



Grayson County Metropolitan Planning Organization 2023 Safety Planning Report

Transportation Planning and Programming Division

Table of Contents

| | Page |
|--|------|
| List of Figures..... | ii |
| List of Tables | iii |
| Safety Planning Report Profiles..... | 1 |
| Grayson County Metropolitan Planning Organization..... | 1 |
| Appendix A. Interview Documentation | 17 |

List of Figures

| | Page |
|---|------|
| Figure 1. Location of Fatal Crashes in Grayson County MPO Region from 2018 to 2022 | 2 |
| Figure 2. Grayson County MPO Overall Crash Trends over Five-Year Period | 3 |
| Figure 3. Grayson County MPO Fatality Crash Count — Five Years | 4 |
| Figure 4. Grayson County MPO Suspected Serious Injury Crash Count — Five Years | 5 |
| Figure 5. Grayson County MPO Fatal or Suspected Serious Injury Crash Type Counts — Five Years | 6 |
| Figure 6. Grayson County MPO Top Five Regional Crash Emphasis Areas for Fatal or Suspected Serious Injury Incidents | 7 |
| Figure 7. Grayson County MPO Fatal Crash Counts by Auto and Truck — Five Years | 7 |
| Figure 8. Grayson County MPO Top Five Regional Contributing Factors for Fatal and Suspected Serious Injury Crashes | 8 |
| Figure 9. Hot Spot Map in Grayson County MPO MTP | 9 |
| Figure 10. Decision Lens Raw Results | 10 |
| Figure 11. Performance Measures and Weighting | 11 |
| Figure 12. Freight Crash Analysis in Grayson County MPO 2020 Regional Freight Mobility Plan | 12 |
| Figure 13. Decision Lens ArcGIS Dashboard for Project Prioritization | 13 |

List of Tables

| | Page |
|---|------|
| Table 1. Grayson County MPO 2023 Funding Balances for Category 2, 5 and 7 | 14 |
| Table 2. Grayson County MPO Funded Safety Project Listings..... | 15 |
| Table 3. Grayson County MPO Sample of Unfunded Needs Projects..... | 15 |

Safety Planning Report Profiles

Grayson County Metropolitan Planning Organization

Data-Driven Plan of Action

The following safety trends were determined from analysis of the 2023 Texas Department of Transportation (TxDOT) Crash Record Information System (CRIS) data set examining the data years 2018–2022. As shown in Figure 1, the Grayson County metropolitan planning organization (MPO) has the majority of fatal crashes occurring primarily along US 75, US 82, and SH 91 and around the merger of US 75 and SH 91.

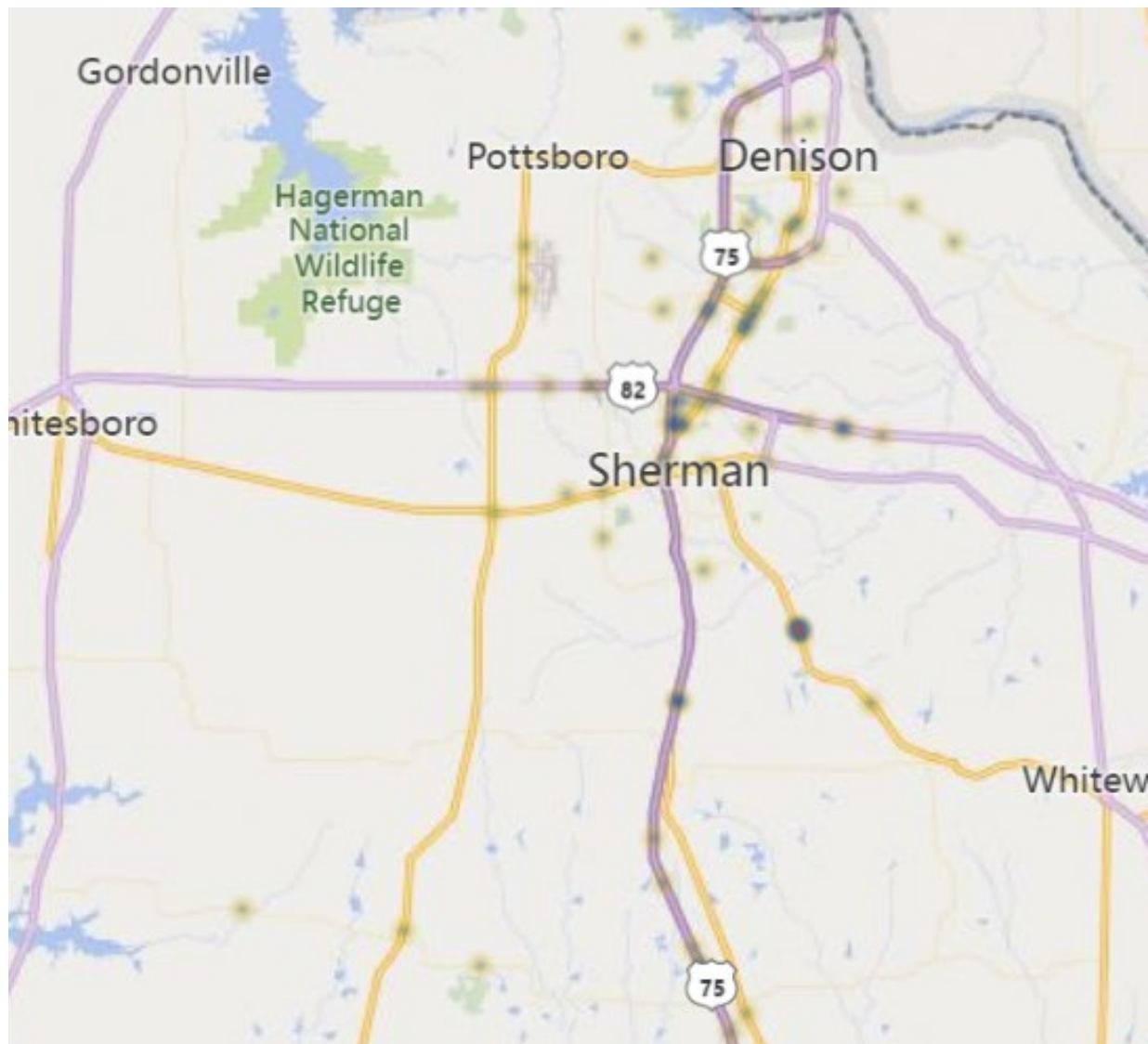


Figure 1. Location of Fatal Crashes in Grayson County MPO Region from 2018 to 2022

Source: TTI Center for Transportation Safety

Figure 2 displays how overall crash counts are trending upward for the Grayson County MPO planning area.

