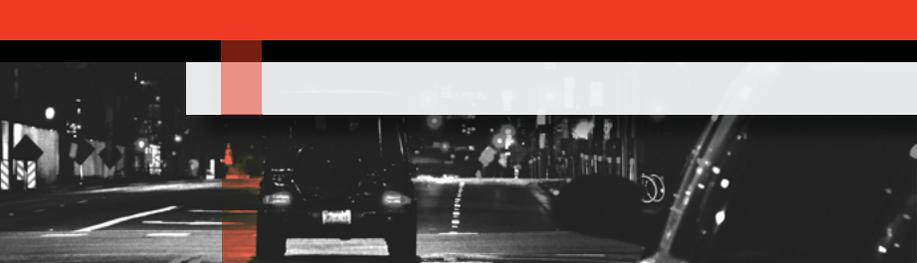
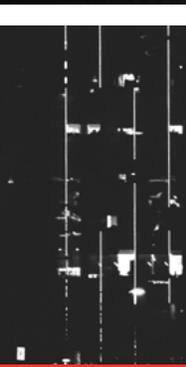
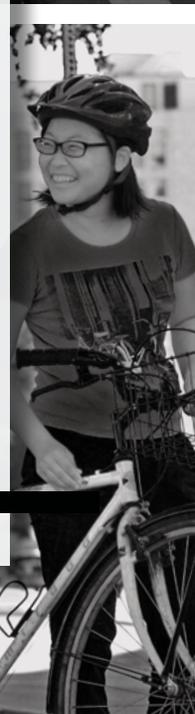


NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

ROADWAY SAFETY PLAN

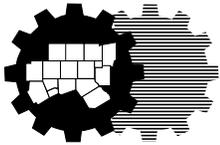


What is NCTCOG?

The **North Central Texas Council of Governments** (NCTCOG) is a voluntary association of, by, and for **local governments** within the 16-county North Central Texas Region. The agency was established by state enabling legislation in 1966 to assist local governments in **planning** for common needs, **cooperating** for mutual benefit, and **coordinating** for sound regional development. Its purpose is to strengthen both the individual and collective power of local governments, and to help them recognize regional opportunities, resolve regional problems, eliminate unnecessary duplication, and make joint regional decisions – as well as to develop the means to implement those decisions.

North Central Texas is a 16-county **metropolitan region** centered around Dallas and Fort Worth. The region has a population of more than 7 million (which is larger than 38 states), and an area of approximately 12,800 square miles (which is larger than nine states). NCTCOG has 229 member governments, including all 16 counties, 167 cities, 19 independent school districts, and 27 special districts.

NCTCOG's **structure** is relatively simple. An elected or appointed public official from each member government makes up the **General Assembly** which annually elects NCTCOG's **Executive Board**. The Executive Board is composed of 17 locally elected officials and one ex-officio non-voting member of the legislature. The Executive Board is the policy-making body for all activities undertaken by NCTCOG, including program activities and decisions, regional plans, and fiscal and budgetary policies. The Board is supported by policy development, technical advisory and study **committees** – and a professional staff led by **R. Michael Eastland**, Executive Director.



NCTCOG's offices are located in Arlington in the Centerpoint Two Building at 616 Six Flags Drive (approximately one-half mile south of the main entrance to Six Flags Over Texas).

North Central Texas Council of Governments

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NCTCOG's Department of Transportation

Since 1974 NCTCOG has served as the Metropolitan Planning Organization (MPO) for transportation for the Dallas-Fort Worth area. NCTCOG's Department of Transportation is responsible for the regional planning process for all modes of transportation. The department provides technical support and staff assistance to the Regional Transportation Council and its technical committees, which compose the MPO policy-making structure. In addition, the department provides technical assistance to the local governments of North Central Texas in planning, coordinating, and implementing transportation decisions.

Prepared in cooperation with the Federal Highway Administration, US Department of Transportation, and the Texas Department of Transportation.

The contents of this report reflect the views of the authors who are responsible for the opinions, findings, and conclusions presented herein. The contents do not necessarily reflect the views or policies of the Federal Highway Administration, the Federal Transit Administration, or the Texas Department of Transportation.



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An aerial, black and white photograph of a complex highway interchange. The image shows multiple levels of overpasses and ramps, with several cars and trucks visible on the roads. The perspective is from a high angle, looking down at the intersection. A semi-transparent white box is overlaid on the upper portion of the image, containing the title text. A thick red vertical bar is on the left side, and a thick red horizontal bar is at the top, intersecting the vertical bar.

INTRODUCTION AND OVERVIEW



WHAT IS THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS?

The North Central Texas Council of Governments (NCTCOG) is a voluntary association of, by, and for local governments within the 16-county North Central Texas Region. The agency was established by state enabling legislation in 1966 to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. Its purpose is to strengthen both the individual and collective power of local governments, and to help them recognize regional opportunities, resolve regional problems, eliminate unnecessary duplication, and make joint regional decisions, as well as to develop the means to implement those decisions.

North Central Texas is a 16-county metropolitan region centered in the cities of Dallas and Fort Worth. The region has a population of more than 8 million and an area of approximately 12,800 square miles. NCTCOG has 229 member governments, including all 16 counties, 167 cities, 19 independent school districts, and 27 special districts.

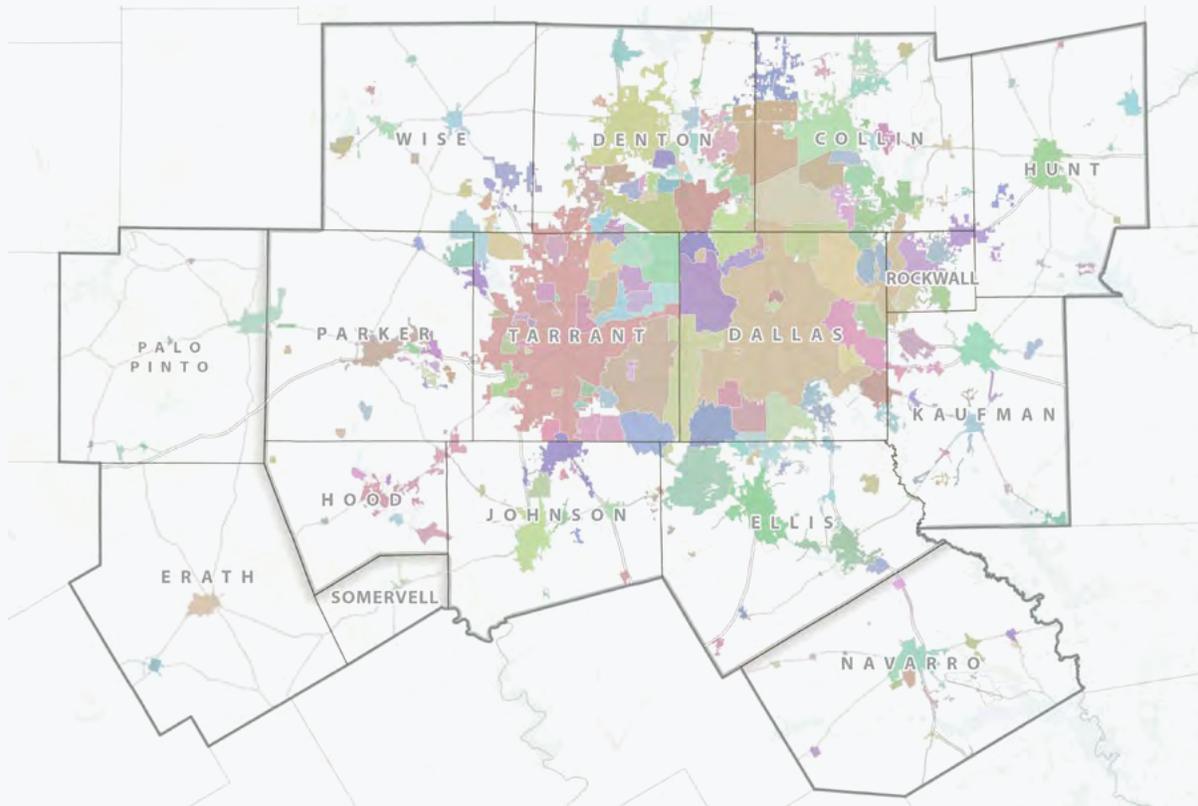
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making body for all the activities undertaken by NCTCOG, including but not limited to, program activities and decisions, regional plans, and fiscal and budgetary policies. The Board is supported by policy development, technical advisory and study committees and a professional staff led by R. Michael Eastland, Executive Director.

ABOUT THE METROPOLITAN PLANNING AREA

As the federally designated Metropolitan Planning Organization (MPO) for the Dallas-Fort Worth area since 1974, the North Central Texas Council of Governments Transportation Department works in cooperation with the region's transportation providers to address the transportation needs of the rapidly growing region. The scope of the Roadway Safety Plan is the 12-county Metropolitan Planning Area (MPA), which includes Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties. The NCTCOG region is composed of three urbanized areas as defined by the United States Census Bureau: Dallas-Fort Worth-Arlington, Denton-Lewisville, and McKinney.

North Central Texas is one of the fastest growing regions in the country, adding about 1 million people every ten years. The 2020 population estimate within the region exceeds 7.6 million, making it the fourth largest metropolitan area nationwide, with a projected increase to over 11.2 million residents by 2045.



All: 16-County North Central Texas Region, Bold: 12-County MPA Region

The Regional Transportation Council (RTC), the independent policy body of the MPO, administers the work of the MPO, guides the development of multimodal transportation plans, programs, and partnerships with stakeholders. The RTC is primarily composed of local elected officials and representatives from the area’s transportation providers, and determines how to allocate federal, state, and regional funds for transportation improvements. Committees and advisory groups lend expertise and develop recommended actions for the RTC to consider.

Through the RTC’s guidance in the development of multimodal transportation plans and programs, the 44-member council approved a regional safety position on December 14, 2017, which states:

“Even one death on the transportation system is unacceptable. Staff will collaborate with our partners to develop projects, programs, and policies that assist in eliminating serious injuries and fatalities across all modes of travel.”

The RTC’s safety position aligns with the Texas Transportation Commission’s minute order from May 30, 2019, which states:

“The Texas Transportation Commission directs the Texas Department of Transportation to work toward the goal of reducing the number of deaths on Texas roadways by half by the year 2035 and to zero by the year 2050. The commission acknowledges a majority of motor vehicle crashes can be prevented, thereby reducing fatalities.”

In support of these positions the NCTCOG Roadway Safety Plan was developed to function as a catalyst and guide towards promoting safety in all future roadway projects and programs. NCTCOG recognizes that safety is a shared responsibility and encourages partners and the public to do their part in making our roads safer.



SAFETY PERFORMANCE TARGETS

While zero fatalities on our roadways is the target of this plan, NCTCOG also recognizes the importance of setting realistic short-term performance targets to measure progress on our path to zero fatalities. On February 14, 2019, the Regional Transportation Council adopted a resolution supporting Highway Safety Improvement Program Performance Targets as established by the Texas Department of Transportation (TxDOT). In early 2023, NCTCOG adopted newer and more aggressive targets in line with the Texas Transportation Commission’s and Regional Transportation Council’s Vision Zero commitments. Current targets are shown in Table 1.

TABLE 1: FEDERAL SAFETY PERFORMANCE TARGETS (2020-2022)

SAFETY PERFORMANCE TARGETS	2020 TxDOT Targets	2020 NCTCOG Targets	2021 TxDOT Targets	2021 NCTCOG Targets	2022 TxDOT Targets	2022 NCTCOG Targets
	<i>1.2% Reduction</i>		<i>1.6% Reduction</i>		<i>2.0% Reduction</i>	
Fatalities	4,068	589.3	3,687*	572.4	3,563*	579.5
Fatality Rate	1.48	0.803	1.33*	0.762	1.27*	0.755
Serious Injuries	18,602	3,514.7	17,151	3,375.3	16,677	3032.9
Serious Injury Rate	6.56	4.768	6.06	4.485	5.76	3.939
Non-motorized Fatalities and Serious Injuries	2,477	595.0	2,316.4	592.3	2,367	596.9

Targets are based on a five-year rolling average. 2022 targets calculated using 2018-2020 (observed) and 2021-2022 (projected).

*TxDOT 2021 and 2022 fatalities and fatality rate targets calculated using a 50 percent reduction by 2035

STATEWIDE TEXAS DEPARTMENT OF TRANSPORTATION AND METROPOLITAN PLANNING ORGANIZATION SAFETY TASK FORCE

The Texas Transportation Commission established a new task force composed of representatives from the Texas Department of Transportation and the state’s Metropolitan Planning Organizations to further identify and fund safety projects throughout the state with a relentless focus on reducing the number of fatalities on Texas highways.

The TxDOT/MPO Safety Task Force kicked off in November 2021 for an initial two-year term. The Task Force has developed a short-term plan to immediately invest in funding on current ongoing safety initiatives to reduce speeding and impaired driving, improve bicycle, pedestrian, and motorcycle safety, increase awareness for occupant protection (seatbelts), and

implement safety efforts in work zones. Annually, TxDOT and MPOs will report on previous years’ performance measures, implemented activities and achievements as well as identify priorities for the next year. TxDOT has committed \$50,000 to each MPO across the state to support safety efforts and document safety activities to help reduce fatalities in the state of Texas. In addition, a long-term plan will be created to identify funding sources, establish metrics to measure effectiveness, and describe incentives for the partnership based on the reduction of deaths on Texas roadways.

Table 2 identifies the contributing factors and the linkages between the TxDOT/MPO Safety Task Force effort, NCTCOG’s Regional Pedestrian Safety Action Plan and NCTCOG’s Roadway Safety Plan. The highlighted rows are focus areas across multiple activities. Through these efforts, NCTCOG is collaborating with partners to implement strategies to reduce crashes in the North Central Texas area.

TABLE 2: COMPARISON BETWEEN NCTCOG SAFETY PLANS AND STATEWIDE SAFETY EFFORT

Contributing Factors	NCTCOG Roadway Safety Plan	NCTCOG Regional Ped Safety Action Plan	Statewide TxDOT/MPO Safety Task Force	Countermeasures
Speeding	X	X	(MPO)	Education/Engineering/Enforcement
Distracted Driving	X	X		Education/Enforcement
Impaired (DUI)	X	X	(TxDOT)	Education/Engineering/Enforcement
Intersections	X	X		Engineering
Bicycle/Pedestrian	X	X	Both	Education/Engineering/Enforcement
Roadway Lane Departure	X			Education/Enforcement
Occupant Protection (Seatbelts)	X		(TxDOT)	Education/Enforcement
Motorcycles	X		(TxDOT)	Education/Engineering/Enforcement
Work Zones			(TxDOT)	Education/Engineering/Enforcement
Wrong Way Driving	X			Engineering
Crashes occurring at night	X	X		Education/Engineering/Enforcement
Roadway Illumination		X		Engineering

VISION, MISSION, AND GOALS

The North Central Texas Council of Governments is dedicated to the development of a safe and reliable transportation system through organizational policies, programs, and collaborative efforts with local governments. Policies at all levels of government need to align to make safety the highest priority for our roadways. The Regional Roadway Safety Plan refuses to accept dangerous roads as the status quo.

The goal of the Regional Roadway Safety Plan is to provide a framework on which to identify problems, analyze solutions, and prioritize safety improvements within the NCTCOG Region. The plan will serve as a guide for the implementation of future systemic safety projects and programs as we strive toward a goal of zero fatalities on our roadways by 2050.

