



APPENDIX C

EQUITY ANALYSIS



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Webb County-City of Laredo Safety Action Plan Equity Analysis

Equity is a core principle of the Vision Zero strategy, underscoring the ethical imperative that no one should be left behind in improving safety. Laredo-Webb County, as an area characterized by heavy freight activity across the U.S.-Mexico border and a significant share of zero-car households and non-English speaking households, faces unique vulnerabilities to traffic fatalities and severe injuries.

To develop this plan, a comprehensive, data-driven approach was employed to integrate equity considerations throughout all stages of the planning and decision-making processes. As a first step, equity in the context of road safety in Webb County was defined. Next, the current conditions were analyzed through an equity lens. This involved identifying and mapping equity priority areas based on the concentration of historically marginalized populations and the severity of burdens related to traffic safety using census tract-level data. The findings from this equity analysis were then validated through extensive community outreach activities to ensure alignment with lived experiences and local knowledge.

The Equity Impact Analysis Appendix provides a detailed explanation of methodologies and findings used in the assessment of Webb County-City of Laredo Safety Action Plan (SAP). In alignment with the project's commitment to equity, the Equity Analysis served as a framework for evaluating the potential impacts of transportation planning decisions in equity-priority areas, with a focus on identifying and addressing safety problems with measures for performance and better outcomes.

The analysis used the following key steps:

- **Identification of Equity Areas of Focus:** The Council on Environmental Quality (CEQ)'s Climate and Economic Justice Screening Tool and the US Census was used to identify communities experiencing disproportionate burdens across multiple factors, including climate vulnerability, environmental hazards, health outcomes, and economic opportunity.
- **Development of Problem Statements:** A baseline analysis of disproportionate burdens was conducted to assess existing transportation safety disparities across different metrics and communities. This involved analyzing crash data and the high-injury network (HIN), considering equity priority areas and access to equity-serving land uses. The analysis resulted in the development of four key problem statements to guide the assessment of equity within the Safety Action Plan recommendations.
- **Development of Performance and Outcome Measures:** Performance measures and outcome measures were established to track progress toward addressing identified disparities and achieving a more equitable and safe transportation system. These measures provided a quantifiable basis for evaluating safety while also advancing equity goals.

This appendix provides an overview of the methods and results of each step. It is a technical reference document for understanding the approach to integrating equity considerations into the Safety Action Plan.

Defining Equity

The Equity Analysis framework recognizes transportation inequity often arises from the combination of multiple factors. This framework defines "equity" by examining how several factors can intersect to create disproportionate burdens in safety and equity for specific communities. For example, individuals living with disabilities living in a low-income neighborhood with inadequate pedestrian infrastructure and limited public transportation options face heightened challenges in safely accessing essential destinations. This intersectional lens highlights the connection between safety and equity. With this context, the analysis considered factors such as income, poverty, linguistic isolation, education level, minority status, environmental burdens, health, and transportation barriers. The data was then used to define Equity Priority Areas and develop targeted problem statements and performance/outcome measures.

The metrics used to assess equity and safety were organized into four main categories. First, socioeconomic burdens consider factors such as language barriers, low-income levels, and the history of discrimination within communities. Second, transportation burdens focus on challenges people face in getting around safely, such as living close to busy roads, not owning a car, and other obstacles to travel. Third, health burdens look at health-related issues that can affect safety, such as air quality/pollution. Finally, Equity Priority Land Uses consider access to essential services and opportunities, including community services, support for unhoused population, support for undocumented workers, and access to parks and open space.

To evaluate equity and safety the following metrics were assessed:

Table 1: Equity Categories and Associated Metric Relevant to the Safety Action Plan

Category	Metric	Relevance to Safety Action Plan
Socioeconomic Burdens	Linguistic Isolation	Informs community engagement strategies, safety communication, signage, and outreach countermeasures.
	Low Median Income Households	Informs community engagement strategies and areas in need of increased investment.
	Historically Marginalized Communities	Race and ethnicity are not factors in CEJST scoring, but important in addressing historic harm.
Transportation Burdens	Travel Barriers	Average relative cost and time spent on transportation relative to all other census tracts. Informs both long-distance commutes and high-cost burdens for travel.
	Traffic Proximity & Volume	Count of vehicles on major roads within 500 meters, divided by distance in meters. This is compiled from 2017 DOT traffic data. Informs the level of traffic stress experienced by road users.
	Zero-Vehicle Households	Informs need for safety treatments inclusive of pedestrians, bicyclists, people with different abilities, and transit users.
Health Burdens	Poor Air Quality (PM 2.5)	Informs health benefits or burdens of active transportation.
Equity Priority Land Uses	Community Services	Identifies critical community-serving destinations to ensure safe access.
	Services for Unhoused Population	
	Establishments Supporting Undocumented Labor	
	Parks & Open Space	

Source: CEJST, 2023, Accessed from: <https://screeningtool.geoplatform.gov/en/downloads#3/33.47/-97.5>; Census Bureau ACS-5 Year, 2022; Land Use information compiled by Cambridge Systematics

Equity Areas of Focus

The next step in Equity Impact Analysis is to identify geographic areas that have experienced a disproportionate burden of socioeconomic challenges such as transportation limitations, health risks, and/or limited access to essential services, geographic equity areas of focus. Analysis further narrowed the focus of metrics from **Table 1** to **Table 2**, honing in on the key factors considered when defining equity areas of focus for the Laredo-Webb County region, particularly in the context of the development of the Safety Action Plan. Other considerations, such as Equity Priority Land Uses were considered in mapping against the high-injury network (HIN) later in the analysis.

