free car seats checks

Young Driver (Ages 20-24) Education / Enforcement Recommendations

Nearly 1 in 3 crashes in Pecos City between 2021 and 2025 involved young adult drivers.

Existing Strategies:

Most safety campaigns are not directly aimed at this age group, but general programs and materials can affect young adult driving behavior. General transportation safety programs and strategies include Impact Texas Drivers and *Drive a Safe Speed*. *Drive Sober. No Regrets* is an example of a campaign targeted towards young adult drivers. *Drive Sober. No Regrets* emphasizes the long-lasting consequences of impaired driving for young adults and college students in Texas. Print resources including bar posters, mirror clings, and coasters are provided by TxDOT and are effective tools for reaching the target audience when it matters most.

Drive a Safe Speed, hosted by TxDOT, reminds motorists that driving too fast can be both dangerous and expensive and urges drivers to slow down. Key statistics are displayed on the campaign's main webpage to demonstrate the effect that speeding has had statewide. Speed related safety tips are also given on this webpage to encourage safer speeds and to reduce the negative impacts of speed-related crashes. Video, print, and radio resources help establish these points.

Future Strategies:

- City can partner with local employers to offer safe driving modules for young adults

Older Driver (Ages 60+) Education/Enforcement Recommendations

Older drivers are involved in 21% of all crashes and 10% of severe crashes in Pecos.

Existing Strategies:

Texas A&M and the National Safety Council market existing education strategies for older drivers. *Driving for Life* by Texas A&M is an educational campaign targeted towards drivers 60+ years of age. The campaign goes beyond typical multi-media outreach strategies, offering a safety toolkit that includes games and worksheets. Pecos City can partner with local senior groups and medical practices to disburse the interactive safety toolkit.

The National Safety Council (NSC) offers mature driver defensive driving courses. These courses are offered both online and in person depending on where you are located. Older drivers who successfully complete the course are eligible for premium reductions with some insurance companies.

Future Strategies:

- City can offer free vehicle safety inspections for older adults

Bike/Pedestrian Education/Enforcement Recommendations

Existing Strategies:

Share the Road is a safety campaign for multiple travel modes. Its focus is on educating cyclists, drivers, and pedestrians on how to interact with heavy weight trucks on the road. While it is important for truck drivers to be trained with safe driving habits, it is equally important for other people on the road to be aware of how to safely navigate around them. *Share the Road* hosts media and community events across the country. Event requests can be made on the *Share the Road* webpage.

Bike Law University is a series of resources created by the League of American Bicyclists to educate cyclists on traffic laws pertaining to riding a bicycle in their state. Bike law topics range from safe passing laws and vulnerable road user laws to sidewalk riding and helmet laws. An example of a vulnerable road user law in Texas is the creation of a distinct or increased penalty for people who injure or kill a cyclist or pedestrian.

Future Strategies:

- Partner with groups such as the West Texas Gazelles to host group walk/bike sessions.

APPENDIX D: COUNTERMEASURES MEMO

TABLE OF CONTENTS

Introduction 3
Core Countermeasures 3
- Access Management 4
- Sidewalk Connectivity 4
- Dynamic Speed Monitoring 4
- Lighting Upgrades 4
- High Visibility Crosswalks 5
- Leading Pedestrian Interval 5
- Retroreflective Backplates on Traffic Signals 5
- Protected Left-Turn Signal 5
- Roundabouts 5
- Advance Warning Signals 5
- Convert to All-Way Stop 6
- Lane Delineators/ Curb Extensions 6
- Traffic Signal 6
- Intersection Lane Marking 7

Applying Countermeasures to the High Injury Network 7

Introduction

As part of our ongoing efforts to improve roadway safety and reduce crash rates in Pecos, this memo presents a comprehensive set of data-driven countermeasures tailored to specific intersections and corridors. These recommendations are grounded in detailed crash analyses and supported by proven strategies from the Federal Highway Administration's (FHWA) Crash Modification Factors (CMF) Clearinghouse.

The goal here is not just to list treatments, but to also connect the dots between observed crash patterns and practical engineering solutions. Whether it's rear-end collisions caused by poor signal timing, pedestrian risks due to low visibility, or angle crashes from unclear turning movements, each countermeasure is selected to directly address the underlying issues at each location.

This document is organized to first introduce the core safety treatments that have consistently shown effectiveness across various roadway environments. Following that, you'll find location-specific recommendations, where these treatments are applied based on crash data, roadway geometry, and operational conditions.