Traffic crashes are not accidents, they are the result of poor driving behaviors combined with unforgiving roadway infrastructure. Eliminating fatal injuries on our roadways requires policymakers, planners, engineers, and even roadway users themselves to prioritize safety. This idea is a cornerstone of the Safe Systems Approach, which considers the interaction between roadways and users and recognizes that humans make mistakes. The roadway system needs



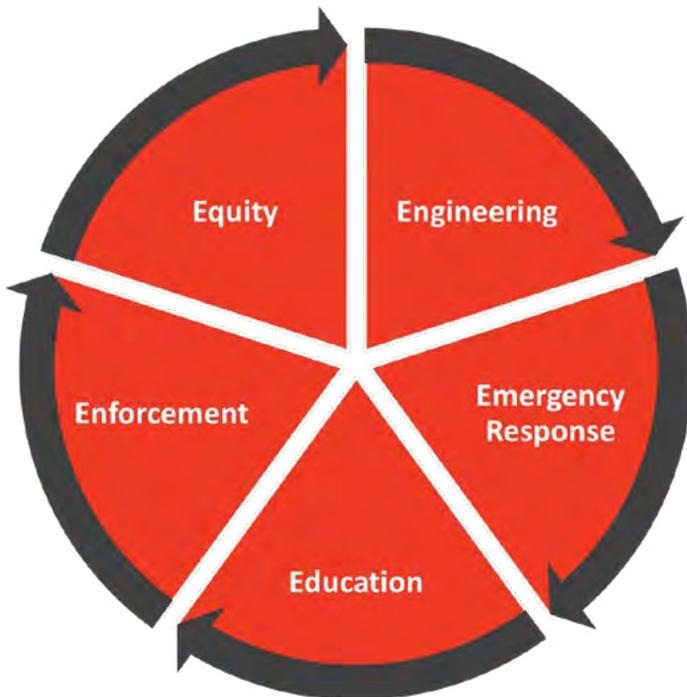
https://safety.fhwa.dot.gov/zerodeaths/zero_deaths_vision.cfm

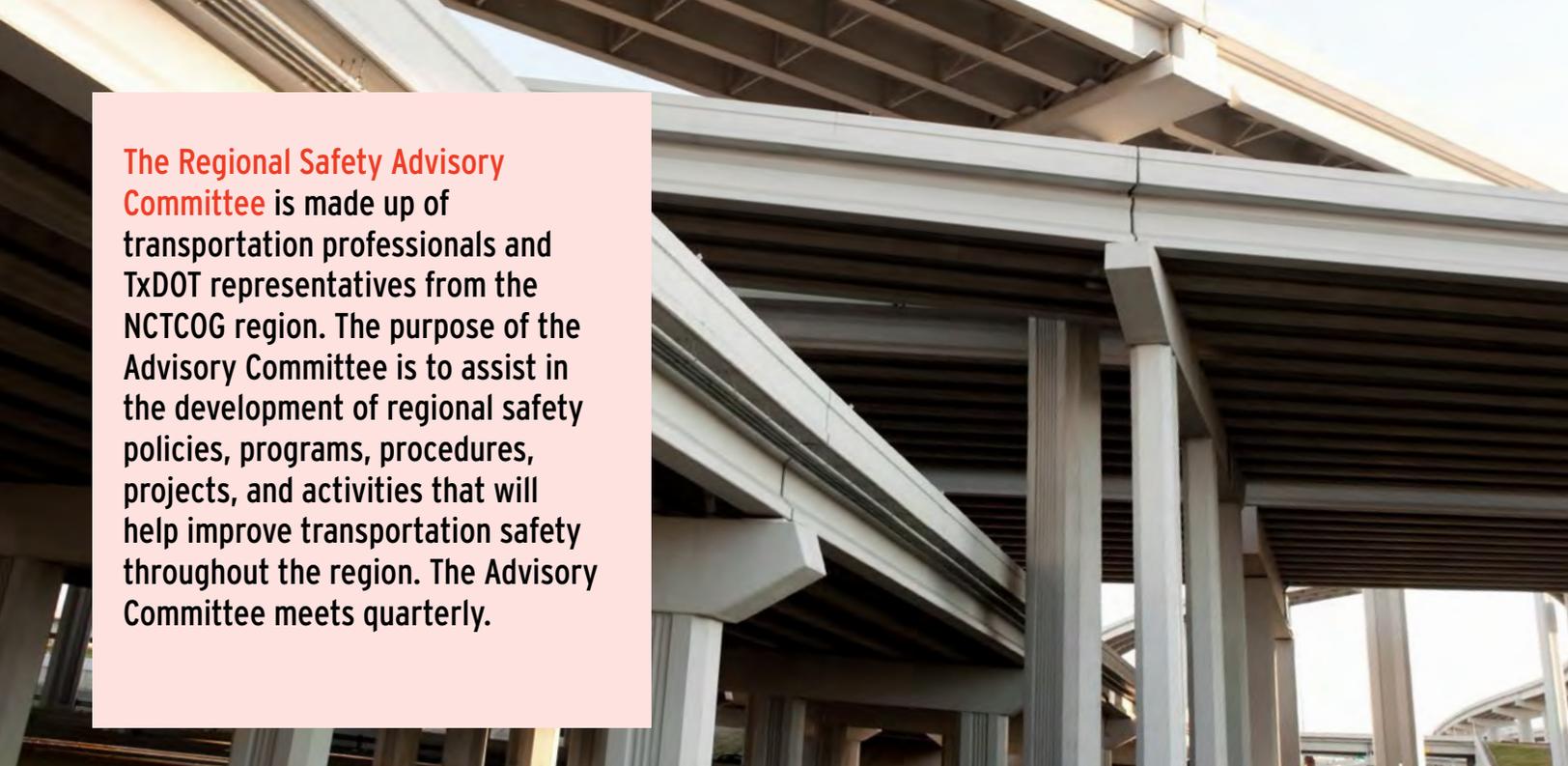
to be designed in such a way that these mistakes are prevented, but if they still do occur, they do not end up costing anyone their life. There are six guiding principles of this approach:

- Deaths and serious injuries are unacceptable
- Humans make mistakes
- Humans are vulnerable
- Responsibility is shared
- Safety is proactive
- Redundancy is crucial

Making a commitment to zero fatal crashes also means addressing all aspects of safety through the following five Safe System elements which lead to a holistic approach with layers of protection for all road users: safe road users, safe vehicles, safe speeds, safe roads, and post-crash care.

The effort to eliminate fatal and serious injury crashes from our roadways must be data-driven and evidence-based. This plan will look to implement solutions and countermeasures across each of the “five Es” of transportation safety: Engineering, Education, Emergency Response, Equity, and Enforcement. Every crash has different causes and may require multiple solutions from one or more of these categories.





The Regional Safety Advisory Committee is made up of transportation professionals and TxDOT representatives from the NCTCOG region. The purpose of the Advisory Committee is to assist in the development of regional safety policies, programs, procedures, projects, and activities that will help improve transportation safety throughout the region. The Advisory Committee meets quarterly.

The following goals were identified in the process of developing the Roadway Safety Plan and are endorsed by the Regional Safety Advisory Committee.

1. Eliminate fatal crashes from all modes of travel by 2050.
2. Prioritize safety in roadway project selection and provide guidance on countermeasure development to partner agencies.
3. Work with partners to foster a culture of safety that utilizes the safe systems approach; and develop behavioral and educational countermeasures to address dangerous driving behaviors.
4. Fund and implement safety projects and policies equitably to ensure safe transportation access for all road users.
5. Implement a proactive approach to roadway safety to identify problems before they occur.
6. Work with police to effectively enforce traffic rules and traffic management professionals to improve quick clearance strategies.



SNAPSHOT OF REGIONAL CRASH DATA

The primary data source for the Roadway Safety Plan is crash data from TxDOT’s Crash Records Information System (CRIS). CRIS data is composed of all police crash reports recorded in Texas. This data was then filtered to include only fatal and serious injuries within the NCTCOG 12-county region. A data-driven, systemic approach was used to identify what types of crashes tend to be the most deadly, where fatal and serious injuries are most likely to occur, and what factors contribute to those crashes. Crash data was accessed from TxDOT’s CRIS system in April 2021.

From 2016-2020, the NCTCOG 12-county region experienced 3,752 fatalities on the roadway network. These deaths occurred among all ages, genders, and ethnicities. They included not only vehicle drivers and passengers, but disproportionately more vulnerable roadway users like pedestrians, bicyclists, and motorcyclists as shown in Figure 1 and Figure 2. This five-year total averages to 750 deaths per year, or approximately two deaths a day.

In addition to fatal injuries, there were 19,405 serious injuries between 2016-2020 (Table 3). A serious injury is any injury that leaves a person incapacitated and unable to quickly resume the normal mobility of which they were previously capable. This means there are ten potentially life changing injuries each day.

Traffic injuries and fatalities may seem an unfortunate consequence of daily life in North Central Texas, but the fact is, they are preventable. Vision Zero is a transportation safety philosophy that seeks to eliminate serious injuries and fatalities from our roadways. This philosophy was first developed in Sweden in the 1990s and since its implementation, roadway fatalities in Sweden have been reduced by half. Because of this success, the Vision Zero movement has since expanded throughout Europe and has taken hold in the United States. This Roadway Safety Plan is the first regionwide effort in North Central Texas to embrace the Vision Zero philosophy that zero deaths on our roadways are acceptable.

FIGURE 1: PERCENTAGE OF TRIPS BY METHOD OF TRAVEL



FIGURE 2: PERCENTAGE OF FATAL AND SERIOUS INJURIES BY METHOD OF TRAVEL

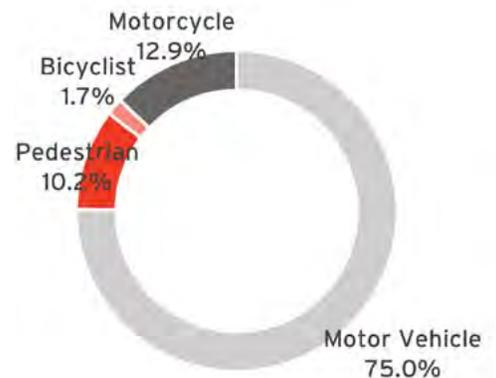


TABLE 3: NUMBER OF FATAL AND SERIOUS INJURIES WITHIN THE NCTCOG MPA BY YEAR (2016-2020)

	2016	2017	2018	2019	2020	Total
Fatality	755	756	697	726	818	3,752
Serious Injury	4,336	4,328	3,540	3,772	3,429	19,405
Total	5,091	5,084	4,237	4,498	4,247	23,157



NATIONAL TRENDS

In May 2022, the National Highway Traffic Safety Administration (NHTSA) estimated that within the United States, 42,915 persons had died in a traffic crash in 2021.¹ This total indicates a 10.5 percent increase from 2020. It represents the highest number of fatalities seen on America's roadways since 2005 and the highest year over year increase since reporting began. In Region Six, which includes Texas along with New Mexico, Oklahoma, Louisiana, and Mississippi, the increase in fatalities from 2020 to 2021 was 16 percent and the second highest regional increase.² Moreover, the estimated 2021 fatality rate of 1.65 fatalities per 100 million vehicle miles traveled (VMT) in Region Six is the highest in the nation.

In addition, national traffic fatalities in several categories revealed significant increases from 2020 to 2021:

- Fatalities in multi-vehicle crashes up 16 percent
- Fatalities on urban roads up 16 percent
- Fatalities among drivers 65 and older up 14 percent
- Pedestrian fatalities up 13 percent
- Fatalities in crashes involving at least one large truck up 13 percent
- Daytime fatalities up 11 percent
- Motorcyclist fatalities up 9 percent
- Bicyclist fatalities up 5 percent
- Fatalities in speeding-related crashes up 5 percent
- Fatalities in police-reported, alcohol-involvement crashes up 5 percent

The national Vision Zero movement and these latest fatality statistics have helped inform the creation of the Bipartisan Infrastructure Law, which includes \$6 billion in new funding over five years to help local governments develop safety projects and programs to reduce crashes and fatalities.

STATE TRENDS

The State of Texas experienced 4,489 total fatalities in 2021, an increase of 15.22 percent compared to 2020, which in turn represented an increase of 7.54 percent compared to 2019 totals.³ When factoring in traffic volume, there were 1.56 deaths per 100 million VMT statewide, an increase from 1.5 in 2020 and 1.26 in 2019. These totals represent the highest number of fatalities and highest fatality rate reported since TxDOT began publishing these numbers in 2003. In total, TxDOT estimates that the economic loss from all motor vehicle crashes in the state was \$51 billion in 2021 alone.

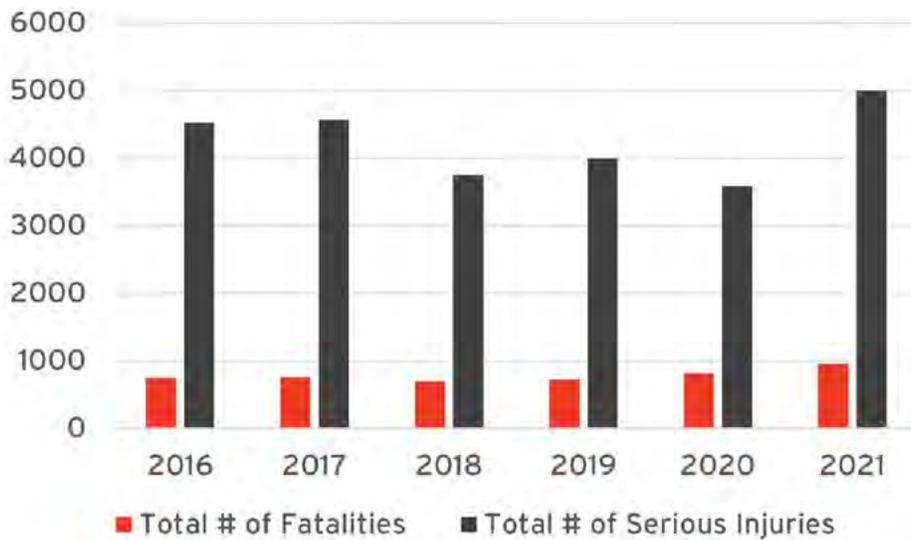
TxDOT publishes a variety of additional crash and injury statistics on an annual basis. Among the most alarming trends in their most recent report (2022), are a

¹ <https://www.nhtsa.gov/press-releases/early-estimate-2021-traffic-fatalities#>

² <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813283>

³ *Comparison of Motor Vehicle Traffic Deaths, Vehicle Miles, Death Rates and Economic Loss (2003-2021)*, TxDOT. https://ftp.txdot.gov/pub/txdot-info/trf/crash_statistics/2021/a.pdf

FIGURE 3: TOTAL NUMBER OF FATAL AND SERIOUS INJURY CRASHES BY YEAR (2016-2021)



15.2 percent and 13.9 percent increase respectively in the number of pedestrian and bicyclist fatalities in 2021, and a 17.3 percent increase in distracted driving fatalities.⁴ The lack of protective equipment played a large role in the number of fatalities as well, with 46 percent of vehicle fatalities cited as not having worn a seatbelt and 45 percent of motorcyclist fatalities not wearing a helmet at the time of the crash.

An overall increase in fatalities following the COVID-19 pandemic and shutdown which began in March 2020 has been a product of several different factors but is primarily due to an increase in speed made possible by fewer vehicles on roadways and therefore less congestion and a decrease in speed enforcement. The relationship of increased fatalities and serious injury crashes to increased speed during COVID was studied by the Texas A&M Transportation Institute. Their study found that higher daily operating speeds were associated with higher daily fatal and serious injury totals.⁵

REGIONAL TRENDS

Regional trends have mostly followed those at the state and national level. While the number of fatal and serious injury crashes had been generally decreasing from 2016-2020, 2021 reversed that trend with a 32 percent increase from 2020. Fatalities alone represented an 11.5 percent increase from 2020. The rate of fatalities in North Central Texas was 1.3 fatalities per 100 million VMT in 2021, an increase from the 2020 rate of 1.03 (Figure 3). Pedestrian fatalities rose two percent from 2020 totals, but bicyclist fatalities increased 38.5 percent over that period. North Central Texas also had increases in the number of persons killed in distracted driving and impaired driving crashes in 2021.