Table 2: Equity Metrics Used to Identify Equity Priority Areas

No.	Metric	Definition
1	Linguistic Isolation	Percent of households where no one over age 14 speaks English very well
2	Household Income	Percent of a census tract's population in households where household income is at or below 200% of the Federal poverty level (does not include students in higher education)
3	Traffic Proximity	Percentile of average annual daily traffic at major roads within 500 meters, divided by distance in meters
4	Travel Barrier Score	Percentile of the average relative cost and time spent on transportation
5	Zero-Car Households*	Percent of households that have no vehicle

Data sources: US Climate and Economic Justice Screening Tool (CEJST) 2023; *American Community Survey (ACS) 2019 5-year Estimates

Equity focus areas were organized into three tiers based on the degree of marginalization. A census tract was assigned a point if it ranked at or above the 90th percentile for any burden category within the federal Climate and Economic Justice Screening Tool (CEJST) data, in addition to having more than 90 percent of households as zero-car households within the census tract. All census tracts were assigned scores on each metric, and cumulative scores determined their tier categorization. **Figure 1** maps the equity tiers and their proximity to the High Injury Network (HIN) in the Laredo-Webb County region.

Of the total 61 census tracts in the Laredo-Webb county region, 55 tracts (or 90.2 percent) fall in the equity priority areas. Of the total, approximately 61 percent of tracts fall in Tier I (or the lowest equity tier), shown in a light green color in the map below. This tier includes any tract that meets the CEJST definition of disadvantaged. Tier II, highlighted in brighter green color, includes 10 census tracts (16.4 percent) that meet the 90th percentile criteria for at least two equity metrics. Tier III, shown in the darkest green color, represents areas with the highest degree of marginalization. This tier includes tracts where three or more equity metrics met the 90th percentile criteria, accounting for 13 percent of the total census tracts in Webb County and representing the areas with the greatest equity needs.

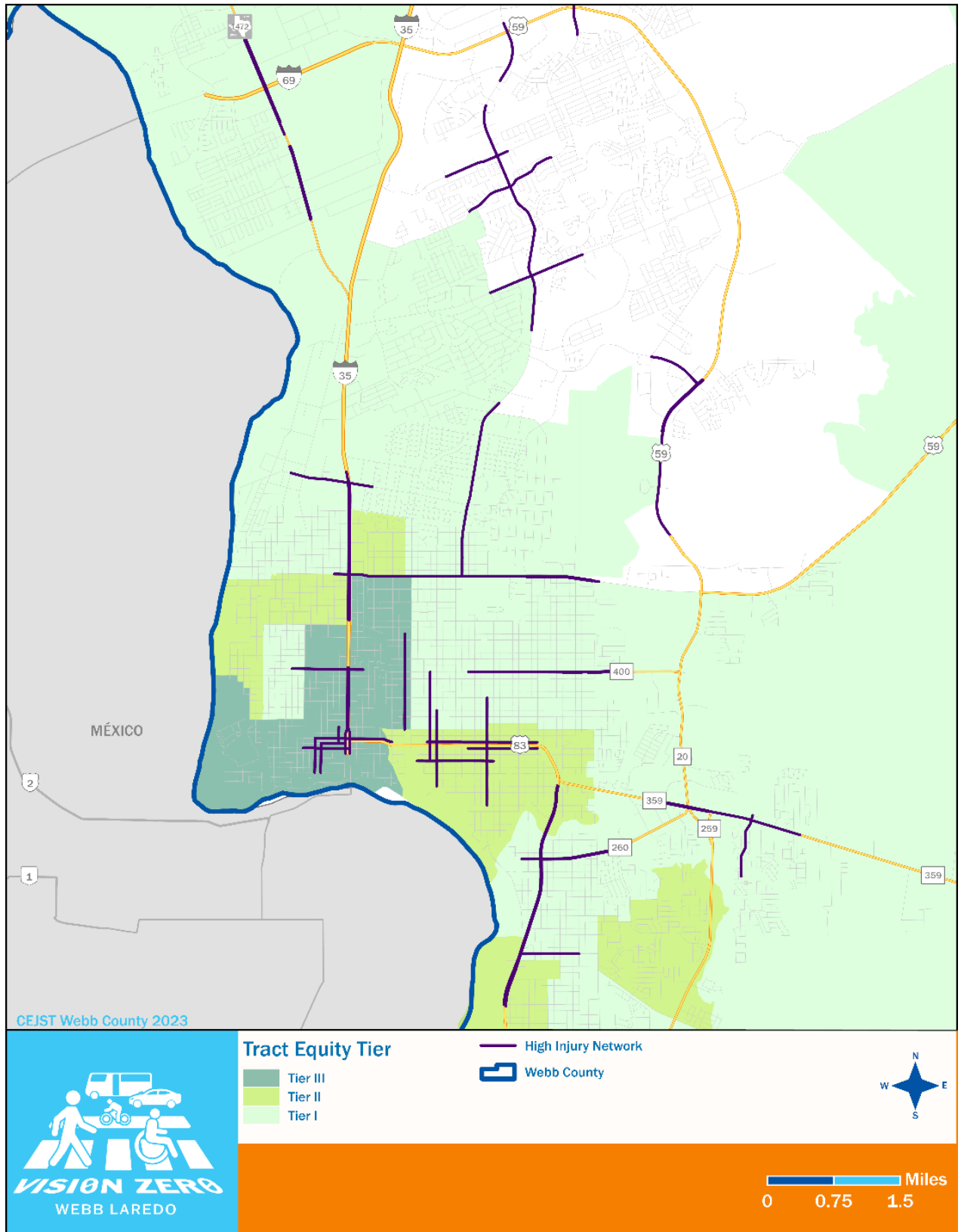


Figure 1: Equity Priority Areas and Tiers in Webb County

Problem Statements & Performance Measures

The next step of the Equity Analysis was to develop problem statements describing specific safety issues faced by residents in the equity priority areas identified. These problem statements guided the development of targeted solutions and performance measures to address the identified disparities.