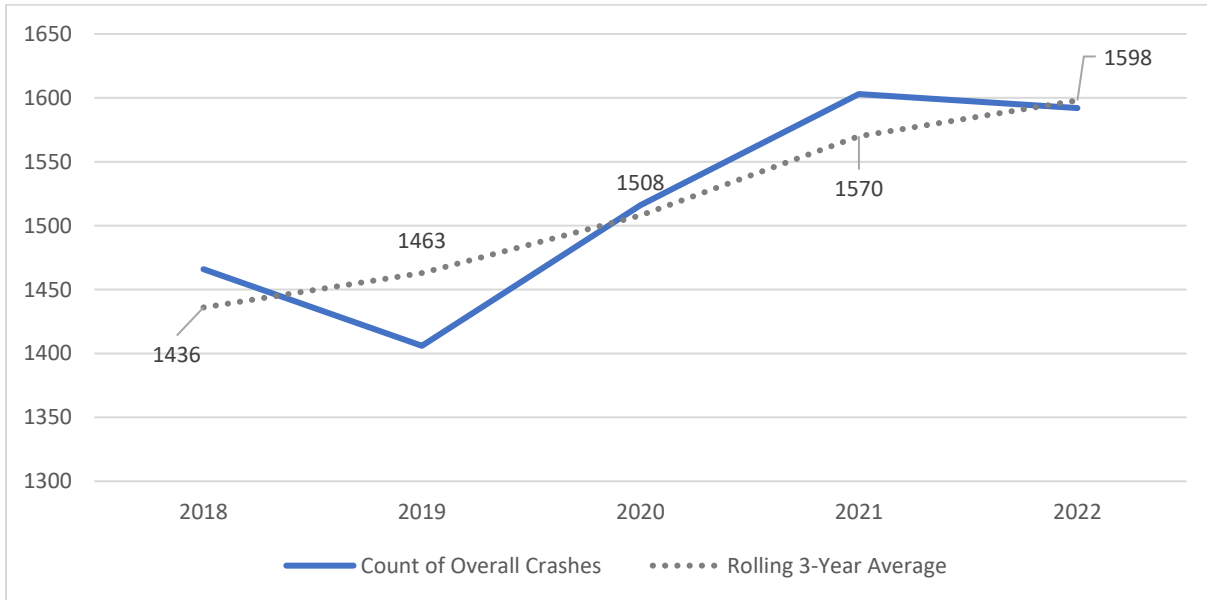


Figure 2. Grayson County MPO Overall Crash Trends over Five-Year Period

Source: TTI Center for Transportation Safety

As depicted in Figure 3, fatal crash counts reflect an upward trend since 2018, rising from 10 to 21 per year on a three-year rolling average.

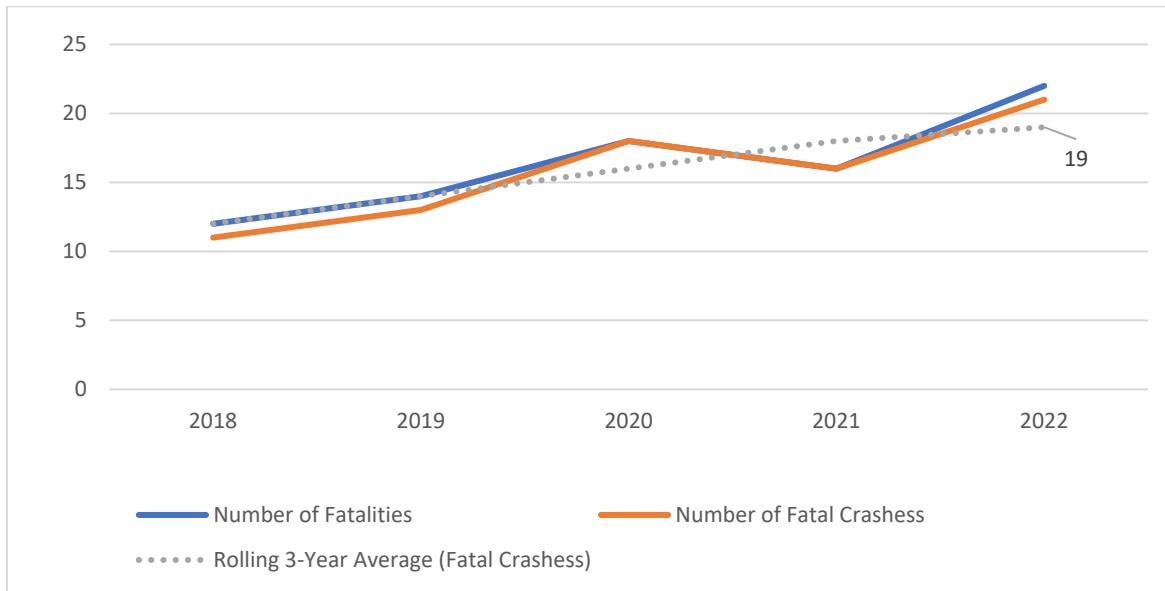


Figure 3. Grayson County MPO Fatality Crash Count – Five Years

Source: TTI Center for Transportation Safety

The rolling three-year average for suspected serious injury crash counts has increased more gradually, as shown in Figure 4, from 76 to 82 per year.