⁴ Texas Motor Vehicle Traffic Crash Facts 2021, TxDOT. https://ftp.txdot.gov/pub/txdot-info/trf/crash_statistics/2021/01.pdf
⁵ <https://static.tti.tamu.edu/conferences/traffic-safety21/presentations/data-innovations/das-le.pdf>



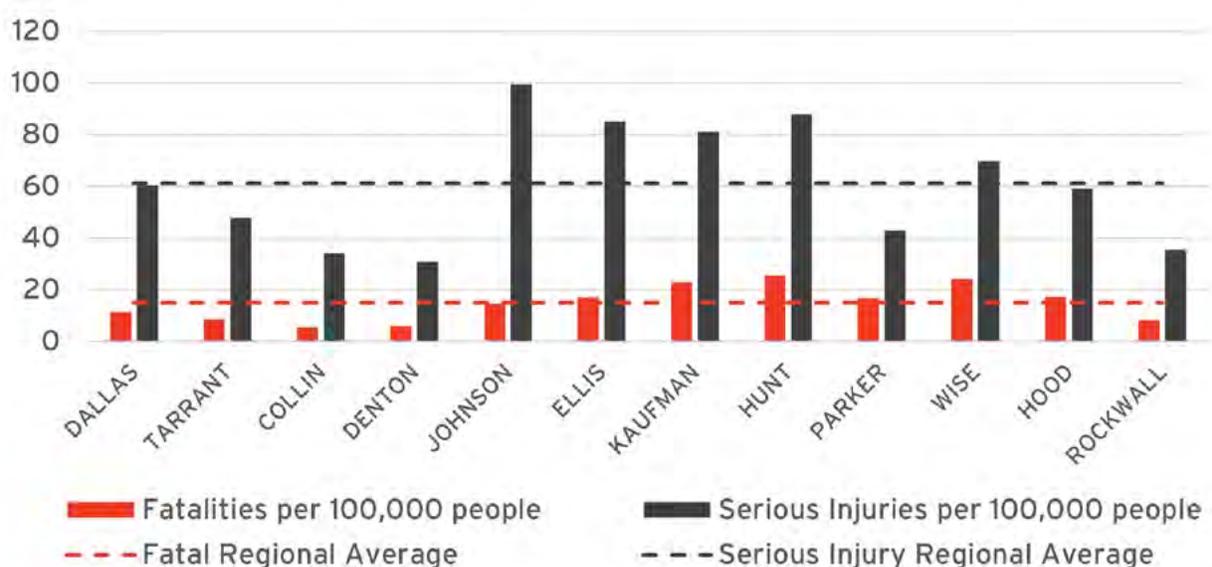
FATAL AND SERIOUS INJURIES BY POPULATION

The NCTCOG region has experienced an average of 14.9 traffic-related deaths per 100,000 population from 2016-2020. This average is higher than both the Texas statewide average of 13.3 and the U.S. average of 11.7 deaths per 100,000 population, according to the Insurance Institute for Highway Safety.⁶ When compared to other leading causes of death in Texas, the regional crash fatality rate of 14.9 per 100,000 population puts it in the top ten causes, just below kidney disease.⁷ This rate of crash fatalities is also higher than firearm deaths, homicides, and drug overdose deaths.

When comparing county-level data throughout the region, some of the less populated counties like Kaufman, Hunt, and Wise had the highest fatal and serious injury crashes relative to their populations and well over the regional average of 14.9 per 100,000 population. The more urban counties like Dallas and Tarrant, despite having much higher injury totals, had lower fatal and serious injuries relative to their population.

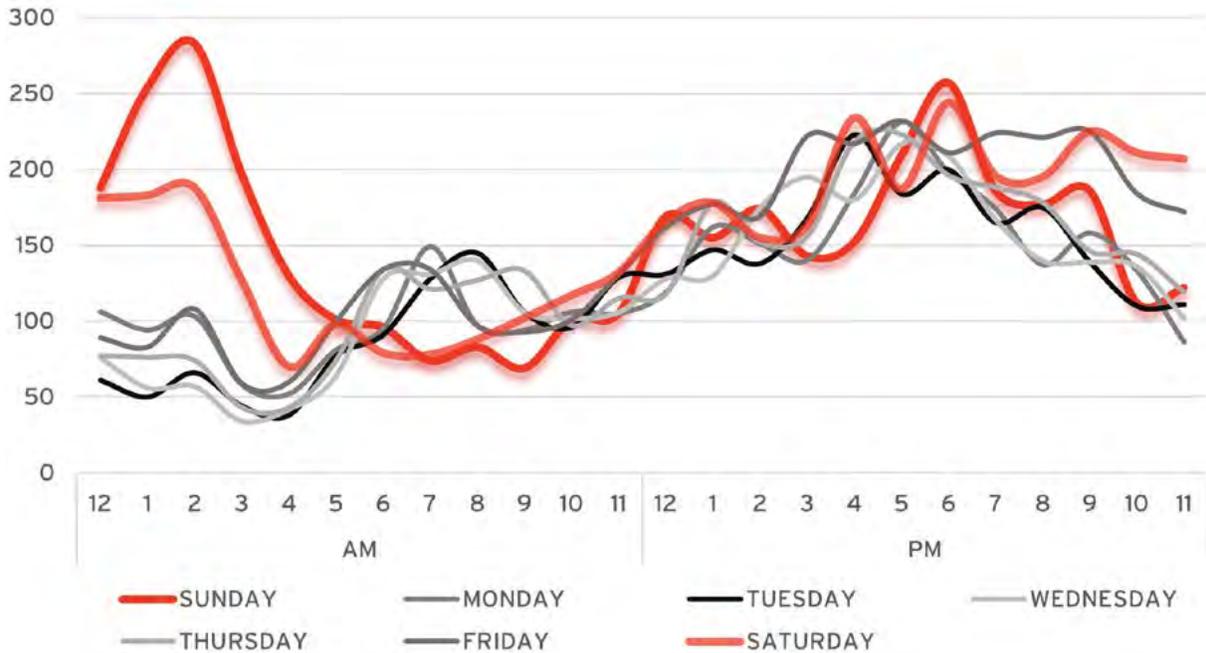
Figure 4 shows the annual average fatal and serious injuries per 100,000 population by county between 2016-2020.

FIGURE 4: ANNUAL AVERAGE FATAL AND SERIOUS INJURIES PER 100,000 POPULATION BY COUNTY (2016-2020)



⁶ Fatality Facts 2020 State by State. Insurance Institute of Highway Safety. <https://www.iihs.org/topics/fatality-statistics/detail/state-by-state>
⁷ Stats of the State of Texas. Centers for Disease Control and Prevention. (2017) <https://www.cdc.gov/nchs/pressroom/states/texas/texas.htm>

FIGURE 5: FATAL AND SERIOUS INJURIES BY TIME OF DAY AND DAY OF WEEK



TIME OF DAY ANALYSIS

Over a 24-hour period, fatal and serious injury crashes are most likely to occur during the evening commute, peaking around 6 PM on weekdays. However, when this analysis was repeated for each day of the week, it was discovered that early weekend mornings resulted in significant peaks around 2 AM that topped the average evening commute (Figure 5). Upon further analysis this early morning period was closely related to several dangerous driving behaviors including impaired driving, speeding, wrong way driving, and not wearing a seatbelt.

Nearly half of all fatal and serious injuries occur at night (44 percent) or at dawn or dusk (3 percent) (Figure 6). Of the crashes at night, 71 percent are reported to have occurred at locations where streetlights were not present (Figure 7).

LOCATION ANALYSIS

Fatal and serious injury crashes occurred throughout the 12-county region; however, the largest concentrations tend to be in Dallas and Tarrant Counties as shown in Figure 8, a grid density map of the area. This map shows the number of fatal

FIGURE 6: FATAL AND SERIOUS INJURIES BY LIGHTING CONDITIONS

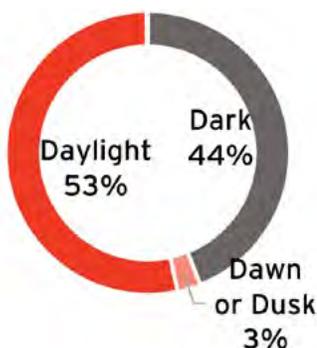


FIGURE 7: NIGHTTIME INJURIES BY ROADWAY LIGHTING CONDITIONS

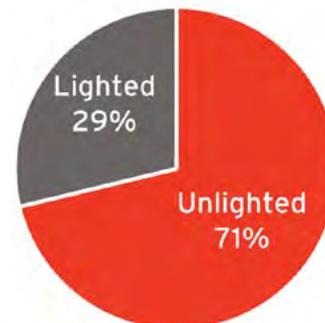
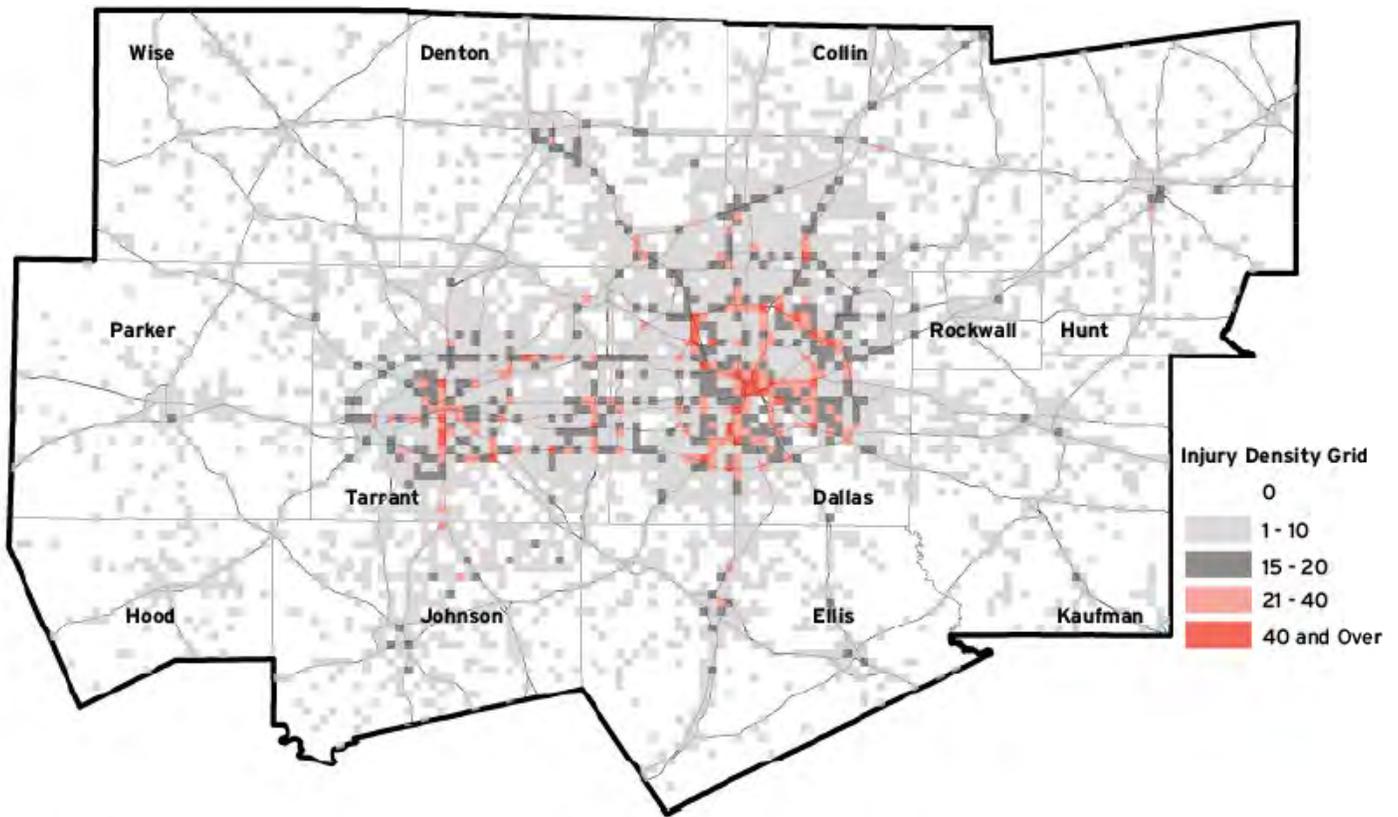


FIGURE 8: FATAL AND SERIOUS INJURY DENSITY WITHIN THE 12-COUNTY AREA (2016-2020)



and serious injuries that occurred in each one square mile within the 12-county region. More in-depth location analysis is included in both the Emphasis Areas and High Injury Network sections of this plan.

Separating by road type, the highest percentage of fatalities occurred on limited access freeways while serious injuries occur most frequently on arterial roadways. Combined, 53 percent of fatal and serious injuries occurred on principal and minor arterial roadways.

Relative to average daily traffic volume recorded in NCTCOG’s 2020 model network, principal arterials have an especially high number of fatal and serious injuries. When compared to centerline miles and lane miles, fatal and serious injuries occurred much more frequently on a per-mile basis (Table 4).

DEMOGRAPHIC ANALYSIS

TxDOT’s CRIS data was used to monitor demographics among those who were killed or suffered a serious injury. Men accounted for 62 percent of all fatal and serious injuries within the NCTCOG MPA. When the number of fatal and serious injuries were compared to their relative

TABLE 4: FATAL AND SERIOUS INJURIES BY FACILITY TYPE COMPARED TO VOLUME AND CENTERLINE AND LANE MILES

	Daily Volume	Centerline Miles	Lane Miles	Fatalities	Serious Injuries	Combined
Freeways	30%	4%	9%	33%	24%	26%
Principal Arterials	20%	11%	14%	27%	27%	27%
Minor Arterials	34%	32%	37%	24%	29%	28%
Collectors	6%	41%	32%	9%	12%	12%
Freeway Ramps	3%	5%	2%	2%	1%	2%
Frontage Roads	7%	8%	7%	1%	1%	1%
HOV Lanes	<1%	<1%	<1%	<1%	<1%	<1%
Local Roadways				4%	6%	6%

regional population, males aged 20-24 experienced 786 fatal or serious injuries per 100,000 population, which is over twice the regional average for all age groups. Among women, the 20-24 age group similarly had the highest totals of fatal and serious injuries, at 474 per 100,000 population. In general, the frequency of fatal and serious injuries decreased with age (Figure 9).

Fatal and serious injuries impact groups of people differently. Black or African American people were more than twice as likely to experience a fatal or serious injury on our roadways (463 per 100,000 population) compared to the regional average for all ethnicities (215 per 100,000 population) (Figure 10). Hispanic populations were also more likely to experience a fatal or serious injury.