Focus areas for safety improvements were determined by analyzing crash data and the HIN, considering equity priority areas and access to Equity Priority Land Uses. This analysis helped identify key areas where targeted strategies and countermeasures can be implemented to improve safety levels in the Webb-Laredo region. These focus areas include speed management, safe access for vulnerable road users (such as pedestrians and cyclists), and addressing the specific safety concerns of older (65+ years) and younger (15-20 years) road users.¹

Performance measures are used to track progress towards creating safer roads. These measures include tracking the number of crashes, fatalities, and serious injuries, as well as evaluating the effectiveness of actions taken by agencies. To ensure the measures are relevant and effective, they were refined based on feedback gathered from stakeholders and community engagement.² Outcome measures track the implementation of the plan. While performance measures evaluate a plan's effectiveness in achieving its goals, outcome measures monitor the plan's implementation, and the actions needed to put it into practice.

Speed Management

Problem Statement & Key Facts

Speed is the top factor in crashes resulting in fatal and serious injuries.

- Approximately 37 percent of all fatal and serious injuries had speed as a factor between 2018-2022. Speed management is an important strategy in Laredo-Webb because speed is a top factor in motor vehicle fatalities and serious injuries. Based on the existing methodology, speed limit change evaluations conducted through TxDOT's speed formula may lead to higher speeds.³
- Existing roadways in Laredo-Webb include design features that encourage speeding, such as wide lanes, wide shoulder, multiple lanes, limited streetscapes, larger corner radius, etc.
- Speed concerns and impacts particularly impact equity populations, such as younger and older road users.

Performance measures

- Ratio of the percentage of speed-related crashes in equity focus areas to speed-related crashes in non-equity focus areas.
- Number of speed-related fatalities and serious injuries (5-year average).
- Number of crashes at locations before and after safety improvements.

Outcome measures

- Number of traffic calming treatments implemented on High Injury Network in equity focus areas.
- Miles of coordinated signals implemented on HIN in equity focus areas. Include audio-operated messages for pedestrians and bicyclists (to "wait") at signals wherever possible.
- Miles of roads with road design and engineering improvements to achieve desired speeds.
- Vehicle data collection on hard stops, near misses, and speeding opportunities.

¹ Younger Road Users are defined here in alignment with the Texas Strategic Highway Safety Plan.

² Vision Zero Working Group, Vision Zero Advisory Committee and the public Safety Action Plan outreach event in April 2024

³ TxDOT Procedures for Establishing Speed Zones, 2015.

Safe Access for Vulnerable Road Users (VRUs)

Problem Statement & Key Facts

Vulnerable road users, including pedestrians, bicyclists, and motorcyclists, account for only 2 percent of all crashes but 32 percent of fatal and serious injury crashes (Table 2).

- Zero-car households make up 6 percent of the population, but 48 percent of those households are within ¼-mile of the overall high-injury network (HIN).
- 46 percent of parks and open space land uses are within ¼-mile of the overall HIN.
- 34 percent of elementary and middle schools are within ¼-mile of the overall HIN.
- 71 percent of hospitals are within ¼-mile of the overall HIN.

Table 3: Safe Access for Vulnerable Road Users (VRUs)

Equity Priority Populations	Percent of the Laredo-Webb population or households	Percent within ¼-mile of the High-Injury Network
Total Population / Households	100%	31% / 33%
Zero-Car Households	6%	48%
Seniors (65+)	9%	42%
Equity Priority Land Uses		Percent within ¼-mile of the High-Injury Network
Elementary and Middle Schools		33%
Libraries		33%
Parks and Open Space		46%
Hospitals		72%
Religious Centers		47%
Senior Centers		62%
Community Services		45%

Source: TxDOT Crash Records Information System (CRIS); US Department of Homeland Security, 2024, Hospitals. Accessed from: <https://hifld-geoplatform.hub.arcgis.com/maps/9e318142490c4884bf74932af437c6c2>; National Center for Education Statistics, 2023, School Locations and Geoassignments. Accessed from: <https://nces.ed.gov/programs/edge/geographic/schoollocations>; Other land use information compiled by Cambridge Systematics

Figures 2, 3, 4, and 5 demonstrate the geographic proximity of Equity Priority Land Uses to the HIN. This analysis was used in informing the prioritization of projects to address inequities in accessibility in Laredo-Webb. The overrepresentation of zero-car households within ¼-mile of the HIN, along with the proximity of crucial land uses to the HIN, indicates a need to target safety measures in these areas.

Data analysis also shows that a higher percentage of VRUs are involved in fatal and serious injuries at intersections than at other road segments, underscoring targeted safety treatments at intersections (Figure 6).