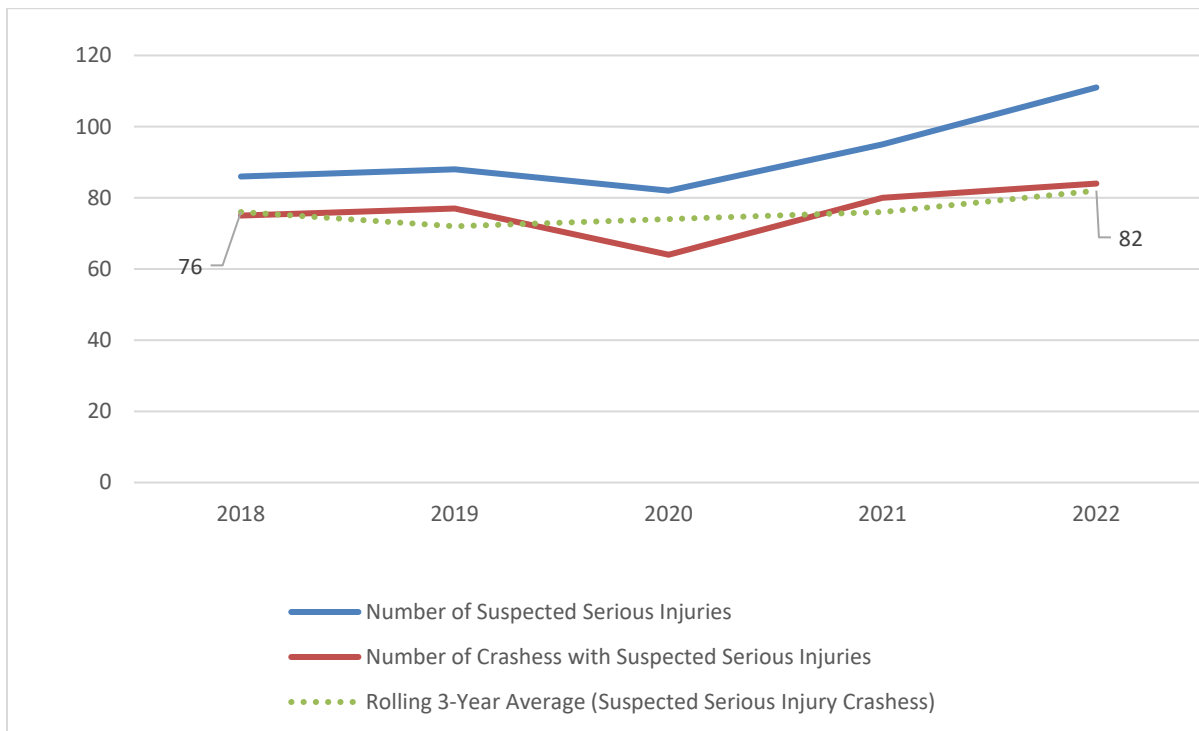


Figure 4. Grayson County MPO Suspected Serious Injury Crash Count – Five Years

Source: TTI Center for Transportation Safety

Figure 5 depicts that, after one-motor-vehicle crashes (OMVs), angled crashes and left-turn crashes (more typical at intersections) are the region's second and third highest average crash type, respectively, for fatal or suspected serious injury crashes.

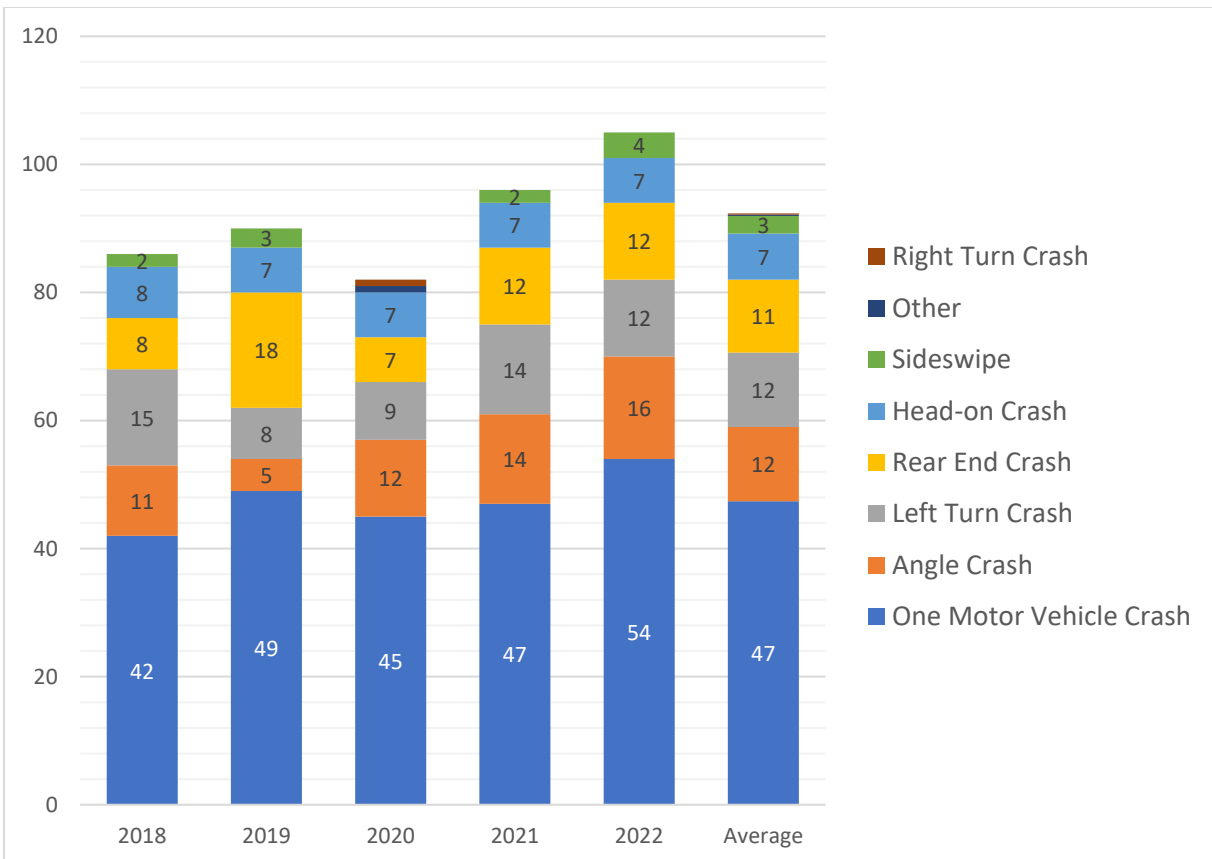


Figure 5. Grayson County MPO Fatal or Suspected Serious Injury Crash Type Counts — Five Years

Source: TTI Center for Transportation Safety

Figure 6 shows how roadway lane departure crashes remain the largest emphasis area for potential crash causes in the region, followed by intersections.