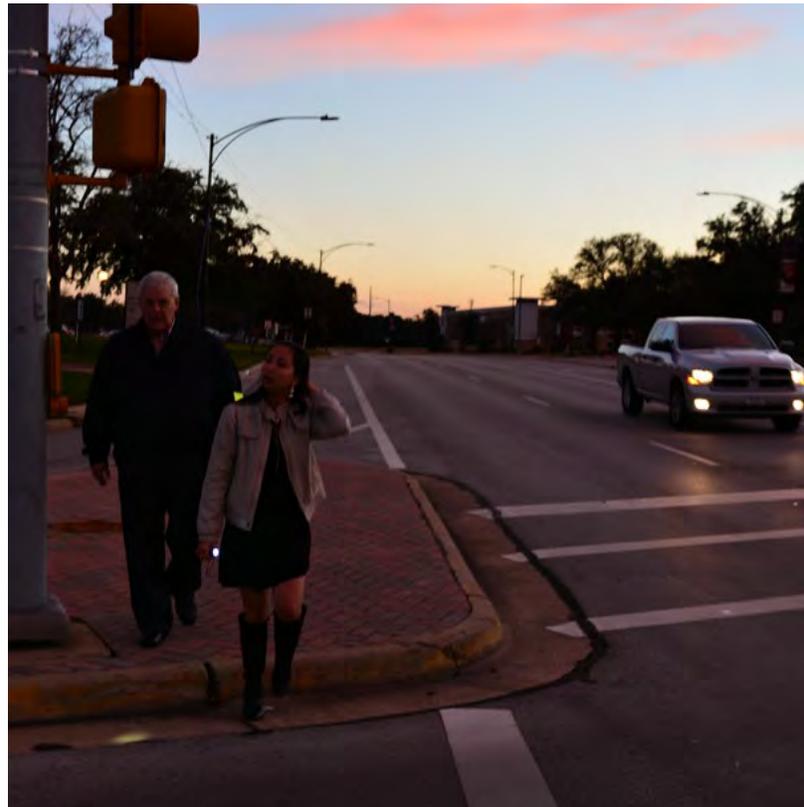




FIGURE 9: FATAL AND SERIOUS INJURIES BY AGE AND GENDER PER 100,000 POPULATION

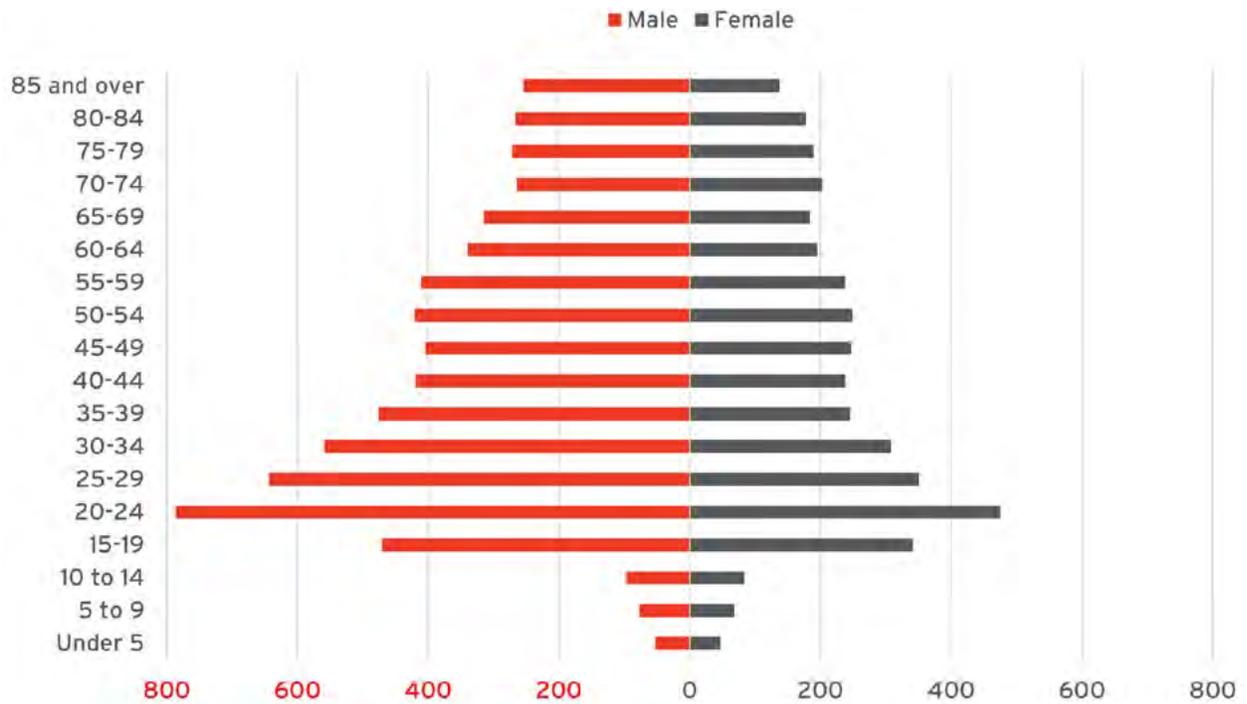
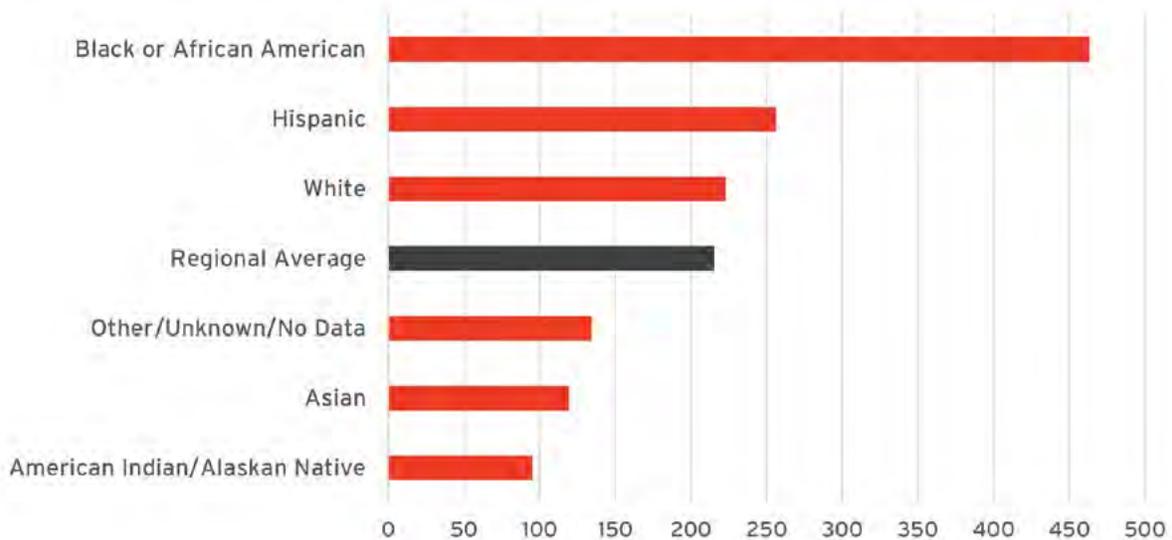
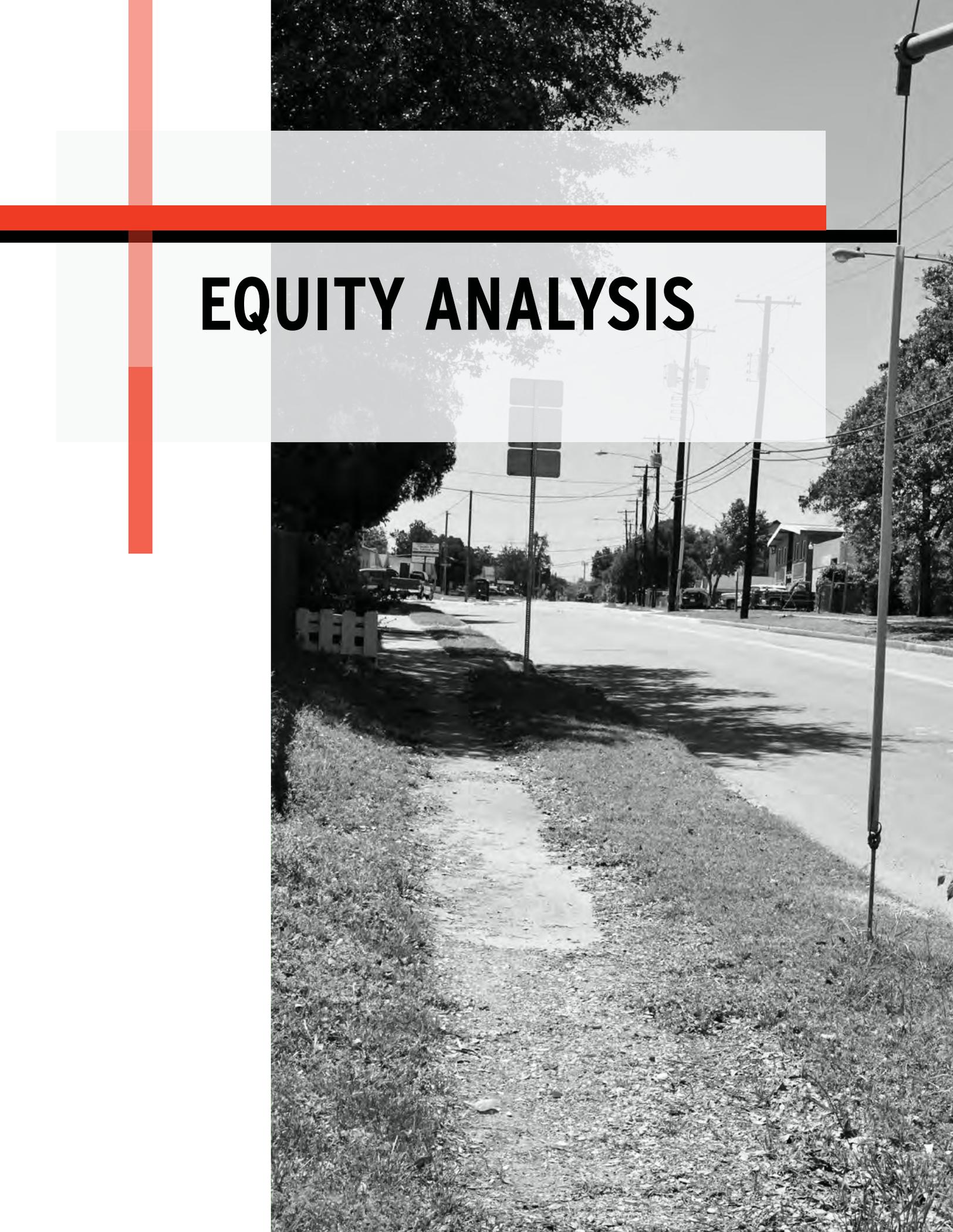


FIGURE 10: FATAL AND SERIOUS INJURIES PER 100,000 POPULATION BY ETHNICITY



Regional population census data (2016-2020) from NHGIS.org



EQUITY ANALYSIS



NCTCOG and the Regional Transportation Council are committed to providing an equitable transportation system for **all people**.

Nondiscrimination and environmental justice principles were incorporated into the development of the latest Metropolitan Transportation Plan “so that no person is excluded from participation in, denied benefits of, or discriminated against in planning efforts.”⁸ Likewise, equity is a key component of the Roadway Safety Plan because of the disparity in the number of fatal and serious injuries among disadvantaged people and in disadvantaged neighborhoods.

Safe transportation options should be accessible to everyone on our region’s roadways. The Vision Zero philosophy recognizes that traffic safety problem locations often result from patterns of disinvestment or under-investment in low income and minority and

immigrant communities. Often these communities lack amenities like sidewalks and designated crosswalks for pedestrians, or existing infrastructure may be poorly maintained which can contribute to a disproportionately high number of crashes.

According to a Vision Zero report on equity,⁹ low-income individuals are two times more likely to be killed while walking. Similarly, African American children are two times more likely, and Latino children are 40 percent more likely to be killed while walking than White children. In the NCTCOG region, minority populations were most heavily overrepresented among pedestrians as well. Over 60 percent of pedestrian fatal and serious injuries were minorities, with Black (32 percent) and Hispanic (25 percent) populations most significantly affected. Please see the Emphasis Area section of this plan and Section A1 of the appendices for a more detailed demographic analysis of age, gender, and ethnicity for each emphasis area.

⁸ NCTCOG Mobility 2045 Metropolitan Transportation Plan. Chapter 3. Social Considerations. 2022. https://www.nctcog.org/getmedia/5f1cd2b1-ba4d-4c34-8a49-c69a95eb9788/3-Social-Considerations_2.pdf

⁹ Vision Zero Equity Strategies for Practitioners. http://visionzeronetwork.org/wp-content/uploads/2017/05/VisionZero_Equity.pdf

JUSTICE40 AND DISADVANTAGED COMMUNITIES

Justice40 is a federal initiative to allocate 40 percent of certain Federal investments “to disadvantaged communities that are marginalized, underserved, and overburdened by pollution.”¹⁰ Investments from this initiative are broad, with several focusing on transportation. In February 2022, the Climate and Economic Justice Screening Tool was released to help advocates identify which areas of their communities are disadvantaged according to 22 indicators collected at the census tract level. These indicators are categorized into six groups, one of which is transportation.

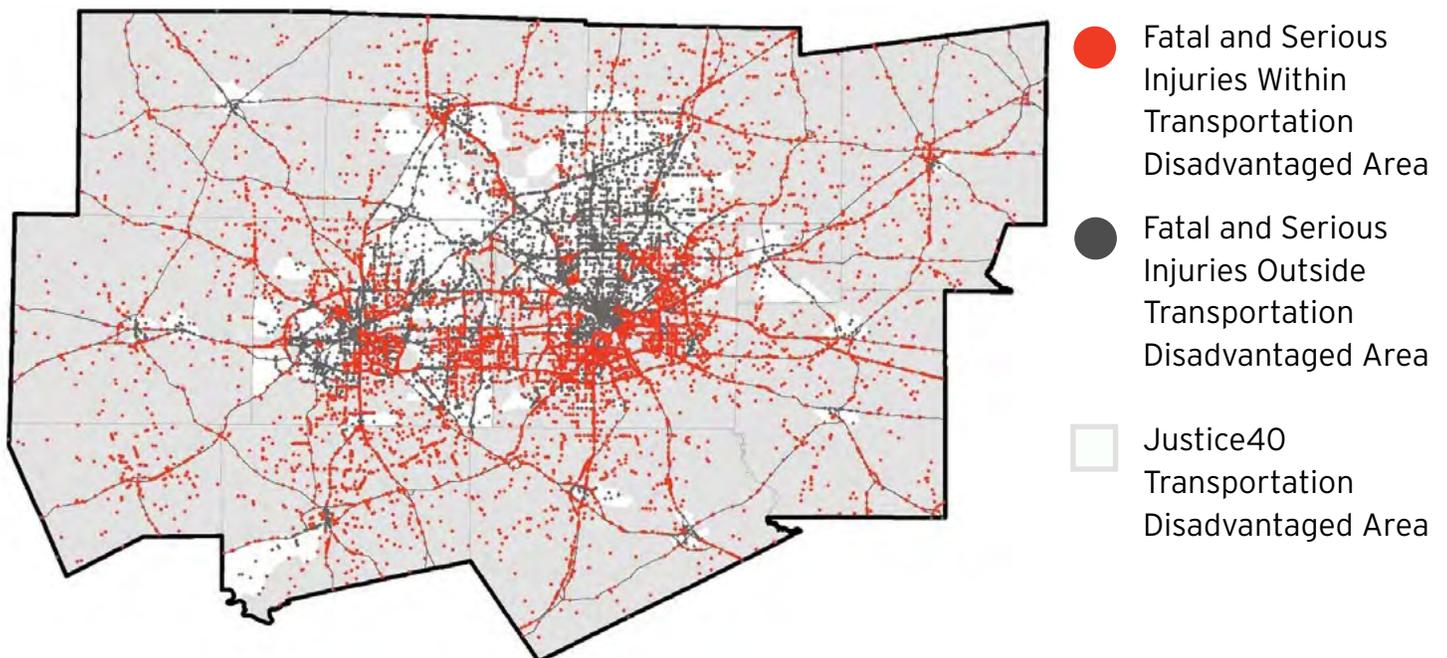
Transportation Disadvantaged Communities are areas where transportation costs more and/or where it takes someone longer to reach a destination. These areas are identified by evaluating walkability scores, commute times, cost burdens, and households without access to at least one vehicle. A map of these locations and the fatal and serious injury locations within these areas within the 12-county area are shown in Figure 11.