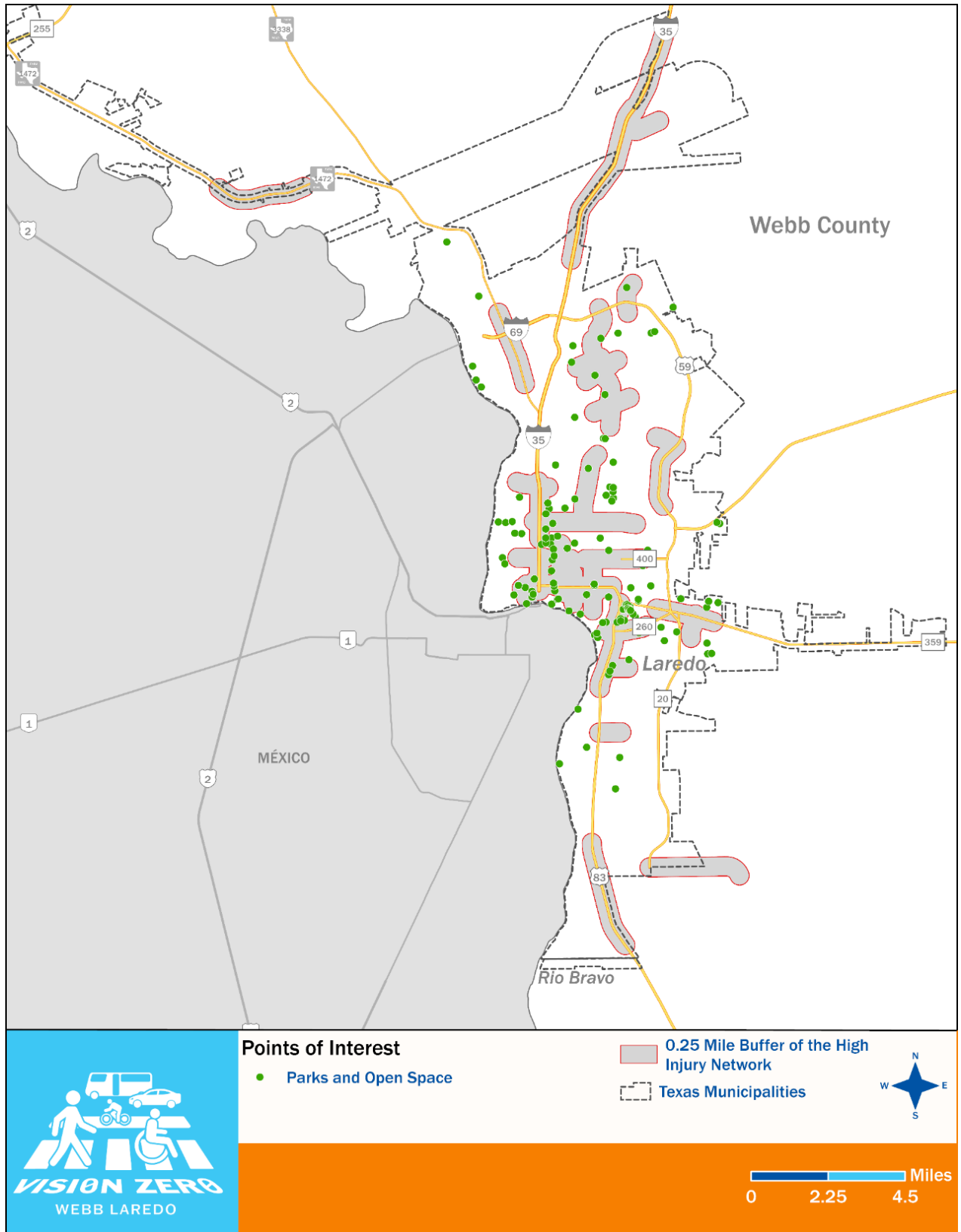


Figure 2: Parks and Open Space within ¼-Mile of the High-Injury Network

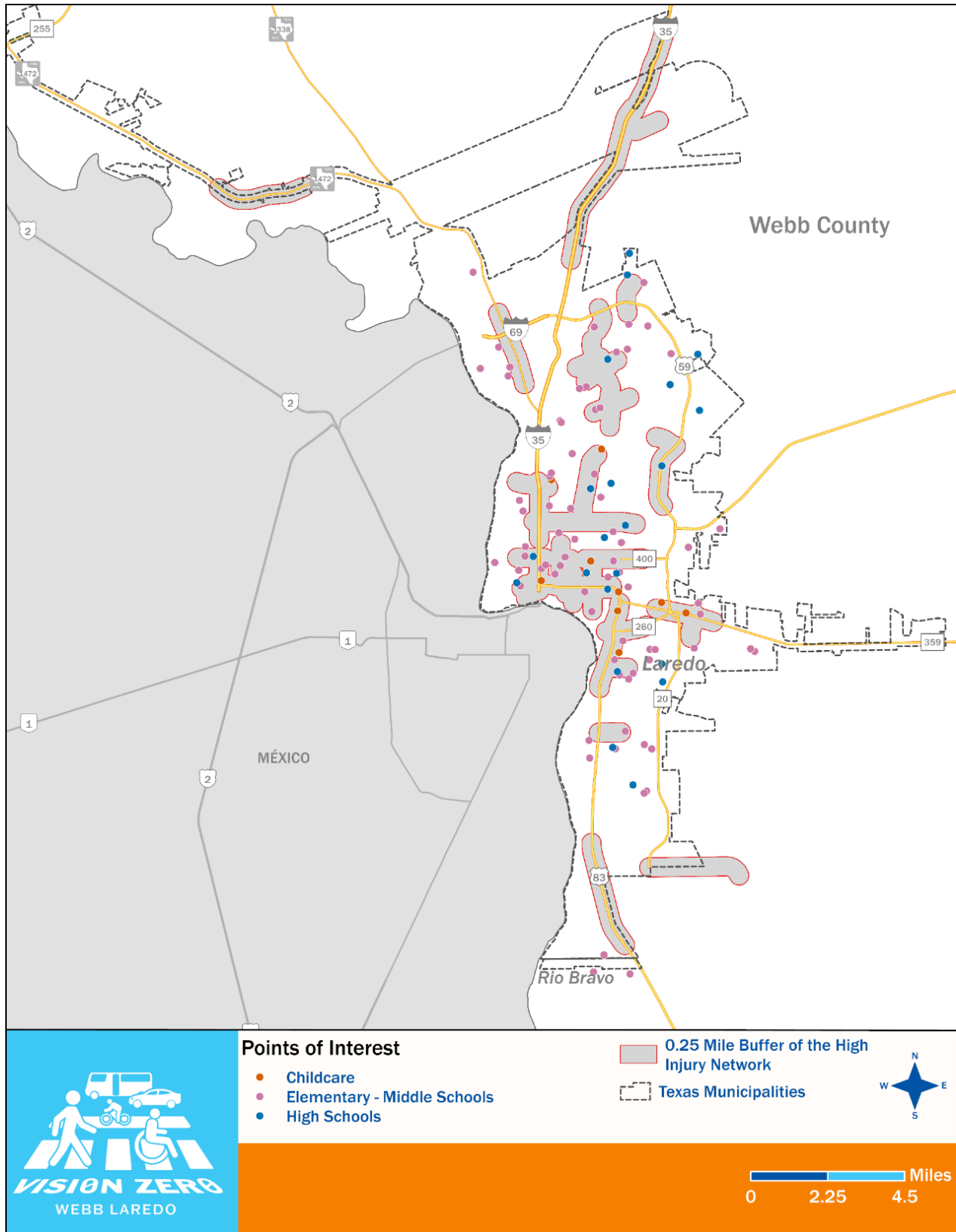


Figure 3: Childcare and Schools within ¼-Mile of the High-Injury Network

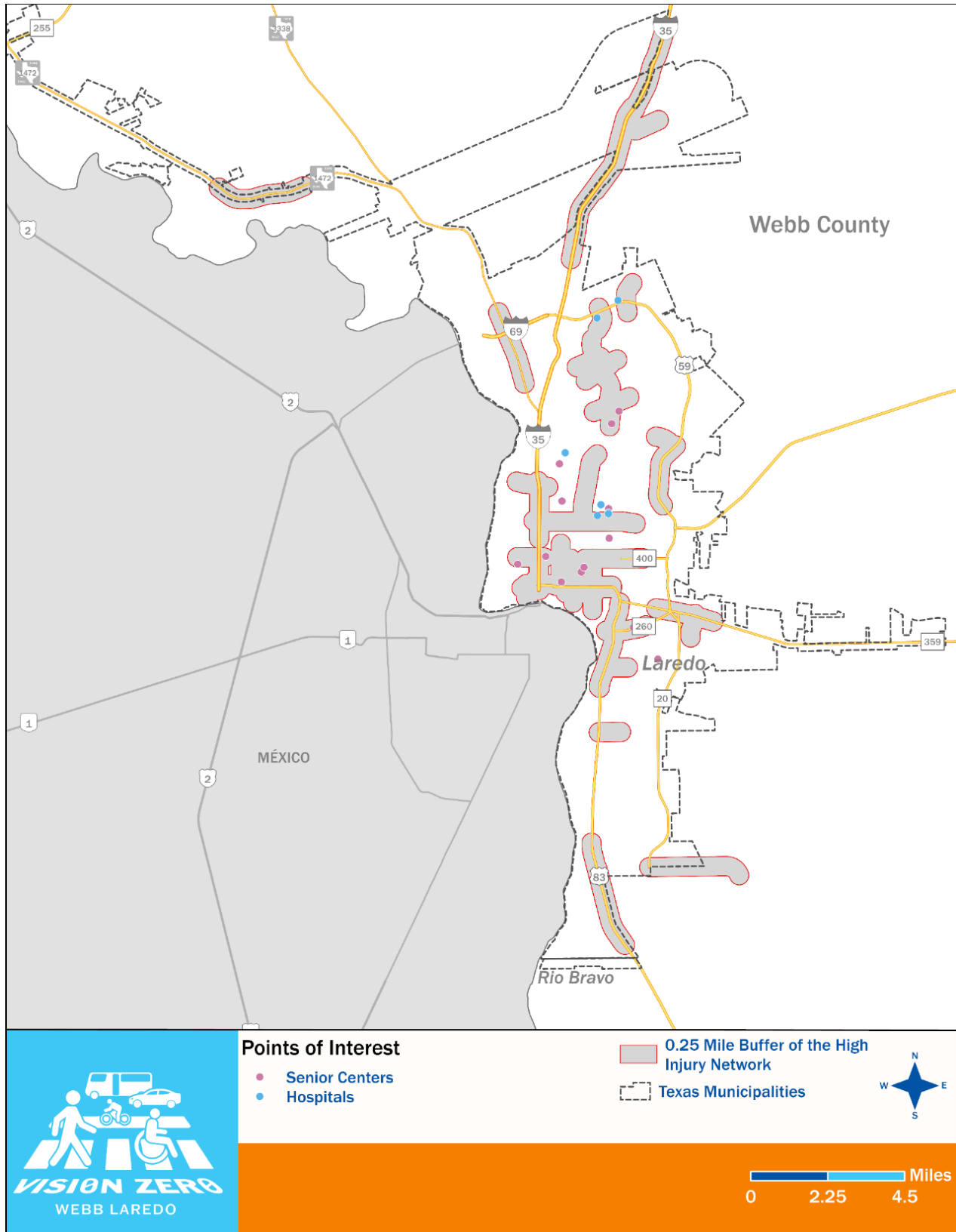


Figure 4: Hospitals and Senior Centers within ¼-Mile of the High-Injury Network

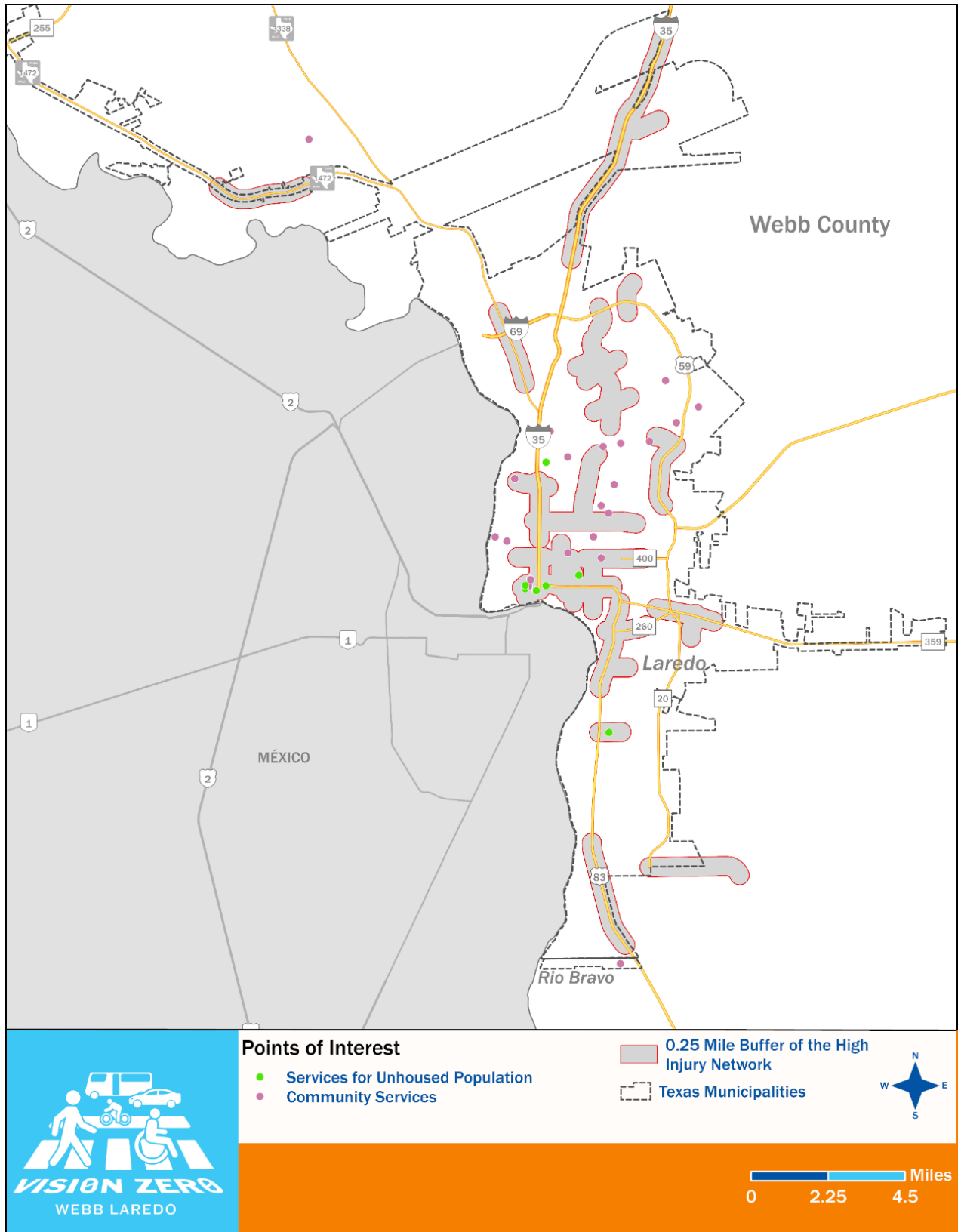