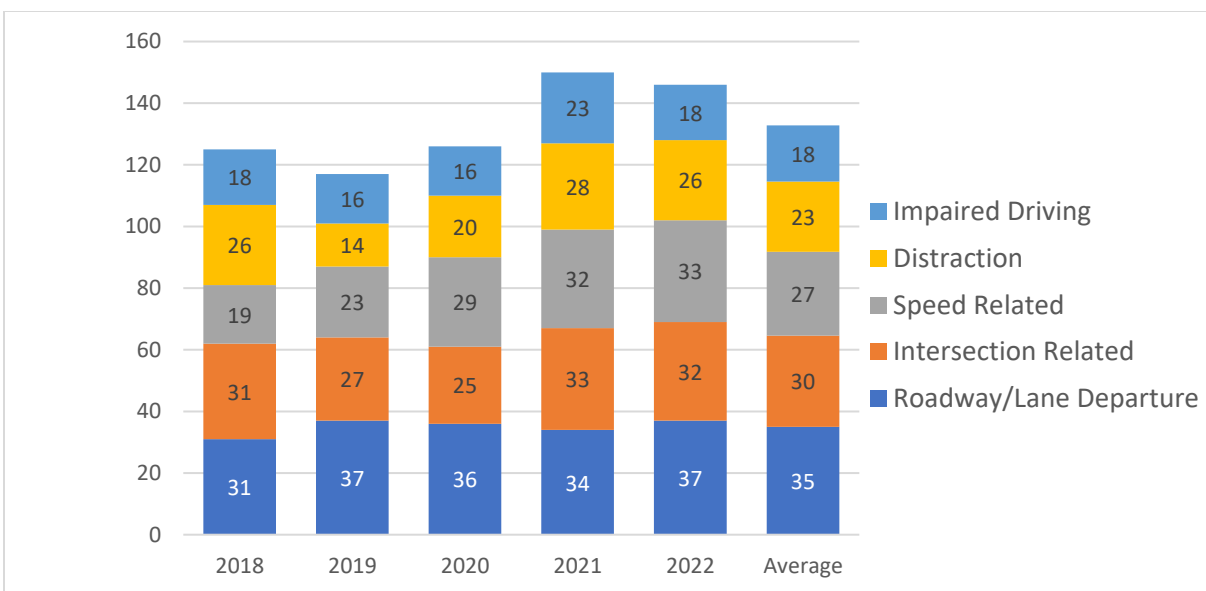


Figure 6. Grayson County MPO Top Five Regional Crash Emphasis Areas for Fatal or Suspected Serious Injury Incidents

Source: TTI Center for Transportation Safety

Figure 7 indicates that trends are moderate for fatal truck crashes.

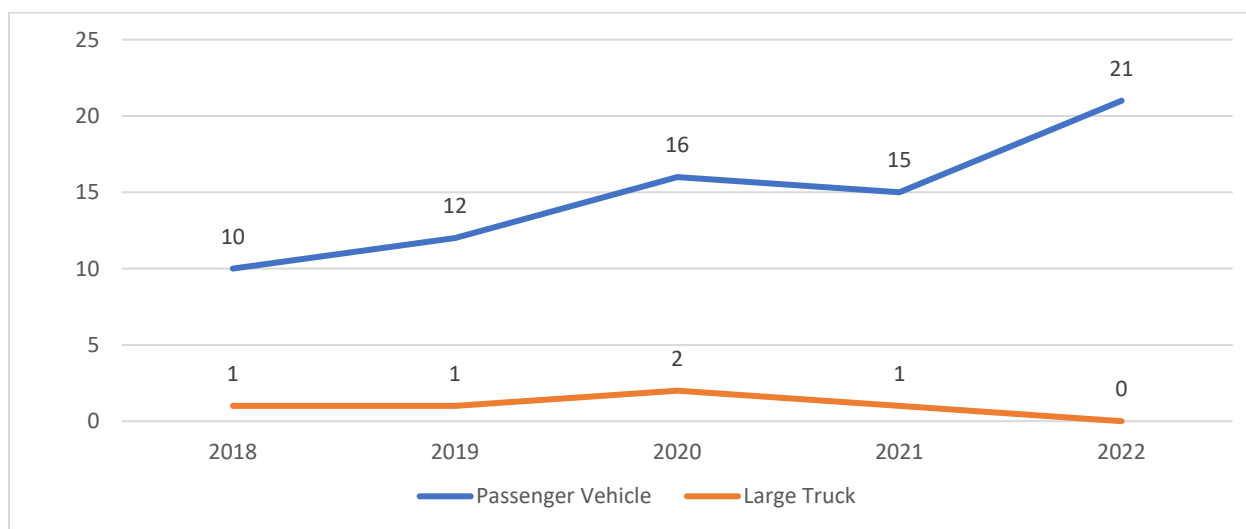


Figure 7. Grayson County MPO Fatal Crash Counts by Auto and Truck – Five Years

Source: TTI Center for Transportation Safety

Figure 8 shows that the two highest contributing factors for fatal and suspected serious injury crashes are failure to control high speeds and driver inattention.