In North Central Texas, transportation disadvantaged areas tend to be in both rural areas and in economically disadvantaged urban neighborhoods. About 58 percent of all fatal and serious injuries occurred within a transportation disadvantaged area. Of those, 75 percent occurred in urban locations and 25 percent in rural areas.

EQUITY IN PROJECT SELECTION

To seek fairness and accessibility in roadway safety, equity is considered as a central component of the roadway safety project and countermeasure selection process. More information on how demographic data relating to income and minority populations is used to prioritize projects is available in the High Injury Network Analysis section of this plan.

FIGURE 11: FATAL AND SERIOUS INJURY LOCATIONS WITHIN JUSTICE40 TRANSPORTATION DISADVANTAGED AREAS



¹⁰ Justice40. *A Whole-of-Government Initiative*. <https://www.whitehouse.gov/environmentaljustice/justice40/>



ROADWAY SAFETY PLAN DEVELOPMENT PROCESS



Roadway Safety Plans serve as guides to identify focus crash types and risk factors and then select and prioritize system-wide safety projects and countermeasures through the “five Es” of transportation. Systemic projects are those that can be implemented throughout the region rather than at targeted locations. This plan follows the Systemic Safety approach, which evaluates injury risk across the entire roadway system. This method helps identify roadway types and characteristics that tend to produce fatal and serious injuries, allowing planners and engineers to better predict the risk of a crash occurring in the future rather than relying only on crash history to identify high injury locations.

FOCUS CRASH TYPE IDENTIFICATION

The Systemic Safety Approach relies on four main steps: Identify Focus Crash Types and Risk Factors, Screen and Prioritize Candidate Locations, Select Countermeasures, and finally Prioritize Projects and Programs. The first three steps of this process are outlined within this plan. The fourth step is an ongoing effort that will begin upon completion of this plan.

To better understand what crash types and contributing factors

cause the highest number of fatal and serious injuries, NCTCOG utilized the Crash Data Summary Template Tool, an Excel-based analysis tool available from the Federal Highway Administration. This tool compares all injury data within North Central Texas to the number of fatal and serious injuries to determine which crash types are “overrepresented.” When the percentage of fatal and serious injuries is significantly higher than the percentage of all other injury data, that crash type is considered overrepresented. A total of 32 CRIS data categories

SYSTEMIC SAFETY APPROACH

1. Identify Focus Crash Types and Risk Factors
2. Screen and Prioritize Candidate Locations
3. Select Countermeasures
4. Prioritize Projects and Programs

TABLE 5: REGIONAL EMPHASIS AREAS AND PERCENTAGE OF ALL FATAL AND SERIOUS INJURIES

Emphasis Areas	Percentage of All Fatal and Serious Injuries
Intersections	35%
Roadway and Lane Departures	29%
Speeding	22%
Occupant protection	14%
Motorcycles	13%
Bicyclist and Pedestrians	12%
Impaired Driving	8%
Distracted Driving	6%

were reviewed and 20 contained at least one overrepresentation. These categories were then filtered down to select only those considered most dangerous and most easily preventable.

The Crash Data Summary Template Tool was also used to compare data from the NCTCOG region to data from the Houston-Galveston Area Council (HGAC) and to the State of Texas to determine if any crash types or factors were overrepresented relative to the most similar peer MPO and to the entire state. HGAC was chosen because of their similar urban transportation network and population and because CRIS crash data could be used for comparison. Texas state data was used to provide context to how traffic issues in the metroplex compare to the rest of the state. Five years of crash data from 2016-2020 was used for this analysis.

EMPHASIS AREAS

From this process eight emphasis areas were identified (Table 5). Six of these same emphasis areas had been identified at the state level by TxDOT and included in their 2017 Strategic Highway Safety Plan (SHSP). The 2022 update of the SHSP now includes

motorcycles and occupant protection as new emphasis areas, both of which were identified in NCTCOG’s process.

In addition to these emphasis areas, NCTCOG identified four other “areas of concern.” These are dangerous crash types or characteristics that are not considered a full emphasis area because they occur less frequently or because they are closely related to one or more of the eight emphasis areas. These additional areas of concern are listed in Table 6.

FOCUS FACILITIES AND RISK FACTORS

With emphasis areas identified, NCTCOG used Crash Tree Diagrams¹¹ to identify facility types and risk factors which contributed to fatal and serious injuries. This process was first used for all fatal and serious injuries within the 12-county region and then repeated for each of the eight emphasis areas.

Crash tree hierarchy focused on identifying roadway ownership (TxDOT or local), location (Urban or Rural), and then roadway attributes (median type, number of lanes, and speed limit). This process

¹¹ Crash Tree Diagram Tool, FHWA. <https://safety.fhwa.dot.gov/LRSPDIY/safety-data.cfm>



facilitated quick identification of which agency would need to implement countermeasures, where safety countermeasures are needed, and on which roadway types. Below are crash trees for all fatal and serious injuries which occurred on either on-system (TxDOT-owned) (Table 7) or off-system (local owned) (Table 8) facilities within the NCTCOG 12-county region.

From these crash trees, the following can be summarized:

On-System Fatal and Serious Injuries:

- Injuries occurred predominantly on urban divided roadways, most frequently on six-lane roadways with a speed limit between 40-50 mph or 55 mph and above.
- Rural injuries tended to occur on undivided two-lane roadways with a speed limit of at least 55 mph.

Off-System Fatal and Serious Injuries:

- Injuries occurred overwhelmingly in urban locations, again primarily on divided six-lane roadways with a speed limit between 40-50 mph.

TABLE 6: ADDITIONAL AREAS OF CONCERN AND PERCENTAGE OF ALL FATAL AND SERIOUS INJURIES

Emphasis Areas	Percentage of All Fatal and Serious Injuries
Nighttime Crashes	44%
Younger Road Users	7%
Older Road Users	6%
Wrong Way Driving	2%

- Rural injuries, while rarer, tended to occur on two-lane undivided roadways with a speed limit between 40-50 mph.

If on- and off-system data is combined, about 40 percent of all fatal and serious injuries occurred on urban divided roadways with six or more lanes of traffic.

TABLE 7: ALL ON-SYSTEM FATAL AND SERIOUS INJURIES

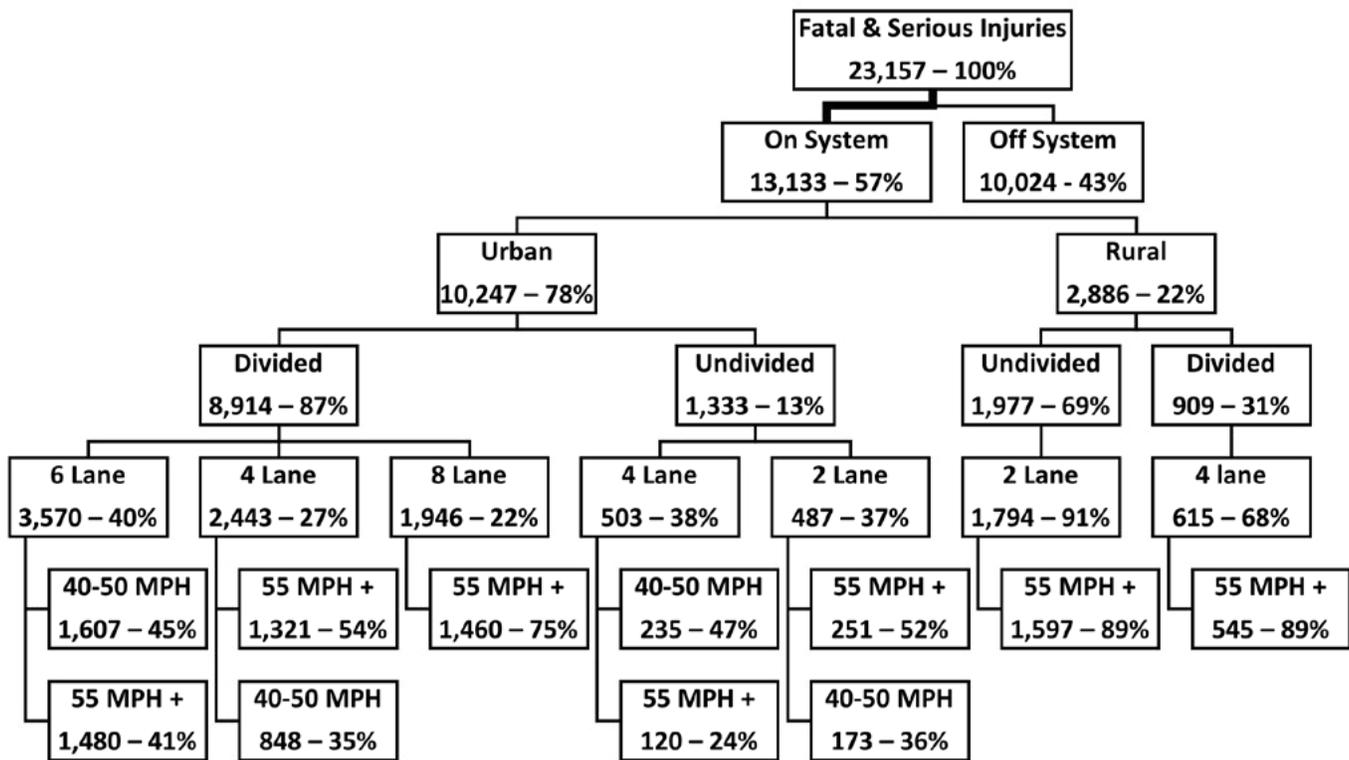
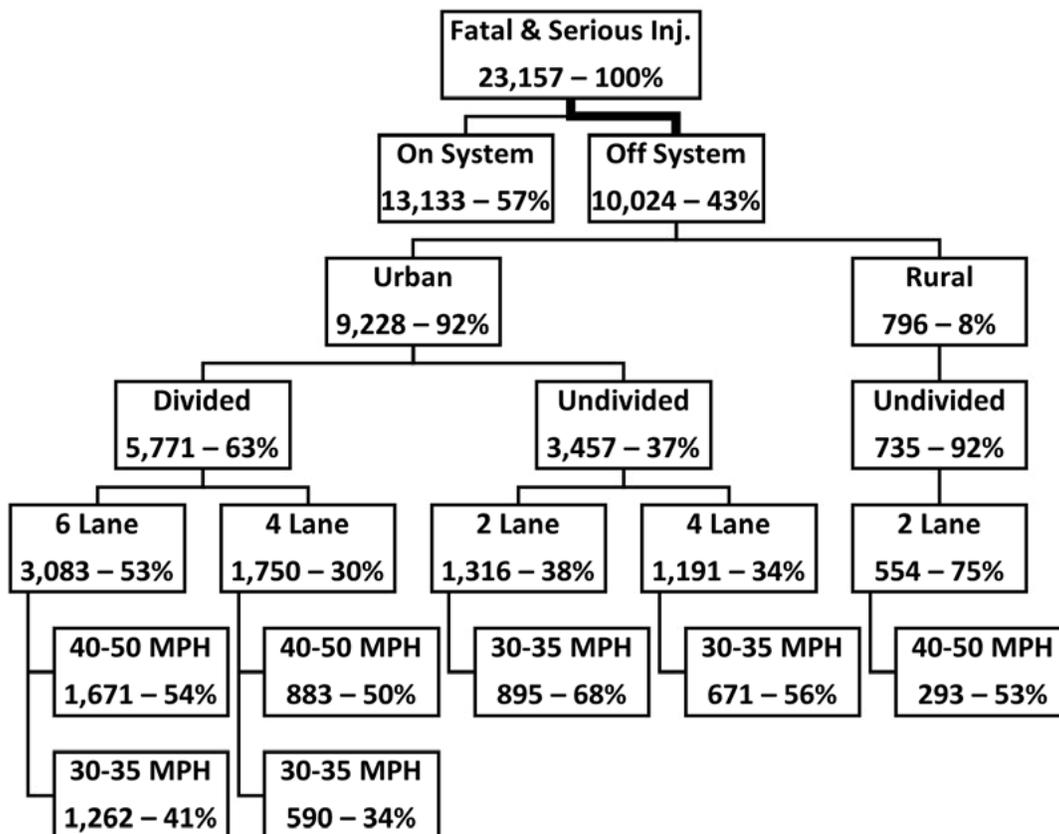


TABLE 8: ALL OFF-SYSTEM FATAL AND SERIOUS INJURIES



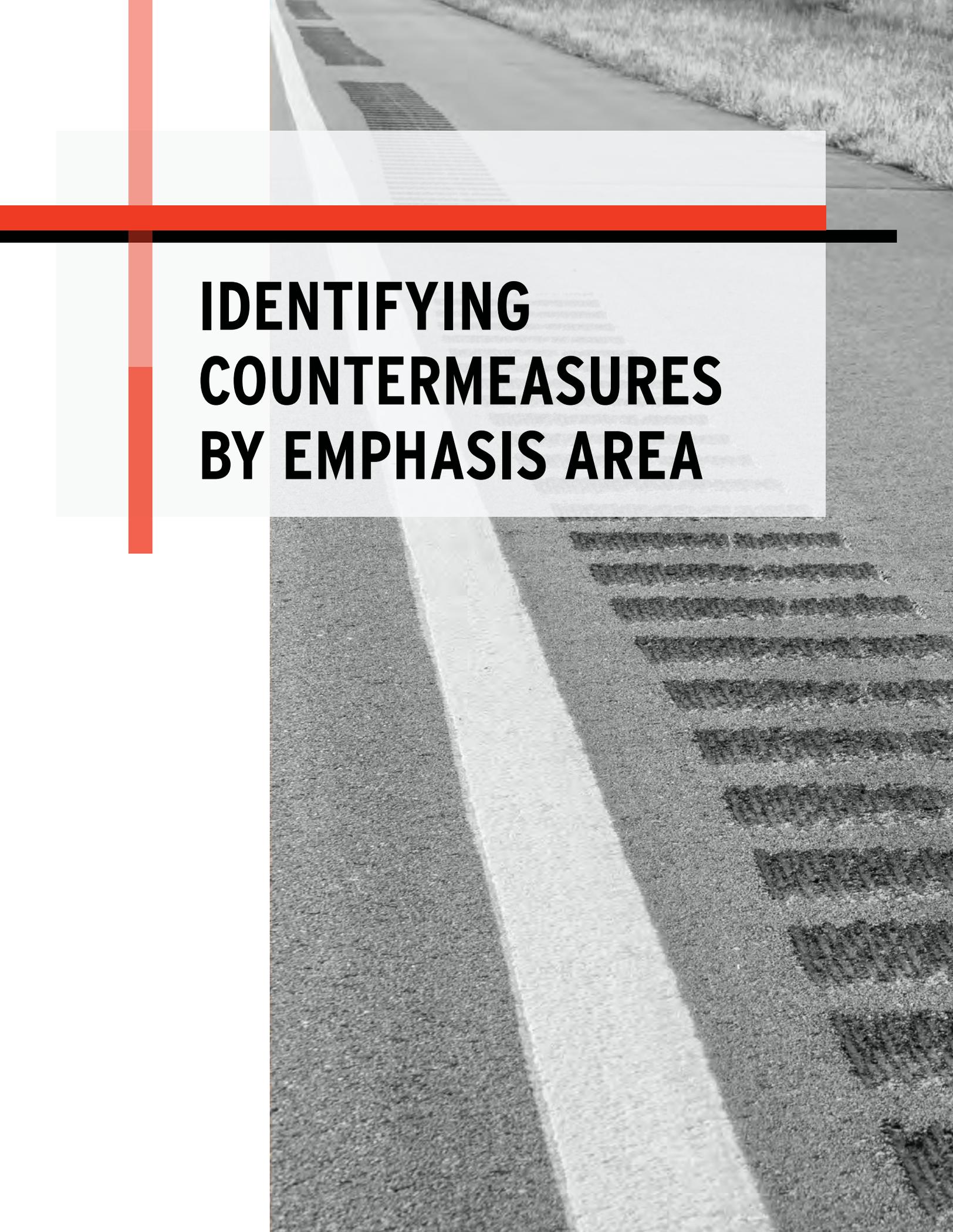
Because different crash types may occur more or less frequently on various roadway types, this process was repeated for each emphasis area. A summary of those results is shown in Table 9.