Figure 5: Community Services within ¼-Mile of the High-Injury Network

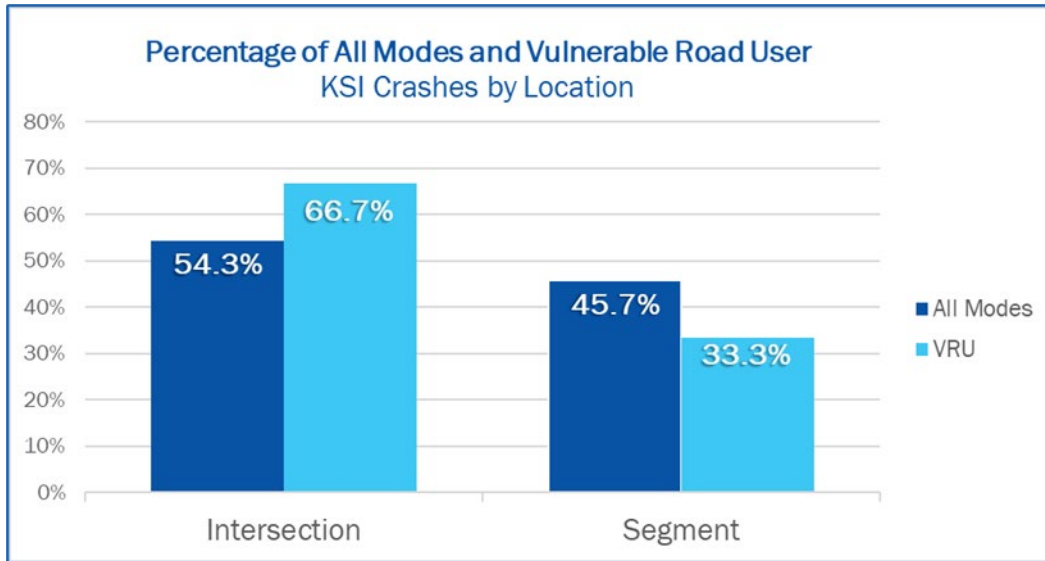


Figure 6: Percentage of All Modes and Vulnerable Road User KSI Crashes by Location