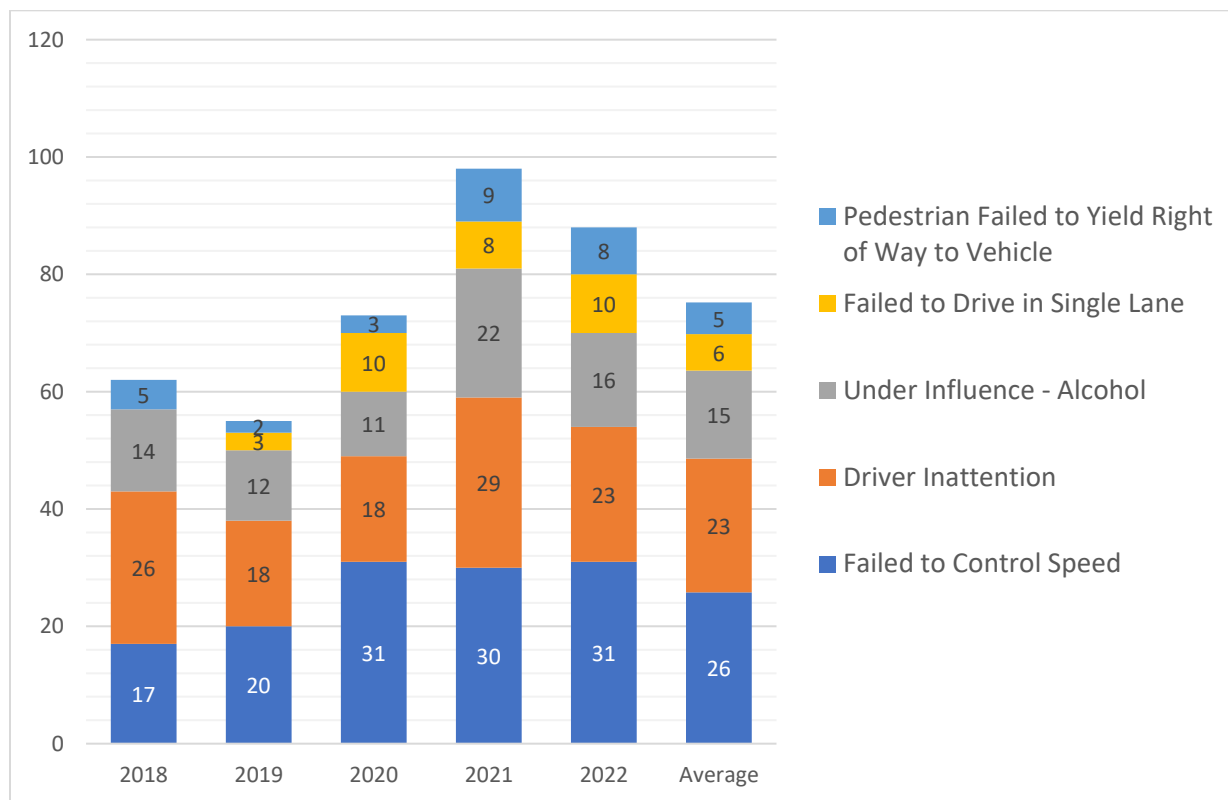


Figure 8. Grayson County MPO Top Five Regional Contributing Factors for Fatal and Suspected Serious Injury Crashes

Source: TTI Center for Transportation Safety

The Grayson County MPO advised that analysis of CRIS data is automated and indirectly performed by Decision Lens and the Performance Metrics Data Integration System (PM-DIS). Decision Lens and CRIS data, integrated with control sections, are used to determine what investments to prioritize in relation to safety. Decision Lens also contains the data and visualization elements. The Grayson County MPO indicated that TxDOT, the city and the county are not collecting and analyzing any separate safety data for their own use or whether they share the results with the Grayson County MPO. Information on hot spots generally comes from occasional calls from the County Sheriff's Office indicating problem areas.

The Grayson County MPO does not have a comprehensive safety plan but does develop hot spot maps and a multi-year crash analysis within the 2045 Metropolitan Transportation Plan (MTP), stratified by pedestrian and bicyclist fatalities, fatality crashes and suspected serious injury crashes. Figure 9 depicts these fatal crash locations between 2013 and 2017. The Grayson County MPO uses PM-DIS to advise where the highest priority control sections

intersect with safety crash hot spots to inform their project selection, planning and development.

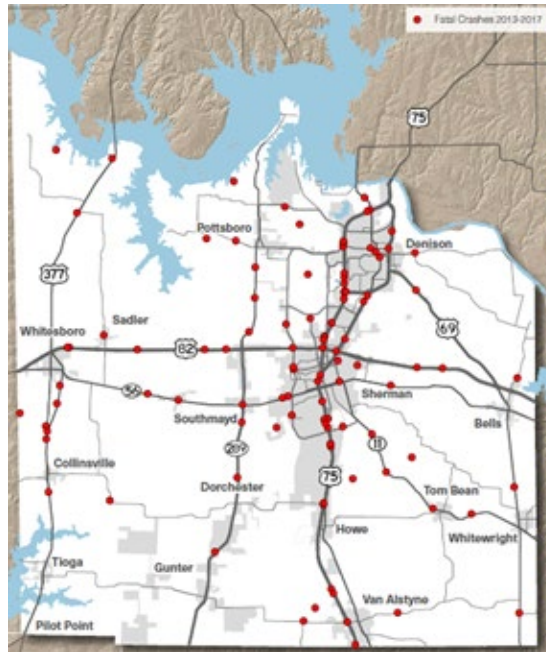


Figure 9. Hot Spot Map in Grayson County MPO MTP

Source: Grayson County MPO 2045 MTP

Figure 10 from the project prioritization chapter of the 2045 MTP shows how the regional goal-based criteria weights approved by the MPO Policy Board connect to projects submitted to the MPO to inform project selection decisions.