Each emphasis area and area of concern was evaluated to determine if that crash type is more likely to occur on certain roadway types by comparing the percentage of fatal and serious injuries to the regional average. This process revealed that wrong way driving injuries were much more likely to occur on on-system (TxDOT) roadways while intersection related injuries and bicyclist/pedestrian injuries were more likely to occur on off-system (local) facilities.

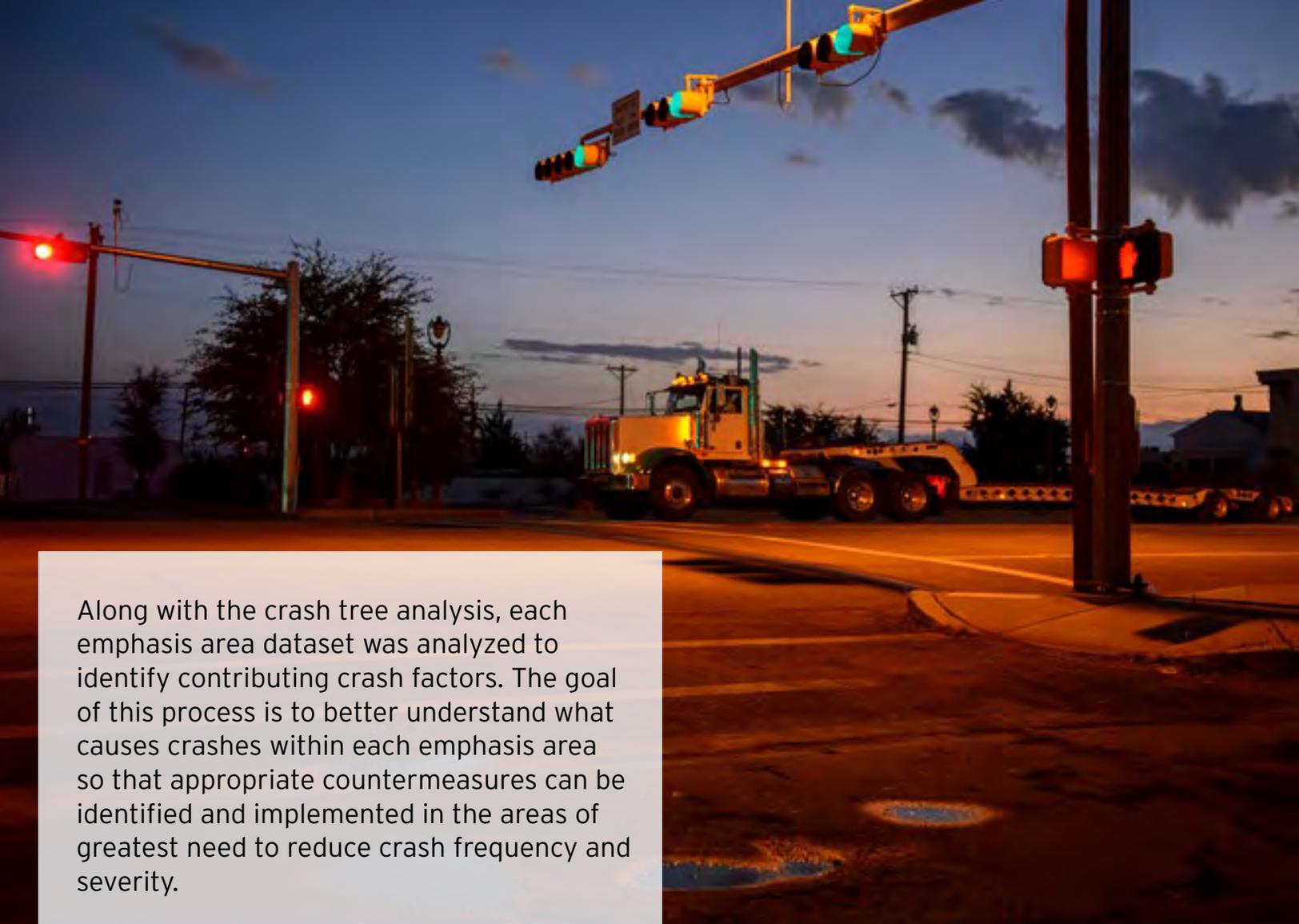
Further, Nighttime, Intersection-related, and Bicyclist/Pedestrian injuries were more likely to have occurred in urban areas. Roadway and Lane Departure, Speeding, Occupant Protection, Impaired Driving, Distracted Driving, and Wrong Way Driving were all more likely to have occurred on rural roadways. Both Older (65 years+) and Younger (under 20 years) Roadway Users were more likely to be injured in rural areas of the region. The only emphasis area that was not overrepresented on a particular roadway type or location compared to the regional average were Motorcycles.

TABLE 9: PERCENTAGE OF FATAL AND SERIOUS INJURIES FOR EMPHASIS AREAS COMPARED TO A REGIONAL AVERAGE

	Percentage of all Fatal and Serious Injuries	On-System	Off-System	On-System Urban	On-System Rural	Off-System Urban	Off-System Rural
All Fatal and Serious Injuries	100%	57%	43%	78%	22%	92%	8%
Nighttime Crashes	44%	58%	42%	83%	17%	92%	8%
Intersections	35%	46%	54%	80%	20%	97%	3%
Roadway and Lane Departures	29%	58%	42%	75%	25%	82%	18%
Speeding	22%	58%	42%	78%	22%	85%	15%
Occupant Protection	14%	57%	43%	75%	25%	87%	13%
Motorcycles	13%	56%	44%	79%	21%	90%	10%
Bicyclists and Pedestrians	12%	42%	58%	91%	9%	98%	2%
Impaired Driving	8%	54%	46%	70%	30%	84%	16%
Younger Roadway Users	7%	51%	49%	73%	27%	86%	14%
Distracted Driving	6%	61%	39%	73%	27%	88%	12%
Older Roadway Users	6%	61%	39%	72%	28%	90%	10%
Wrong Way Driving	2%	71%	29%	55%	45%	94%	6%



IDENTIFYING COUNTERMEASURES BY EMPHASIS AREA



Along with the crash tree analysis, each emphasis area dataset was analyzed to identify contributing crash factors. The goal of this process is to better understand what causes crashes within each emphasis area so that appropriate countermeasures can be identified and implemented in the areas of greatest need to reduce crash frequency and severity.

Key findings in each emphasis area are crash factors which were overrepresented relative to all fatal and serious injuries. Each emphasis area also includes broad strategies to eliminate fatalities and reduce serious injuries. Section A2 in the appendices contains specific countermeasures proven to address the strategies within each emphasis area. These recommended countermeasures come from one or more of the following national and state resources:

Federal

- Federal Highway Administration Proven Safety Countermeasures
- Crash Modification Factor Clearinghouse
- National Highway Traffic Safety Administration Countermeasures that Work

State

- Highway Safety Improvement Plan
- Strategic Highway Safety Plan (2017-2022)
- A Plan for Saving Lives on Texas Roadways

A comprehensive list of countermeasures from these resources was then screened against each emphasis area's data analysis to select countermeasures proven to prevent that crash type most effectively or mitigate injury severity only. Countermeasures come from each of the "five Es" of safety and may involve engineering upgrades, behavioral education campaigns, traffic enforcement programs, or be related to emergency response.

Full crash trees and additional data for each emphasis area are also available in the appendices.

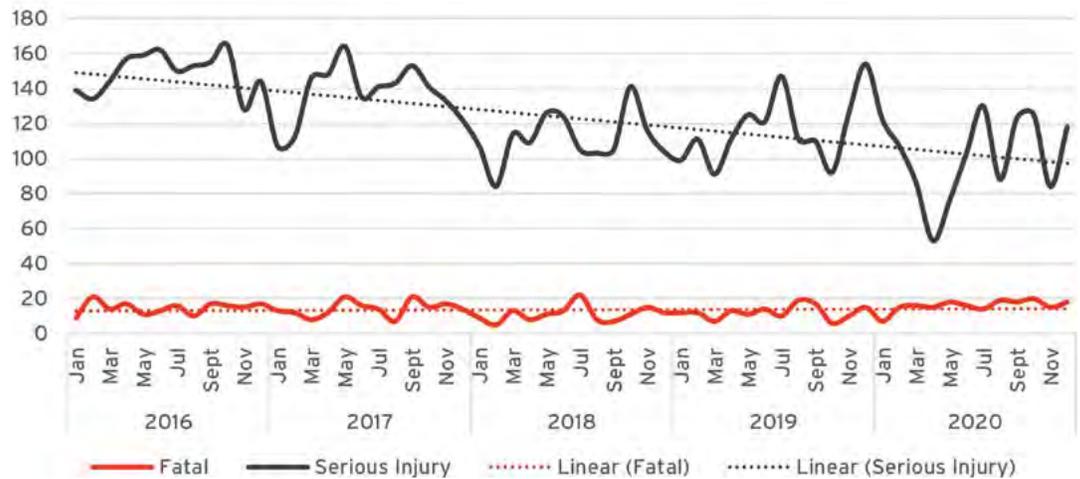
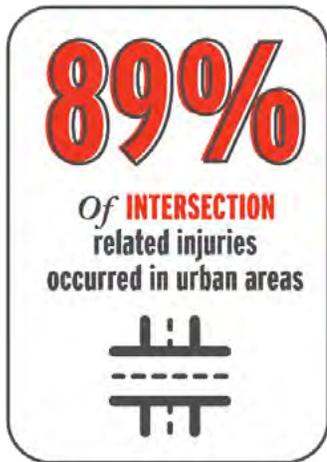
INTERSECTIONS

Fatal and serious injuries within this emphasis area are those that occurred within the boundaries of an intersection or at an approach to or an exit from an intersection. Intersection-related injuries accounted for 35 percent of all fatal and serious injuries within the NCTCOG 12-county region including 817 fatalities and 7,386 serious injuries from 2016-2020 (Figure 12). This translates to 163 deaths and 1,477 serious injuries per year on average.

KEY FINDINGS

- More than half (54 percent) of intersection-related injuries occurred off-system.
- Eighty-nine percent of all intersection-related fatal and serious injuries occurred in urban areas.
- Older roadway users (65+) tended to have more trouble navigating intersections than other drivers (45 percent of injuries to those 65+ occurred at intersections compared to 35 percent of all other drivers).
- Forty-one percent of intersection-related injuries occurred in right-angle crashes.

FIGURE 12: INTERSECTION RELATED CRASHES BY MONTH AND YEAR (2016-2020)



STRATEGIES FOR INTERSECTION-RELATED FATAL AND SERIOUS INJURIES

1. Implement low-cost intersection improvements like signal timing, signage, and marking to prevent driver confusion and reduce conflicts, especially in urban locations.
2. Improve bicyclist and pedestrian safety at intersections by improving crossings and visibility.

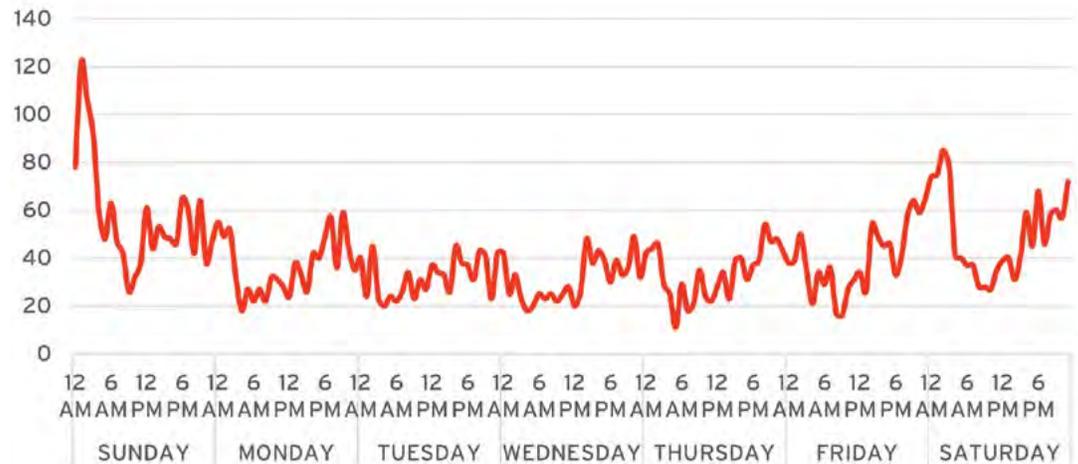
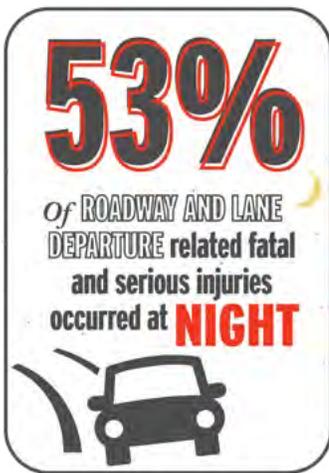
ROADWAY AND LANE DEPARTURES

Roadway and Lane Departure crashes are those that occurred either off the road, on the shoulder, or in the center median and only involved one motor vehicle. Fatal and serious injuries caused by these crashes accounted for 29 percent of all such injuries. There were 1,356 fatalities and 5,360 serious injuries caused by this crash type from 2016-2020. These totals translate to 271 deaths and 1,072 serious injuries per year on average.

KEY FINDINGS

- Forty percent of roadway and lane departure fatal and serious injuries are also speed-related.
- Younger male drivers (between 20-30 years old) were most likely to be involved in a roadway or lane departure-related crash that produced a fatal or serious injury.
- Forty percent of rural roadway and lane departure fatalities and serious injuries occurred at curves. This proportion is higher for rural on-system roadways, at 53 percent.
- Fifty-three percent of roadway and lane departure-related fatal and serious injuries occurred at night and were most likely to occur early on weekend mornings as shown in Figure 13.
- Sixteen percent of all roadway and lane departure fatal and serious injuries are impaired driving-related. This proportion is higher (22 percent) in rural areas.
- Fifteen percent of roadway and lane departure fatal and serious injuries occurred while the roadway was wet.

FIGURE 13: ROADWAY AND LANE DEPARTURES BY TIME OF DAY AND DAY OF WEEK (2016-2020)



STRATEGIES FOR ROADWAY AND LANE DEPARTURE CRASHES

1. Implement engineering countermeasures that prevent vehicles from leaving the roadway or encroaching into the opposite lane of travel.
2. Minimize the consequences of a vehicle leaving the roadway.
3. Improve crash detection and emergency response time, especially in rural areas.