Source: TxDOT Crash Records Information System (CRIS)

- Vulnerable road users, including pedestrians, bicyclists, and motorists, account for only **2 percent** of all crashes but **32 percent** of fatal and serious injury crashes. The overrepresentation of zero-car households within $\frac{1}{4}$ -mile of the HIN, along with the proximity of crucial land uses to the HIN, indicates a need to target safety measures in these areas.
- Data analysis also shows that a higher percentage of VRUs are involved in fatal and serious injuries at intersections than at other road segments, underscoring targeted safety treatments at intersections. Additional measures, including dedicated walking and biking paths and improved visibility of VRUs on roads, would help ensure safe mobility of all road users.
- Additional measures, including dedicated walking and biking paths and improved visibility of VRUs on roads, would help ensure safe mobility of all road users.

Performance Measures

- Reduction in fatalities and serious injuries in census tracts with a high proportion of zero-car households.
- Reduction in pedestrian, bicyclist, and motorist fatalities and serious injuries.

Outcome Measures

- Number of safety projects coordinated with the Laredo Department of Health.
- Number of safety projects coordinated with El Metro.
- Number of new and diverse partnerships representing schools, low-income, or zero-vehicle household communities.
 - Examples include Laredo Homeless Coalition, Bethany House, Laredo Independent School District, United Independent School District, residents, and businesses near schools.

Older Road Users (65+)

Problem Statement & Key Facts

- Older road users (age 65 and over) are most vulnerable to injuries (Figure 2).
- Older drivers are defined in the Texas Strategic Highway Safety Plan (2022-2027) as those age 65 or older. This group represents 9.2 percent of the Webb County population but accounts for 14.9 percent of all motor vehicle injuries (see Figure 2).
- While fatalities and serious injuries represent a lower proportion (6.7 percent of fatalities and serious injuries), it is important to note that people aged 65 and over are at a higher risk for complications from even non-disabling injuries.
- The overrepresentation of older road users in injuries demonstrates a need for targeted measures for this population, such as longer lead times for pedestrian crossings, audible countdown timers, and providing alternative options to driving, to ensure their safe mobility across modes. Doing so is also important to ensure this population is not car dependent.

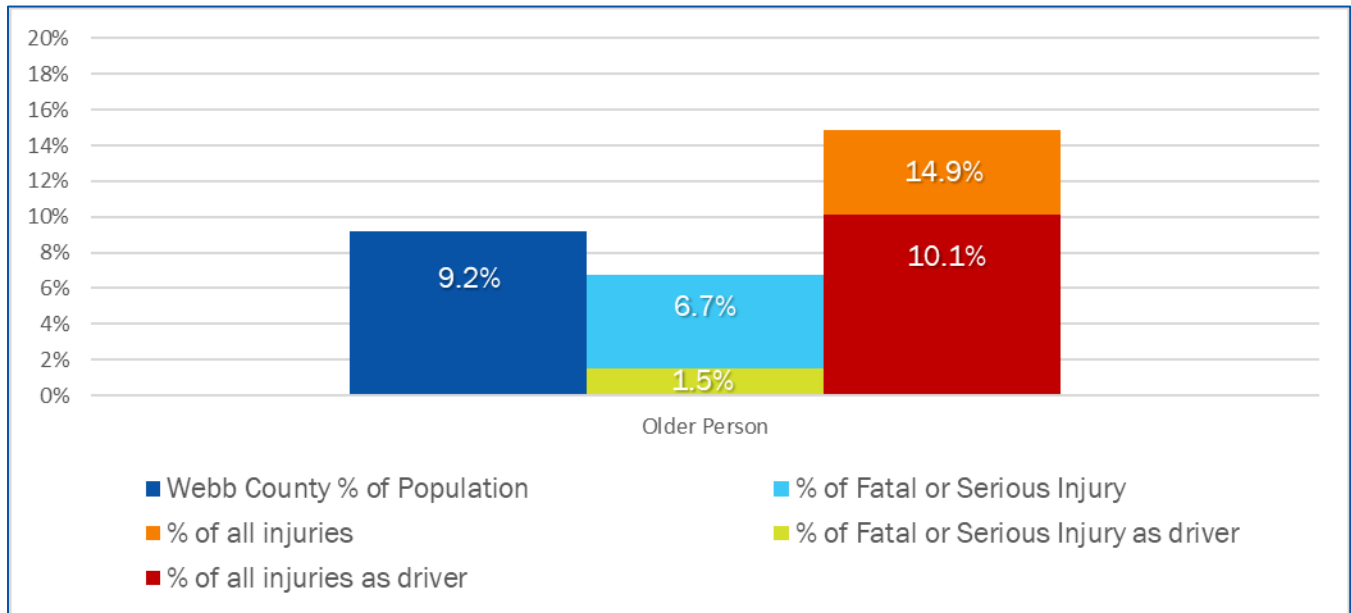


Figure 7: Webb County Older Road Users Motor Vehicle Fatalities and Serious Injuries

Source: TxDOT Crash Records Information System (CRIS)

Performance Measures

- Ratio of the Share of Older Licensed Drivers in Fatal or Serious Injury Crashes to the Share of Older Licensed Drivers.
- Ratio of the Share of Older Road Users in Fatal or Serious Injury Crashes to the Share of Older Persons in the Population.
- Number of Older Road User Fatalities and Serious Injuries.