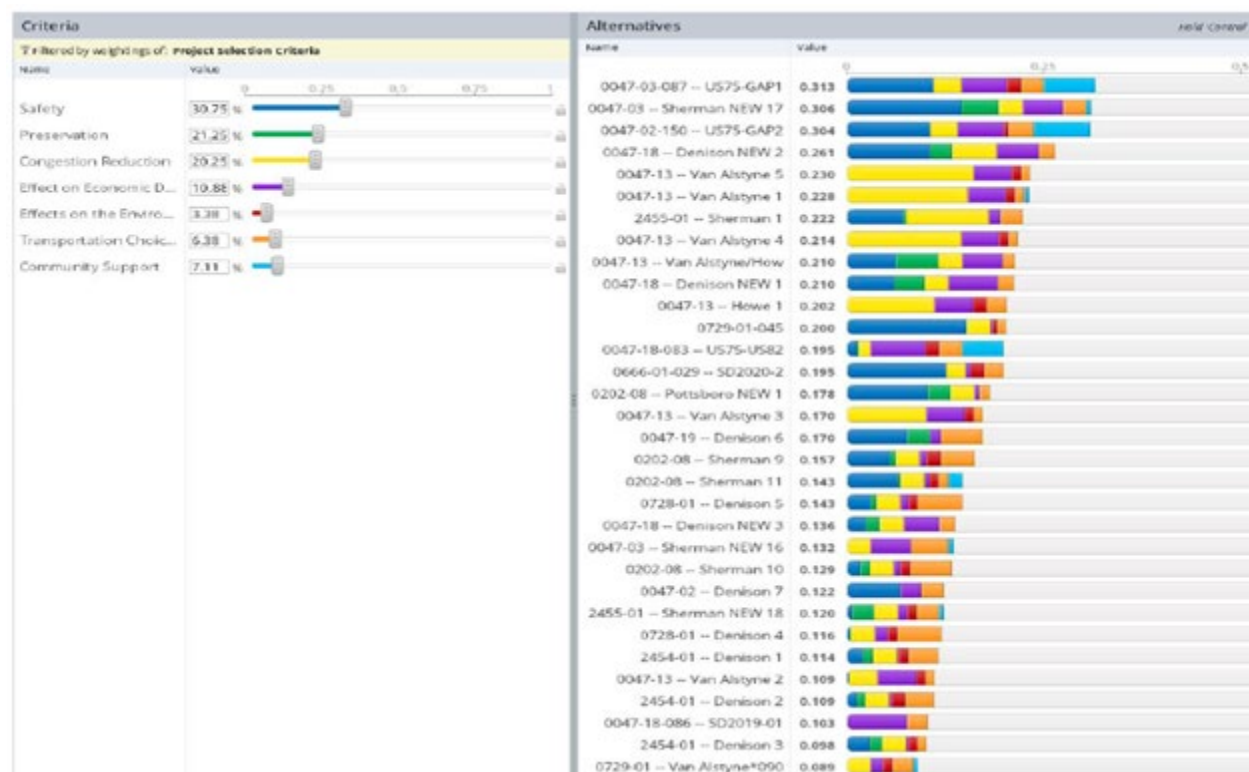


Figure 10. Decision Lens Raw Results

Source: Grayson County MPO 2045 MTP

Performance Measures

The Grayson County MPO adopted TxDOT's safety performance measures and targets for PM 1, which include the total number of traffic fatalities, total number of serious injuries, fatalities per 100 million vehicle miles traveled, and total number of non-motorized fatalities and serious injuries. Projects have been ranked in the MTP based on PM 1 measures using a 30.75 points out of 100 weighting and sub-criteria weights that assign the greatest weight to investments that reduce crash rates (46%) and crash counts (32.5%). The Grayson County MPO displays these criteria in its MTP, and this table is depicted in Figure 11. The Grayson County MPO also adds the local funding ratio to the project selection process, favoring projects with increased local contributions.

| Selection Criteria & Subcriteria | Weight |
|--|--------|
| Safety | 30.75% |
| Crash Count | 32.50% |
| Estimated Impact on Fatal and Incapacitating Injury Crashes | 65.00% |
| Estimated Impact on Total Crashes | 35.00% |
| Crash Rate | 46.25% |
| Estimated Impact on Fatal and Incapacitating Injury Crash Rate | 65.00% |
| Estimated Impact on Total Crash Rate | 35.00% |
| Safety Project Classification (DCIS P1) | 10.00% |
| Societal Cost Savings | 11.25% |

Figure 11. Performance Measures and Weighting

Source: Grayson County MPO 2045 MTP

Coordination and Outreach

Most of the Grayson County MPO's coordination and outreach is with TxDOT. When studies are being conducted or completed, the Grayson County MPO does receive occasional coordination and information request calls from member communities.

For example, when the 2020 regional freight mobility plan was completed, towns located on US 377 and FM 922 contacted the MPO requesting information and voicing safety concerns for sand trucks from the Red River using these routes to ship sand into town. For the region, SH 160 ties into SH 121 near Blue Ridge and has safety implications. Any collision occurring is more likely to cause more severe crashes due to the difference in weight between the sand trucks and passenger vehicles. As shown in Figure 12, the regional freight mobility plan analyzed crashes using data from the TxDOT Bridge Division to document freight use in safety hot spots.

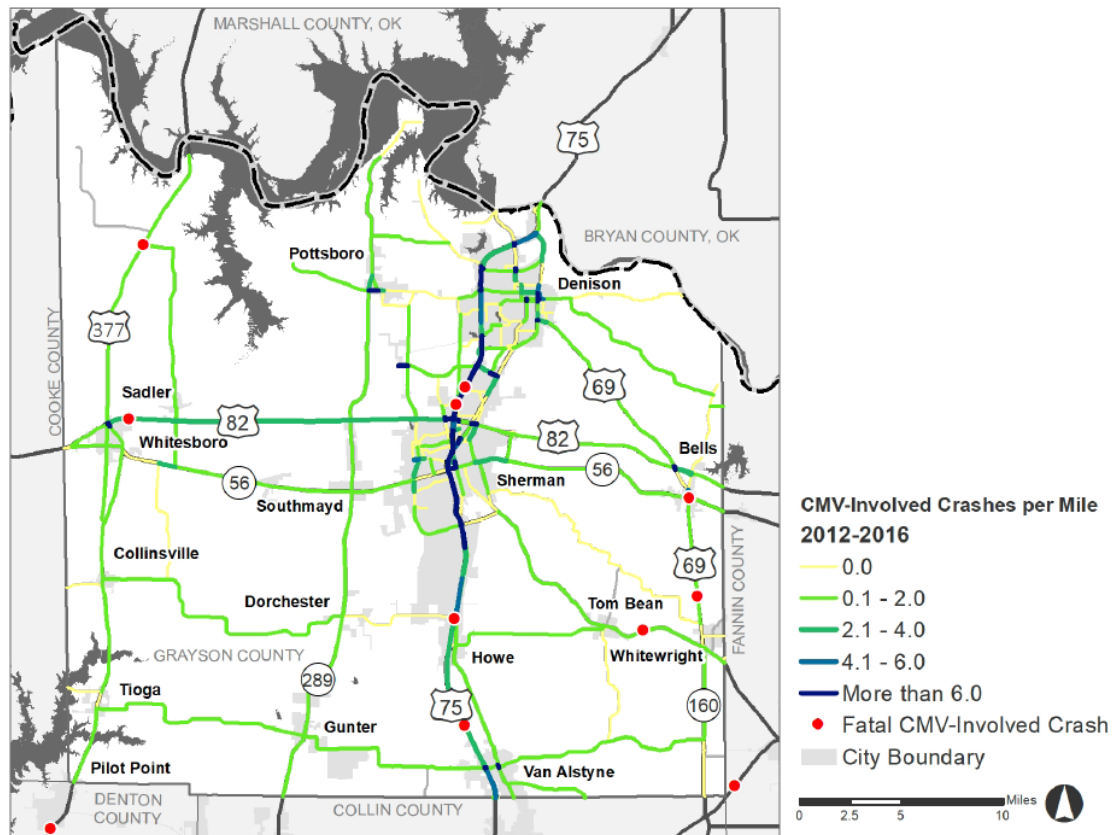


Figure 12. Freight Crash Analysis in Grayson County MPO 2020 Regional Freight Mobility Plan