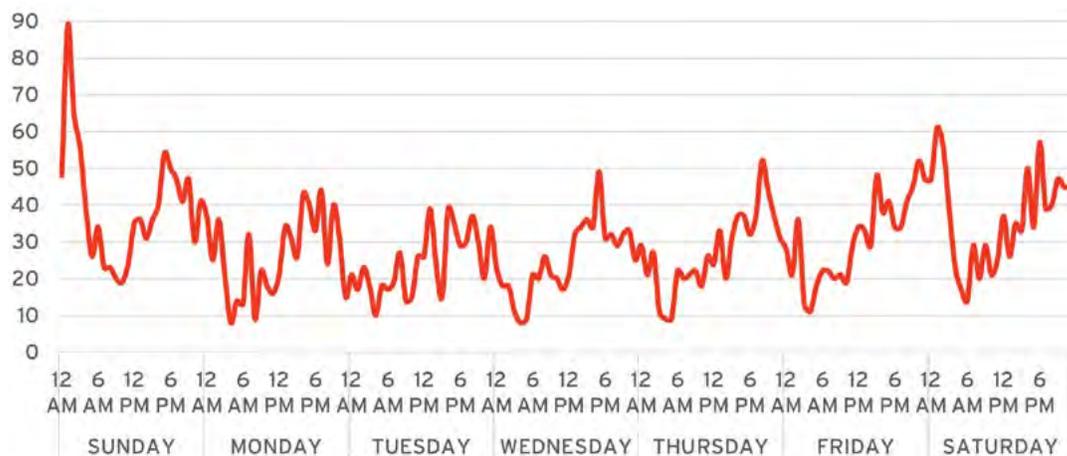
SPEEDING

Speeding-related fatal and serious injuries are those where at least one driver was traveling well above the posted speed limit or was driving too fast for roadway conditions. Vehicle speed is proven to have a direct correlation to crash severity, especially if a bicyclist or pedestrian is involved. From 2016-2020 there were 1,076 deaths and 3,949 serious injuries, or about 215 deaths and 790 serious injuries per year, where speeding was a factor. Speeding was a factor in 22 percent of all fatal and serious injuries.

KEY FINDINGS

- Speeding-related fatal and serious injuries occurred most frequently on Sundays at 2 AM as shown in Figure 14.
- Younger male drivers (between 20-30 years old) were most likely to be involved in a speeding-related crash that produced a fatal or serious injury.
- Motorcyclists accounted for 20 percent of all speeding-related fatal and serious injuries.
- Forty-seven percent of rural speeding-related fatal and serious injuries occurred at curves.
- Forty-nine percent of speeding-related fatal and serious injuries occurred at night (dark conditions).
- Twenty-four percent of speeding-related fatal and serious injuries were cited as not having worn a seatbelt.

FIGURE 14: SPEEDING RELATED FATAL AND SERIOUS INJURIES BY TIME OF DAY



STRATEGIES FOR ROADWAY AND LANE DEPARTURE CRASHES

1. Adjust speed limits to be more appropriate for bicyclists and pedestrians.
2. Increase high visibility speed enforcement along priority corridors.
3. Improve driver education among demographic groups on the dangers of speeding.
4. Implement road diets and traffic calming measures to slow traffic.

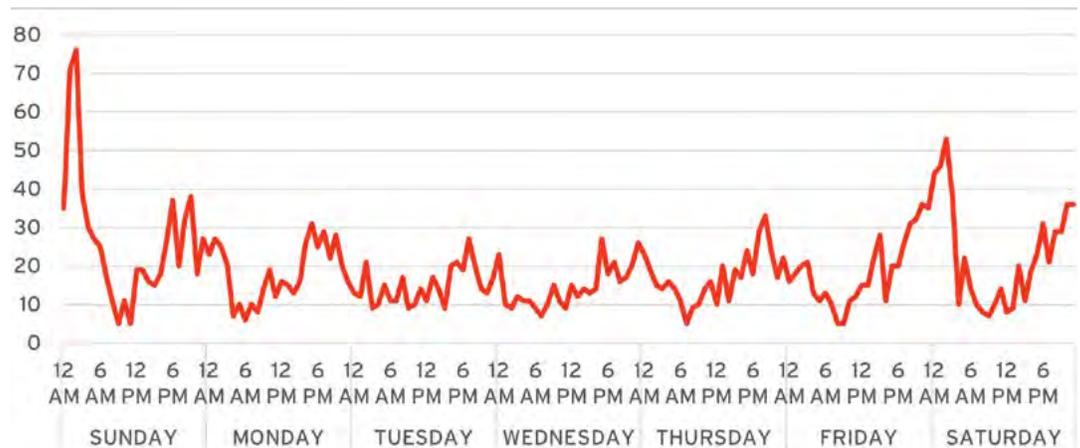
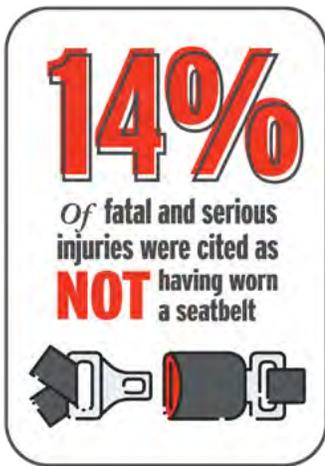
OCCUPANT PROTECTION

Occupant protection-related fatal and serious injuries are those where either the driver or a passenger of a motor vehicle was not wearing a seatbelt or other age-appropriate protection device such as a child's booster seat. A lack of occupant protection was a factor in 14 percent of all fatal and serious injuries in North Central Texas from 2016-2020. There was a total of 881 deaths and 2,303 serious injuries over this period, which translates to 176 deaths and 461 serious injuries per year on average. Almost 9 percent of these injuries were among children under the age of 10.

KEY FINDINGS

- Individuals not wearing a seatbelt at the time of a crash were about seven times more likely to experience a fatal or serious injury compared to those wearing a seatbelt.
- Forty-four percent of people who sustained fatal and serious injuries while not wearing a seatbelt were between the ages of 16-29.
- Thirty-seven percent of people who sustained fatal and serious injuries while not wearing a seatbelt also cited vehicle speed as a crash factor.
- Fifty-eight percent of fatal and serious injuries occurred at night and were most likely to occur on Sunday mornings around 2 AM as shown in Figure 15.
- Fifty-three percent of people who sustained fatal and serious injuries while not wearing a seatbelt were in run off the road related crashes.
- Nineteen percent of people who sustained fatal and serious injuries while not wearing a seatbelt were also impaired or the passenger of an impaired driver.

FIGURE 15: LACK OF OCCUPANT PROTECTION BY TIME OF DAY AND DAY OF WEEK (2016-2020)



STRATEGIES FOR OCCUPANT PROTECTION

1. Safety belt education and enforcement programs, especially targeting younger drivers.
2. Proper age-appropriate child restraint usage and installation training.



MOTORCYCLES

Like bicyclists and pedestrians, motorcyclists are vulnerable roadway users due to the lack of protection provided by a vehicle. Only 1.2 percent of commuter trips are taken by motorcycle, but motorcycle crashes make up 13 percent of all fatal and serious injuries in North Central Texas. From 2016-2020 there were 577 motorcycle fatalities and 2,405 serious injuries, which represents 115 fatalities and 481 serious injuries per year on average, though they did decline from 2016-2020 as shown in Figure 16. Like occupant protection, helmet usage has a significant impact on injury severity. Fifty percent of fatal motorcycle-related injuries resulted from not wearing helmets.

KEY FINDINGS

- Thirty-four percent of motorcycle-involved fatal and serious injuries were speeding-related.
- Forty-four percent of motorcycle-related fatality and serious injuries resulted from as not wearing helmets.
- Twenty-four percent of injuries occurred on curves but 40 percent of motorcycle injuries in rural areas occurred at curves.
- Men were responsible for 90 percent of fatal and serious motorcycle injuries.
- Saturdays had the highest number of motorcycle-related crashes, peaking at 6 PM.
- Motorcycle-related fatal and serious injuries tended to occur more often in daylight than other crash types (59 percent daylight).
- Sixty-two percent of rural motorcycle-related fatal and serious injuries occurred from one-vehicle crashes.

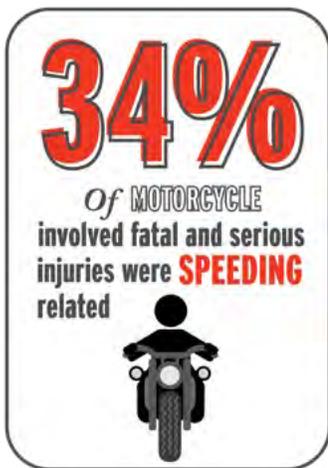


FIGURE 16: NUMBER OF FATAL AND SERIOUS MOTORCYCLE INJURIES BY MONTH AND YEAR (2016-2020)



STRATEGIES FOR MOTORCYCLE-RELATED FATAL AND SERIOUS INJURIES

1. Motorcycle Safety Education and Enforcement
2. Road maintenance at locations with high motorcycle run-off-the-road crashes.



BICYCLISTS AND PEDESTRIANS

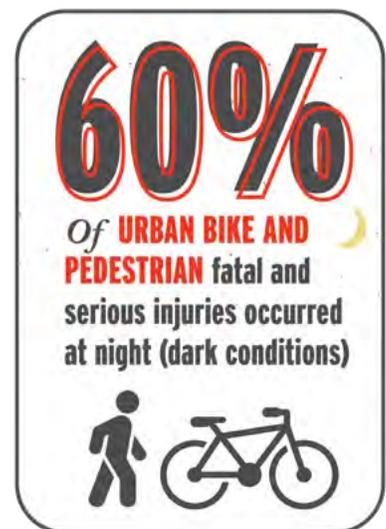
Active transportation users like bicyclists and pedestrians are the most vulnerable roadway users in North Central Texas. While vehicle drivers have safety devices like seatbelts, airbags, and thousands of pounds of metal to protect them, bicyclists and pedestrians have none of these safeguards. For decades in North Central Texas and across the U.S., speed and convenience for vehicles has been prioritized over walking or biking. Speed itself is a well-documented factor in pedestrian and bicyclist fatalities and serious injuries. According to the AAA Foundation, the risk of death for a pedestrian struck by a vehicle traveling 32 mph is 25 percent and climbs to 50 percent at 42 mph. These percentages rise exponentially with 90 percent of

pedestrians killed if struck by a vehicle traveling 58 mph.¹² Age also plays a factor in bicyclist and pedestrian fatalities. For example, a 70-year-old pedestrian struck by a vehicle traveling at 25 mph shares the same risk as a 30-year-old pedestrian struck at 35 mph.

The situation is getting worse. Nationally, from 2010-2019 pedestrian fatalities rose 46 percent and at the same time all other traffic deaths increased only 5 percent.¹³ In Texas, pedestrian deaths continue to rise and currently account for one in every five deaths on our roadways. Pedestrian fatalities in Texas rose 15 percent in 2021 compared to the previous year.¹⁴

While just over 1 percent of all trips in North Central Texas are completed by bicyclists and pedestrians combined, they account

for 13 percent of all fatal and serious injuries. From 2016-2020 there have been 54 deaths and 345 serious injuries among cyclists and 777 deaths and 1,586 serious injuries suffered by pedestrians. This translates to 11 deaths and 69 serious injuries each year among cyclists and 155 deaths and 317 serious injuries among pedestrians each year. Because the danger to active transportation users is great, NCTCOG has created the Pedestrian Safety Action Plan to specifically address pedestrian safety. A bicyclist safety action plan is also planned.



¹² *Impact Speed and a Pedestrian's Risk of Severe Injury or Death.* AAA Foundation. <https://aaafoundation.org/impact-speed-pedestrians-risk-severe-injury-death/>

¹³ *Pedestrian Deaths Soar in 2020 Despite Precipitous Drop in Driving During Pandemic.* Governor's Highway Safety Association. <https://www.gbsa.org/resources/news-releases/GHSA/Ped-Spotlight-Addendum21>

¹⁴ *Texas Department of Transportation.* <https://www.txdot.gov/inside-txdot/media-center/psas/pedestrians.html>

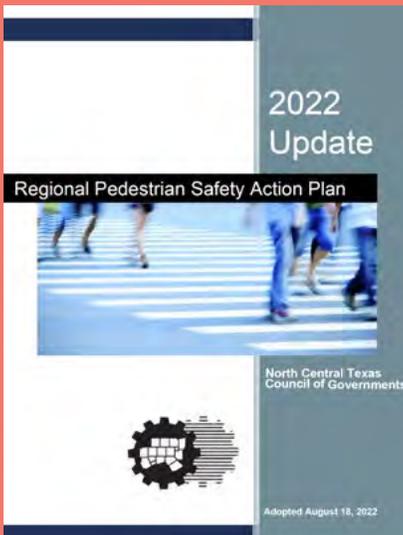
TABLE 10: BICYCLE AND PEDESTRIAN FATAL AND SERIOUS INJURIES BY MONTH AND TIME OF DAY

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12 AM	4	6	9	1	8	11	12	13	10	5	11	6
1 AM	5	3	8	6	8	13	8	14	8	10	8	6
2 AM	4	7	9	11	10	3	10	7	9	8	7	7
3 AM	1	4	8	3	3	10	10	4	3	2	3	5
4 AM	3	4	3	4	5	7	7	10	8	3	5	3
5 AM	13	5	11	3	6	9	12	5	8	12	8	11
6 AM	14	14	10	10	2	8	5	13	11	9	10	14
7 AM	9	8	10	6	9	4	2	6	10	13	7	4
8 AM	3	3	6	8	5	3	6	12	5	8	2	4
9 AM	5	3	3		12	4	9	3	2	11	5	4
10 AM	6	5		5	6	5	3	5	4	6		3
11 AM	8	5	4	2	4	8	6	6	6	6	8	7
12 PM	4	3	3	4	8	3	5	5	3	5	5	10
1 PM	5	11	4	8	6	8	9	8	7	5	4	5
2 PM	11	7	9	9	10	5	6	6	4	7	5	7
3 PM	12	7	7	12	12	4	6	8	13	9	8	10
4 PM	9	15	9	9	6	10	4	8	10	12	13	11
5 PM	10	15	11	7	11	8	8	9	14	18	16	12
6 PM	30	31	18	10	4	9	9	12	13	15	51	45
7 PM	20	28	18	9	11	7	13	3	9	31	38	26
8 PM	21	17	24	19	20	7	12	15	28	28	23	21
9 PM	12	15	16	19	26	29	26	27	18	16	6	14
10 PM	9	16	13	11	10	29	16	22	11	12	13	6
11 PM	11	12	10	4	15	15	15	8	11	14	6	9

Key

1-8	9	10	11	12
13	14	15	16	17+

Black line indicates approximate sunset for each month



PEDESTRIAN SAFETY ACTION PLAN (PSAP)

The PSAP complements NCTCOG’s long-range transportation plan, Mobility 2045 Update, and enhance existing goals and policies with a more targeted focus on pedestrian safety. The PSAP also serves as a guide or template for our local partners to develop their own locally significant pedestrian safety action plans.

KEY FINDINGS

- Sixty percent of bicyclist and pedestrian fatal and serious injuries occurred at night (in dark conditions), 40 percent of which occurred at locations where police reported there were no streetlights (Table 10).
- Forty-two percent of bicyclist and pedestrian fatal and serious injuries occurred on roads with speed limits between 30-35 mph.
- Fifty-six percent of bicyclist and pedestrian fatal and serious injuries occurred on city streets. An additional 16 percent occurred on interstates and 21 percent occurred on U.S. and State Highways.
- Seventy-two percent of bicyclist and pedestrian fatal and serious injuries were not related to intersections.
- Black and African Americans account for 32 percent of all pedestrian fatal and serious injuries.
- Fifty-five to 59-year-olds were most likely to be killed or suffer a serious injury among bicyclists and were also near the top age group amongst pedestrians. Ten to 14-year-olds are most likely to be hit in daylight (8 percent).
- Helmets were not worn in 70 percent of bicyclist fatal and serious injuries.
- Bicyclists and pedestrians were most likely to be struck on Friday evenings.