Outcome Measures

- Number of engagements with senior organizations, retirement communities, medical centers.

Younger Road Users (15-20 years)

Problem Statement & Key Facts

- Younger road users (ages 15-20) in the Laredo-Webb region are involved in motor vehicle fatalities and serious injuries at a higher rate than any other age group (Figure 3).
- Young drivers are defined in the Texas Strategic Highway Safety Plan (2022-2027) as those between the ages of 15 and 20, representing 10.9 percent of the Webb County population. However, not all people in this age range are drivers. In fact, according to 2018-2022 crash data analysis, though young road users represent 10.9 percent of the population, they account for 19.4 percent of all fatal or serious injuries and 19.8 percent of all injuries.
- The majority of fatal and serious injuries among young people in Laredo-Webb are not drivers, but rather other road users, including passengers, pedestrians, and bicyclists. At 12.1 percent, this represents 62.4 percent of killed or seriously injured people aged 15-20 in Laredo-Webb. Young drivers comprise 7.3 percent of fatalities and serious injuries, representing 37.6 percent of young people killed or seriously injured in the community.

Nearly 43 percent of high schools are within 1/4 mile of the high-injury network. Given the overrepresentation of younger road users in crash fatalities and serious injuries in Laredo-Webb County, effective strategies and countermeasures are needed to address the safety concerns of both drivers and other road users, including passengers, pedestrians, motorcyclists, and bicyclists, who account for 44 percent, 5 percent, 3 percent, and 3 percent of total fatalities and serious injuries, respectively.

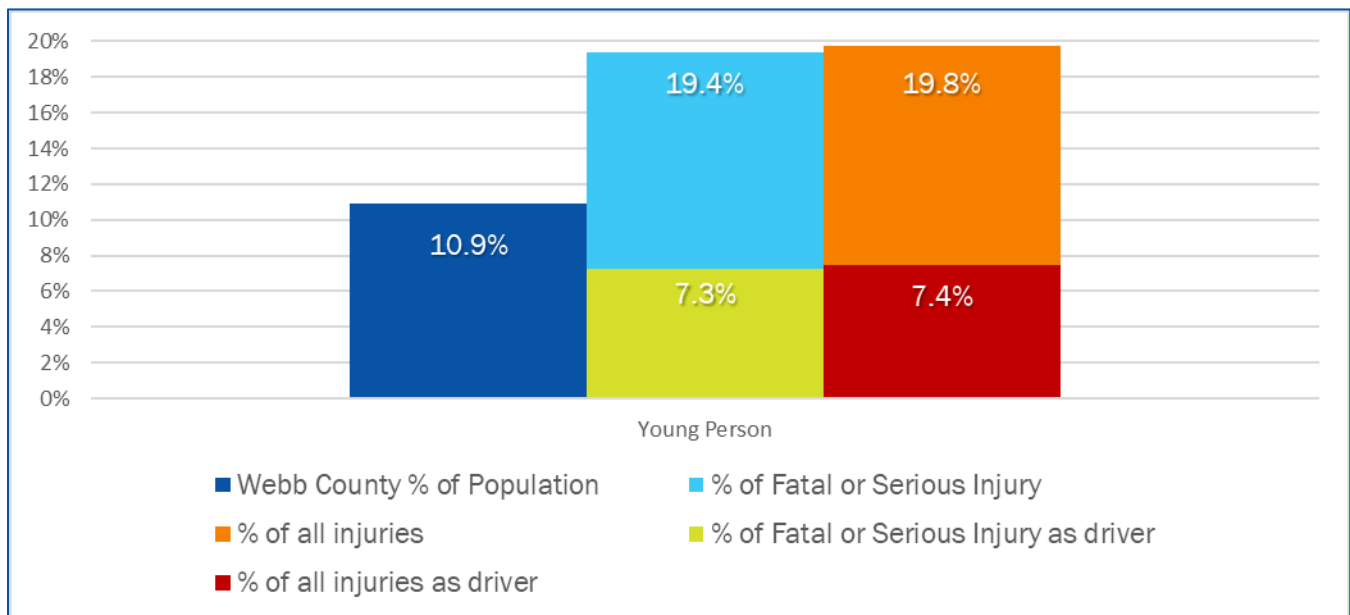


Figure 8: Webb County Younger Road Users Motor Vehicle Fatalities and Serious Injuries

Source: TxDOT Crash Records Information System (CRIS)

Younger Road User Performance measures

- Ratio of the Share of Younger Road Users in Fatal or Serious Injury Crashes to the Share of Younger Persons in the Population.
- 5-Year Average of Fatal or Serious Injury Crashes involving Younger Road Users.

Younger Driver Performance Measures

- Ratio of the Share of Younger Licensed Drivers in Fatal or Serious Injury Crashes to the Share of All Younger Licensed Drivers.
- 5-Year Average of Fatal or Serious Injury Crashes Involving Younger Licensed Drivers
- Number of Younger Unlicensed Drivers involved in Crashes.

Outcome Measures

- Number of engagements with youth organizations, schools, and events.
- Number of social media impressions or engagements on safe driving behaviors.
- Survey of parents/students' safety knowledge before and after (understanding of rules/safety).