Source: Grayson County MPO 2020 Regional Freight Mobility Plan

Much of the outreach on safety occurs during the development and update of the Transportation Improvement Program (TIP) and MTP. The only other safety-related documentation maintained by regional stakeholders is the thoroughfare plan and the railroad quiet zones maintained by Sherman and Denison. The Grayson County MPO is not a part of any coalition, partnership or similar groups for advance safety planning.

Alignment with Other Plans and Efforts

Safety-Related Documents and Materials

The Grayson County MPO does not maintain a comprehensive safety action plan though it did have a consultant complete a safety and operations plan in 2022 using \$120,000 in state planning and research funds. This plan's focus is to analyze historic crash data in conjunction with Texas A&M Transportation Institute congestion data in order to consider potential investments in transportation systems management and operations (TSMO) (e.g., intelligent transportation systems, traffic management centers, safety service patrols, and dynamic message signs) around crash hot spots based on this data analysis. The result of this study is a list of prioritized corridors, as well as systemic and corridor-based TSMO improvements and funding opportunities.

In addition, the Grayson County MPO used Decision Lens to develop a process for project prioritization considering the best way to rank projects within Decision Lens. The result was an ArcGIS dashboard with resulting visualizations depicted in Figure 13.

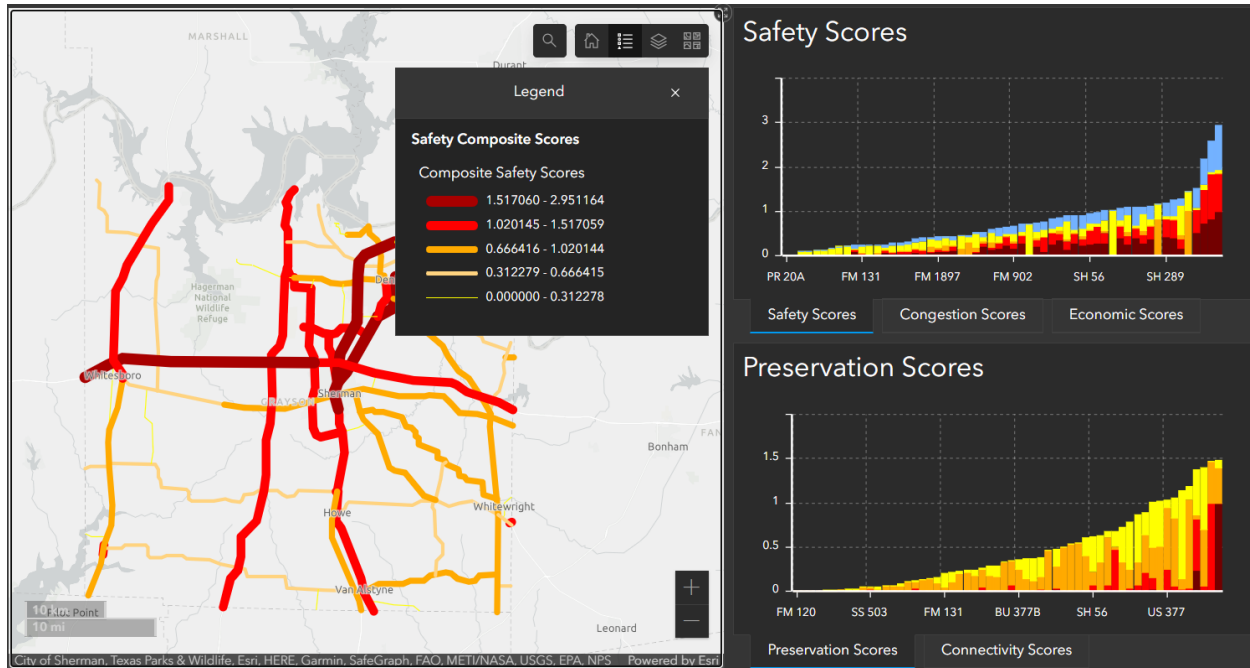


Figure 13. Decision Lens ArcGIS Dashboard for Project Prioritization

Source: Grayson County MPO Regional Performance Measures Dashboard

The Grayson County MPO uses spatial data, heat maps, time-based charts, graphs, and tables to communicate safety information. These are reflected in the MTP, TIP and various regional planning studies.

Work Plan and Priorities

The Grayson County MPO has a project-scoring process driven by PM 1, 2 and 3 as criteria with construction projects programmed in the TIP and included in the Unified Transportation Program (UTP) and MTP. This process is documented in the performance measures section of the Grayson County MPO profile.

The primary safety projects include:

- FY 2023 CSJ 0047-18-089, which is a lane widening of US 75 from four to six lanes;
- FY 2025 CSJ 0047-13-033, which is a lane widening of US 75 from four to six lanes; and
- FY 2026 CSJ 0047-03-091, which is a lane widening of US 75 from four to six lanes.

Primary safety crash hot spots are centered on US 75, which, according to the Grayson County MPO, has interstate-level traffic volumes traversing the corridor traveling at speeds of 80 mph and greater on a roadway designed to handle arterial traffic traveling at 60 mph

with multiple geometric design and line-of-sight challenges. Safety improvements surrounding the update of design standards for US 75 are thus the main focus of the Grayson County MPO, which has capacity-enhancement project descriptions entailing widening from four to six lanes of traffic.

In the most recent March 2023 TIP amendment, 28% of the weight for project selection criteria is dedicated to projects that reduce crash rates and crash counts, address societal cost savings, and have safety project classifications. This weight ensures that most major projects have significant safety influences. This criteria weighting also differs from the 30.75% weight assigned in the most recent 2045 MTP, reflecting that weighting for safety projects does shift over time.