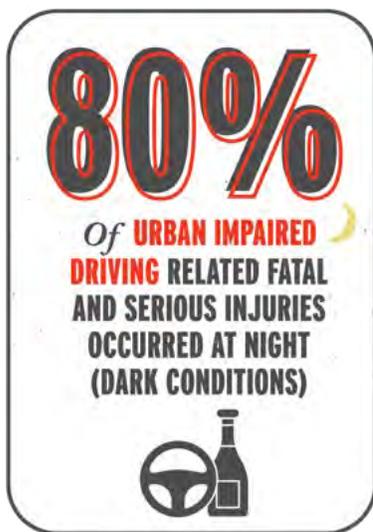
STRATEGIES FOR BICYCLIST AND PEDESTRIAN FATAL AND SERIOUS INJURIES

1. Develop educational programs and resources to be made available for communities, schools, and driver's education programs, which emphasize responsible roadway sharing for all modes.
2. Improve pedestrian crossing infrastructure at intersections and mid-block crossing locations.
3. Improve pedestrian lighting and visibility in areas where crashes have occurred at night.
4. Design roadways to accommodate all users.
5. Provide roadside assistance resources for stranded motorists on highways.

IMPAIRED DRIVING

The use of alcohol and/or drugs reduces brain function, worsening decision making and muscle coordination even at moderate levels. A study by NHTSA showed that a driver with a blood alcohol concentration of .08 (legal limit in Texas) is nearly four times as likely to crash as someone with no alcohol in their system.¹⁵ In North Central Texas, there have been 525 fatalities and 1,308 serious injuries where impaired driving was cited as a contributing factor from 2016-2020. This translates to 105 fatalities and 261 serious injuries each year on average. Almost 80 percent of impaired driving fatal and serious injuries occurred at night and were especially prevalent on weekend mornings around 2 AM, when bars and clubs are closing.

Wrong way incidents are also strongly related to impaired driving. A quarter of all wrong way driving incidents are reported as having involved alcohol or drug impairment. However, police reported driver impairment in 37 percent of all wrong way driving incidents that occurred after dark and 60 percent of wrong way driving incidents that occurred between 1 AM and 3 AM.



KEY FINDINGS

- Eighty percent of urban impaired driving-related fatal and serious injuries occurred at night (dark conditions).
- Thirty-nine percent of urban impaired driving-related injuries occurred between midnight – 4 AM (70 percent between 8 PM – 4 AM). Twenty-five percent of rural impaired driving-related fatal and serious injuries occurred between midnight – 4 AM (59 percent between 8 PM-4 AM) (Figure 17).
- Forty percent of urban impaired driving-related fatal and serious injuries were also speeding related.
- Twenty-seven percent of all impaired driving-related fatal and serious injuries occurred at curves.
- Seventy-five percent of rural impaired driving-related fatal and serious injuries are roadway and lane departure crashes.
- Thirty-three percent of impaired driving-related fatal and serious injuries were cited as not wearing a seatbelt.
- Eighty-one percent of rural impaired driving-related fatal and serious injuries are one-vehicle crashes and 75 percent are roadway and lane departures.
- Seventy-five percent of drivers involved in impaired driving-related fatal and serious injury crashes are male. Male and female drivers between 20-30 years old are most likely to be involved in impaired driving-related fatal and serious injury crashes (40 percent of all drivers).
- Hispanic and Black drivers account for a combined 51 percent of impaired driving-related fatal and serious injuries despite making up 36 percent of the regional population.

¹⁵ *Drug and Alcohol Crash Risk: A Case Control Study*. NHTSA, 2016. <https://www.nhtsa.gov/risky-driving/drunk-driving>

DISTRACTED DRIVING

Distracted driving can be any activity that diverts attention from the roadway. Primarily, this includes cell phone usage. Other types of distractions are using an infotainment system, navigation, or radio, talking with other passengers, eating or drinking, or even pets. Texting is especially dangerous as it takes a driver's eyes off the road for an average of five seconds. At 55 mph, that is the equivalent of

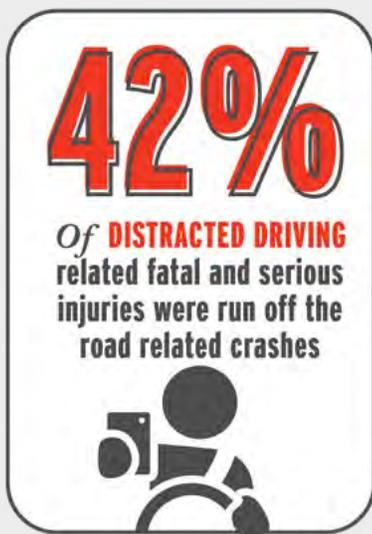
driving the length of a football field with your eyes closed.¹⁶ In 2017, Texas officially prohibited motorists from reading, writing, or sending electronic messages while driving.

While CRIS crash data shows that 6 percent of fatal and serious injuries involved distracted driving in North Central Texas, the actual number is likely higher. In 2013, the National Safety Council found that cell phone usage was not listed as a contributing factor in half of fatal crashes even when drivers admitted to phone use.¹⁷ It is

notoriously hard to prove a driver was distracted, and many might not even realize they were distracted. There were 134 fatalities and 1,280 serious injuries related to distracted driving reported from 2016-2020. This translates to 27 fatal and 256 serious injuries per year on average. Distracted driving is most prevalent among younger drivers, with 30 percent of drivers under the age of 30.

¹⁶What is Distracted Driving? NHTSA. <https://www.nhtsa.gov/risky-driving/distracted-driving>

¹⁷Undercounted is Underinvested: How Incomplete Crash Reports Impact Efforts to Save Lives. National Safety Council. 2017. <https://www.nsc.org/getmedia/88c97198-b7f3-4acd-a294-6391e3b8b56c/undercounted-is-underinvested.pdf>



KEY FINDINGS

- Forty-three percent of distracted driving-related injuries occur on roadways with a speed limit over 55 mph.
- Seventy-one percent of distracted driving-related injuries did not occur at an intersection.
- Twenty-nine percent of distracted driving-related injuries are also speeding related.
- Fifty percent of distracted driving-related injuries involved one motor vehicle, while an additional 27 percent occurred between vehicles traveling the same direction.
- Forty-two percent of distracted driving-related injuries involved a vehicle running off the roadway.

STRATEGIES FOR DISTRACTED DRIVING-RELATED FATAL AND SERIOUS INJURIES

1. Improve and increase enforcement capabilities for addressing distracted driving.
2. Install engineering countermeasures or technology proven to decrease distracted driving.
3. Implement education and awareness programs to address distracted driving.

HIGH INJURY NETWORK ANALYSIS



The systemic analysis approach evaluates crash risk across the entire roadway system. However, it is still important to identify and evaluate roadways with a particularly high number of fatal and serious injuries in the past. The high injury network analysis identifies and selects road segments where the highest concentrations of fatal and serious injury crashes have occurred over the previous five years of data (2016-2020). This analysis facilitates the scoring and ranking of corridors to receive potential safety countermeasures.

METHODOLOGY AND SCORING

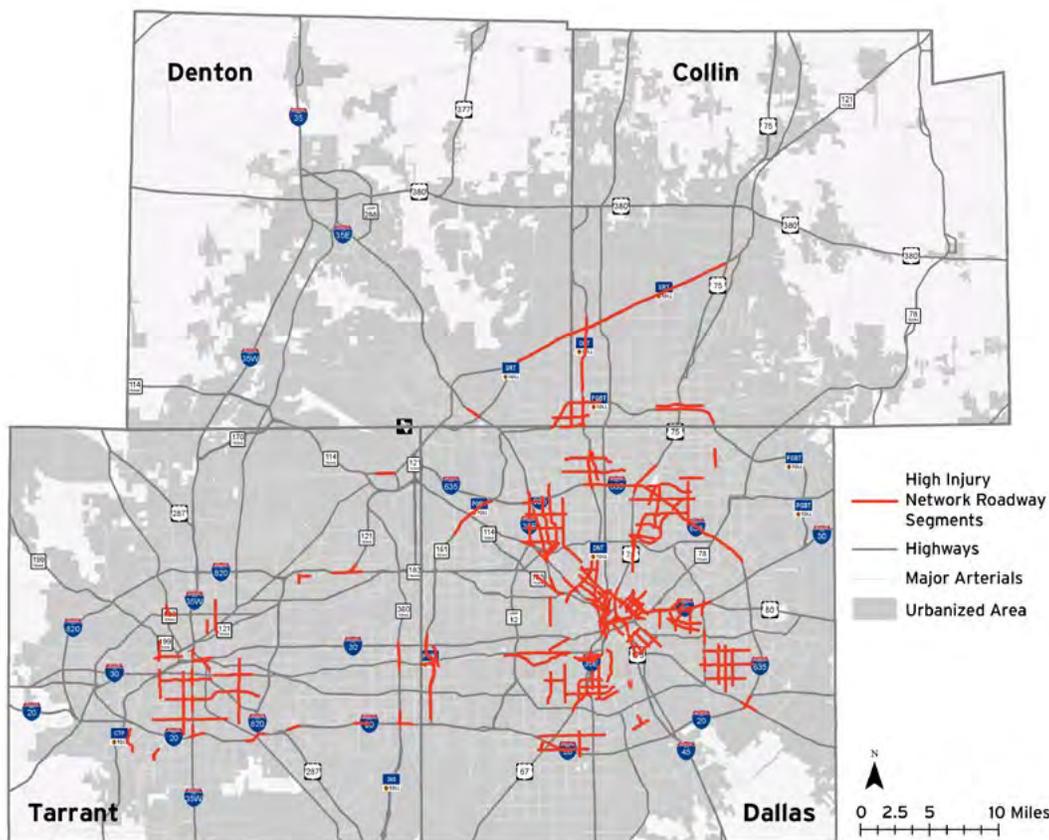
First a one-square-mile grid density map was created to determine the highest densities of fatal and serious injury crashes within the MPA. Grid squares with the highest concentrations of fatal and serious injury crashes were then selected to further investigate which roadway segments within each grid square had the highest concentrations of fatal and serious injuries. However, roadway segments could span more than one grid square.

Roadway segments needed to have at least five fatal and serious injuries to be added to the high injury network. Once selected as part of the high injury network, segments were scored based on a crash risk formula and on an equity score.

CRASH RISK

Crash risk was scored by calculating the number of fatal and serious injuries on each roadway segment relative to the amount of traffic present on that

FIGURE 18: HIGH INJURY NETWORK ROADWAY SEGMENTS



roadway. This traffic calculation is based on the estimated number of vehicle miles traveled (VMT) per year, calculated using NCTCOG’s most recent Metropolitan Transportation Plan network road layer. Fatalities were given extra weight in the following scoring formula:

The results of this analysis can be seen in Figure 18. All roadway segments identified in this process were in Collin, Dallas, Denton, or Tarrant counties (Table 11). A complete table listing all 212 identified high injury network segments is available in the appendix.

$$\begin{aligned}
 & \text{PRIORITIZATION SCORING FORMULA} = \\
 & \text{TOTAL NUMBER OF FATAL AND SERIOUS INJURY CRASHES} \\
 & + (\text{TOTAL NUMBER OF FATAL CRASHES} \times 2) \\
 & + (\text{TOTAL NUMBER OF SERIOUS INJURY CRASHES}) \\
 & / \text{VEHICLE MILES TRAVELED}
 \end{aligned}$$

TABLE 11: TOP 10 HIGH INJURY NETWORK CORRIDORS

Safety Prioritization Rank	Street Name	County	City	On or Off System	Limits From	Limits To	Safety Prioritization Score
1	Forest Ln	Dallas	Dallas	Off System	N Central Expy	Yale Dr	73
2	IH 635 Segment 1	Dallas	Dallas	On System	Blossomheath Ln	TI Blvd	71
3	IH 635 Segment 10	Dallas	Dallas	On System	Welch Rd	Preston Rd	69
4	W Berry St	Tarrant	Fort Worth	Off System	McCart Ave	Stalcup Rd	65
5	IH 635 Segment 8	Dallas	Dallas	On System	TI Blvd	Abrams Rd	60
6	IH 635 Segment 5	Dallas	Dallas/Garland	On System	Plano Rd	Jupiter Rd	59
7	Camp Wisdom Rd	Dallas	Dallas	Off System	Cockrell Hill Rd	University Hills Blvd	57
8	Harry Hines Blvd Segment 3	Dallas	Dallas	Off System	Royal Ln	Raceway Dr	56
9	IH 635 Segment 2	Dallas	Garland/Mesquite	On System	Centerville Rd	La Prada Pkwy	54
10	SH 121 Segment 1	Tarrant	Bedford	On System	Forest Ridge Dr	Bedford Rd	54



EQUITY

Equity scores for each high injury network corridor were calculated separately using a tool called the Demographic Analysis Tool developed by NCTCOG's environmental justice program area. This tool provides census-driven demographic information such as income, person ethnicity, transportation access, and other data within a specified search area. For the high injury network analysis, this tool was used to gather ratios¹⁸ of minority populations and ratios of residents below poverty level within a mile of each identified high injury network corridor. Minority population and poverty ratio scores were then combined to calculate an equity score for each corridor independent of the safety prioritization score in Table 11 and in Table A2 in the appendices. About 76 percent of high injury network corridors scored higher than two, which means the area surrounding that corridor is higher than the regional average. Equity scores for each high injury network corridor are included in Table A1 (section A3) in the appendices.



¹⁸These ratios are the number of people within each selected census block group that are a minority or are below the poverty line relative to the regional North Central Texas region. A score higher than 1 in either category indicates that that block group has a higher ratio than the rest of the region.



IMPLEMENTATION AND FUNDING



The fourth and final step of the Systemic Safety Analysis approach is to prioritize safety projects and programs. This step moves roadway safety from analysis toward implementation using all the information gathered in the development of the plan itself. This step begins after the plan is adopted by the Regional Transportation Council with the creation of a decision-making process for selecting and prioritizing which projects and programs will be implemented based on funding, schedule, and location. From that list, projects and programs are selected for implementation.

REGIONAL TRANSPORTATION COUNCIL REGIONWIDE SAFETY FUNDING PROGRAM

To support the statewide safety effort, the Regional Transportation Council, the regional policy board for the MPO, approved a safety program in October 2022. This funding will focus on the implementation of programs and projects to reduce fatalities and serious injury crashes within the North Central Texas region. This regionwide safety funding program is intended to address a variety of transportation safety issues, including speed enforcement, speed education, bicycle and pedestrian education, bicycle and pedestrian engineering, and freeway operations engineering and intercity connections. These focus areas complement the emphasis areas identified as part of the Roadway Safety Plan as well as the Pedestrian Safety Action Plan to provide needed funding to implement countermeasures. A total of \$50 million has been approved to begin in Fiscal Year 2024 and funding will continue through Fiscal Year 2026 to implement projects and programs to improve the safety of the transportation system. A detailed list of the projects and a breakdown of the funding for each project is provided in Appendix A4.

ONGOING SAFETY PLANNING AND IMPLEMENTATION

Roadway safety planning and the road to zero fatalities is an ongoing process that requires constant attention. The adoption of this plan and other efforts such as NCTCOG's Pedestrian Safety Action Plan are tools used to organize and prioritize roadway safety efforts by identifying dangerous crash types, locations, and contributing factors. However, the roadway safety planning process does not end there. It is important that this process include ongoing efforts to reevaluate plans, projects, and programs as new data becomes available.

This includes an iterative review and updating of this plan at least every five years, parallel to the update schedule of the statewide Strategic Highway Safety Plan. At a minimum, these updates will include reevaluation of the changing causes and solutions to roadway safety issues, updates and refinement of the High Injury Network, and an appraisal of program implementation and effectiveness. Ongoing efforts will also include the identification of additional funding sources, partners, and technologies that can help make North Central Texas roadways *a safer place for all*.

NCTCOG Executive Board 2022-2023

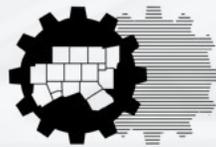
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