Core Countermeasures

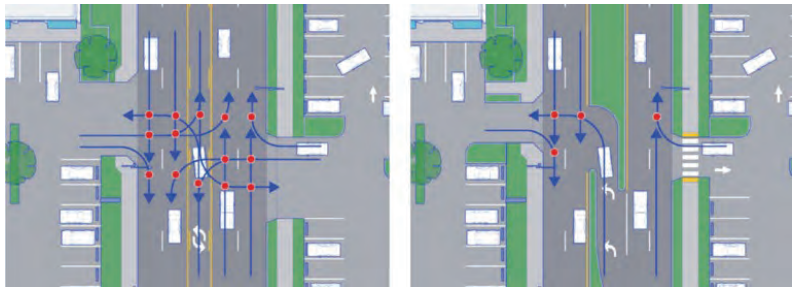
It's important to highlight the foundational safety strategies that guide this analysis. Based on the type of crashes occurring in Pecos, there are 14 core countermeasures representing a toolkit of proven engineering treatments that consistently demonstrate effectiveness in reducing crash frequency and severity. Each one targets specific crash types — like rear-end, angle, sideswipe, or pedestrian-related incidents — and is backed by research and real-world application.

Think of this section as a reference guide: it outlines what each countermeasure does, why it matters, and how it contributes to safer intersections. These strategies form the backbone of the location-specific solutions that follow.

Access Management

Managing the number of entry and exit points from the roadway reduces conflict points and addresses the high number of intersection-related crashes. Examples of access management projects can include medians and restricted crossings, shared driveways, and spacing improvements between commercial driveways and roadway intersections.

Because there are many forms of access management techniques, a corridor study assessing the specific needs of the roadway should be conducted to ensure that the implementation projects balance the needs of the local businesses with necessary safety improvements.



Sidewalk Connectivity

Sidewalks separating pedestrians from motor vehicles, thereby greatly improving the safety of pedestrians. The Pecos sidewalk network is not complete, and gaps exist in key commercial corridors. Completing these sidewalk gaps and improving the design of all sidewalks is a countermeasure proposed along corridors in the HIN.

Dynamic Speed Monitoring

Installing speed feedback signs alert drivers when they are speeding. This can help control approach speeds on long arterials where run-off-road or rear-end crashes are linked to high-speed differentials.



Lighting Upgrades

Ensuring that roadway lighting is uniform, continual, and bright can help address nighttime and pedestrian crashes by improving driver visibility of lanes, signals, and crosswalks.

High Visibility Crosswalks

Bold reflective stripes and patterns delineating crosswalks improve driver awareness of crossing pedestrians.



Leading Pedestrian Interval

A leading pedestrian interval (LPI) improves pedestrian safety by allowing people to enter a crosswalk 3 – 7 seconds before vehicles receive a green light.

Retroreflective Backplates on Traffic Signals

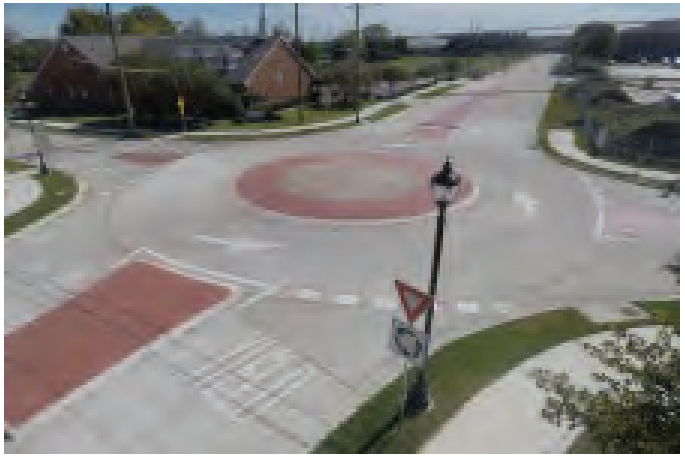
Adding three-inch retroreflective backplates to traffic signals improves signal visibility in both day and night conditions. This can help reduce rear-end and red-light-related crashes.

Protected Left-Turn Signal

Dedicated left turn signals help to address left-turn and angle crashes by eliminating risky gap acceptance and improving clarity for turning drivers.

Roundabouts

A roundabout is a circular road intersection where traffic moves counterclockwise around a central island. By essentially eliminating all left turn movements, roundabouts provide safer, slower continuous traffic flow without traffic lights.



Advance Warning Signals

Advance warning flashers can be used to warn approaching drivers of downstream stops or intersections, which allows them more time to react and slow down.

Convert to All-Way Stop

Pecos stop-controlled intersections vary across the city between 4-way stops (also called All-Way stops) and 2-way stops. It is not always clear when the crossing traffic has the right-of-way or is also expected to stop. Converting a 2-way stop to a 4-way stop reduces crashes at an intersection. Another option is to add clarifying signage below a posted stop sign telling drivers whether the crossing traffic stops or has the right-of-way.