Table 1 illustrates category funding balances over the life of the current 10-year 2023 UTP for Categories 2, 5 and 7 for the Grayson County MPO.

Table 1. Grayson County MPO 2023 Funding Balances for Category 2, 5 and 7
Source: 2023 UTP, TxDOT Category Analysis Report, and TxDOTCONNECT data

| Category 2 | Category 5 | Category 7 |
|--------------|------------|------------|
| \$38,605,125 | \$0 | \$0 |

Non-construction projects and initiatives include the safety and operations study that just completed in 2022. The Grayson County MPO advised that the study identified many regional safety issues, some of which the MPO was aware of and some that it was not. An example of safety issues the MPO was unaware of includes the high number of freight truck crashes along SH 160. Unfortunately, the safety and operations study did not have a granular corridor-based safety analysis that would yield a new direction in safety project priorities. The study did analyze intersections and identify possible investments in improvements. The Grayson County MPO had a traffic modeling analysis built into the safety and operations plan. Most of the outputs of the safety and operations plan will inform a future regional thoroughfare plan. Regional stakeholders are also seeking to identify \$100,000 in local match in order to fund a \$500,000 regional comprehensive safety plan.

Prioritized Projects

Table 2 summarizes priority safety projects that reflect funded regional safety needs. Funded projects were identified in the TIP and MTP based on interview notes.

Table 2. Grayson County MPO Funded Safety Project Listings

Source: Grayson County MPO 2045 MTP, and Grayson County MPO FY 2023-2026 TIP

| CSJ/Project ID | Roadway | Sponsor | Funding Categories | Fiscal Year | Safety Improvement | Reference Document | Funded | Amount |
|--------------------|--|---------|--------------------|-------------|--|--------------------|--------|---------------|
| 0047-03-087 | US 75 from 1417 to SH 91 | MPO | Not listed | 2020 | US 75 from FM 1417 to SH 91 (called "The Gap") and the US 75/US 82 interchange | MTP | Funded | \$188,783,360 |
| 0047-18-089 | US 75 from North Loy Lake Road to US 82 | MPO | 2, 3LC, 4U, 12 | 2023 | Widen from 4 lanes to 6 lanes | TIP | Funded | \$118,238,400 |
| 0047-13-033 | US 75 from FM 902 to Collin County Line (MPO boundary) | MPO | 2, 3LC, 4U, 11, 12 | 2025 | Widen from 4 lanes to 6 lanes | TIP | Funded | \$55,540,800 |
| 0047-03-091 | US 75 from FM 902 to FM 1417 | MPO | 2, 3LC, 12 | 2026 | Widen from 4 lanes to 6 lanes | TIP | Funded | \$59,102,400 |

Table 3. depicts project listings in the unmet needs table in the most recent Grayson County MPO MTP for unfunded projects with potential safety components per the interview notes. This is a sample of the unfunded project listings.

Table 3. Grayson County MPO Sample of Unfunded Needs Projects

Source: Grayson County MPO 2045 MTP

| Project ID | Roadway | Sponsor | Funding Categories | Fiscal Year | Safety Improvement | Reference Document | Funded | Construction Cost |
|-------------------|---------------------------------|------------|--------------------|-------------|------------------------------|--------------------|----------|-------------------|
| Not listed | US 75 at Farmington Road | Not listed | Not applicable | Not listed | Construct 4-lane interchange | MTP | Unfunded | \$14,000,000 |
| Not listed | US 75 at Hodgkin Road | Not listed | Not applicable | Not listed | Construct 6-lane interchange | MTP | Unfunded | \$10,000,000 |
| Not listed | US 75 at Hall Cemetery/LB Kirby | Not listed | Not applicable | Not listed | Construct new interchange | MTP | Unfunded | \$11,900,000 |

Achievements and Next Steps

Metropolitan Transportation Plan

Safety is addressed in the Grayson County MPO's 2045 MTP primarily through the safety and project selection sections of the report. These include Chapter 2, which documents crash costs, countywide crash rates in comparison to statewide crash rates over a 10-year period, and crash hot spots for fatal injuries, bicycles and pedestrians, and intersections. Chapter 4 documents prioritization processes that include safety and Decision Lens. Chapter 8 documents project listings and funding with associated safety criteria and Decision Lens results.

Details on how safety is connected to the MPO's visions, goals and objectives are provided under the data-driven plan of action section of the profile. Chapter 4 in the document details how objectives to identify and make investments in crash hot spots to reduce crash rates and crash counts are specifically connected to adopted PM 1 performance targets through the Decision Lens PM-DIS. Criteria weighting approved by the Policy Board is integrated into Decision Lens, which then ranks project listings using data-driven hot spot analyses from CRIS assigned to various regional corridors and control sections. The selection of projects then connects from the MTP to the TIP, with any resulting changes due to project development and delivery feeding back to MTP amendments.

Next Steps

The Grayson County MPO considers funding opportunities but advised that it is difficult to pursue these with limited staff from within the MPO, even in coordination with regional agencies. The Grayson County MPO is currently sourcing for a 20% local funding match for the \$500,000 regional comprehensive safety plan.

The Grayson County MPO has learned to engage and coordinate closely with TxDOT for additional resources and staff expertise in the realm of safety. TxDOT is providing assistance examining corridors and intersections with high crash rates to determine if they may qualify for Highway Safety Improvement Program funding. The Grayson County MPO advised that another lesson learned is that many local municipal and county agencies must be continually engaged to ensure they are aware of available data and findings from studies such as the safety and operations plan. Further, a lesson learned is that local informational inquiries often result in uncovering safety issues formerly undocumented, such as freight routes with heavier sand trucks and the severity of collisions on these routes. Public engagement and communication in this respect help overall planning and investment strategies, as well as identify funding for local match on regional comprehensive plans.

Appendix A. Interview Documentation

Grayson County Metropolitan Planning Organization

| | |
|---------------------------|-----------------|
| Interview Date: | March 7, 2023 |
| Media: | Microsoft Teams |
| MPO Staff Present: | Clay Barnett |
| TTI Interviewer: | Matthew Miller |
| TPP Field Representative: | Mansour Shiraz |