Lane Delineators/ Curb Extensions

Lane delineators are sometimes called curb extensions. Although the design of a curb extension can vary depending on the community, the proposed design for Pecos are high-reflective paint/tape and raised markers.





Traffic Signal

Where warranted, traffic signals control turning movements at intersection and improve safety at that specific location.

Intersection Lane Marking

Adding arrows and other pavement markers within the driving lane provides drivers early driver guidance leading up to complex, multi-lane intersections. This allows drivers to move into the correct lane earlier, reducing lane-change and sideswipe issues.



Applying Countermeasures to the High Injury Network

Building on the foundation of the core safety countermeasures, the next section of this memo focuses on how these treatments are applied to the High Injury Network (HIN). These locations were selected based on crash frequency, severity, and contributing factors such as nighttime visibility, turning conflicts, and congestion.

While not every location requires all core countermeasures, each recommendation has been matched with a tailored set of strategies that directly address its unique crash patterns. the goal is to implement practical, data-supported solutions that enhance safety and mobility.

The following pages detail the HIN in Pecos with each location including a breakdown of crash types and the corresponding countermeasures proposed to mitigate those risks.

The following table summarizes the proposed countermeasures along the HIN corridors and intersections.

HIN Intersection Recommendations

	Cedar St (285)								
	E D Street	E 3rd St (Business 20)	E 4th St	E 7th St	E 12th St	E 13th St	E Walthall St	Pinehurst St (Service Road)	Co Rd 116
Most Common Crash Types	Angle, Not a Collision with a Vehicle, Rear-End	Not a Collision with a Vehicle, Angle	Angle, Not a Collision with a Vehicle, Rear-End	Angle, Not a Collision with a Vehicle	Angle	Angle, Sideswipe	Angle, Sideswipe	Head-On, Read-End, Sideswipe	Angle
Access Management									
Sidewalk Connectivity									
Dynamic Speed Monitoring									
Lighting	X				X	X	X		X
High Visibility Crosswalks	X	X	X	X	X	X	X		
Leading Pedestrian Interval		X		X	X		X		
HAWK Signal									
Retroreflective Backplates		X						X	
Protected Turn Light		X						X	
Roundabouts									
Advance Warning Signals									X
Convert to All-Way Stop									
Lane Deliniators/ Curb Extensions							X		X
Install a Traffic Signal			X				X		
Intersection Lane Markings		X							

	E 3rd St (Business 20)			S Ash St	S Eddy St			State Highway 17	Hickory St
	Orange St	S Ash St	S Elm St	E 4th St	W 7th St	W 8th St	W Walthall St	W County Rd 204	N Pecos Dr W
Most Common Crash Types	Not a Collision with a Vehicle, Sideswipe	Sideswipe	Angle	Angle	Angle, Head-On	Angle, Head-On, Not a Collision with a Vehicle	Angle, Head-On	Angle, Head-On	Not a Collision with a Vehicle
Access Management									
Sidewalk Connectivity									
Dynamic Speed Monitoring									
Lighting	X	X	X	X			X	X	X
High Visibility Crosswalks	X	X	X	X	X	X	X		
Leading Pedestrian Interval									
HAWK Signal									
Retroreflective Backplates									
Protected Turn Light									
Roundabouts					X				
Advance Warning Signals								X	
Convert to All-Way Stop				X					X
Lane Deliniators/ Curb Extensions						X			
Install a Traffic Signal							X	X	
Intersection Lane Markings									

HIN Corridor Recommendations

	Most Common Crash Types	Access Management	Sidewalk Connectivity	Dynamic Speed Monitoring	Lighting	Advance Warning Signals	Lane Deliniators/ Curb Extensions
Cedar Street (285)	Angle, Head-on, Sideswipe	X	X	X			
3rd Street (Business 20)	Angle, Head-On, Not a Collision with a Vehicle		X	X	X		
West Walthall Street	Angle, Sideswipe		X		X		X
South Eddy Street	Angle, Not a Collision with a Vehicle		X	X	X		
South Bickley Avenue (17)	Angle	X		X	X	X	
Western Avenue (County Road 201)	Angle						
South Country Club Drive	Angle			X			
West County Road (County Road 116)	Not a Collision with a Vehicle			X	X		
South Ash Street	Angle, Sideswipe		X				X
East 12th Street	Angle		X		X		
West 8th Street	Angle						
S Elm Street	Angle		X		X		
East 13th Street	Angle, Sideswipe		X		X		
285 (South Segment)	Sideswipe, Head-On			X		X	X

PECOS™

★ TEXAS ★

Town of Pecos City