

CHAPTER 7

# EQUITY CONSIDERATION



# CHAPTER 7: EQUITY CONSIDERATIONS

## EQUITY IN ROADWAY SAFETY

Traffic collisions and safety concerns on roadway networks affect everyone, however the risk, cost, and injury associated with collisions are distributed unevenly across communities and neighborhoods. The US Department of Transportation (USDOT) published the National Roadway Safety Strategy in 2022 which shows that American Indian or Alaskan Native, Black or African American, and Native Hawaiian or other Pacific Islander communities have roadway fatality rates that are higher than the national rate. This disproportionate burden on certain communities arises from historical and structural inequities in transportation infrastructure which have led to the presence of inadequate infrastructure, roads with high volume and high speed traffic, a lack of pedestrian facilities, and insufficient safety measures.

In these communities, challenges from disproportionate roadway safety burden go beyond the immediate danger to life due to traffic collisions. Unsafe transportation networks can increase health stress due to resultant choices people make such as spending less time outside engaged in outdoor and social activities. A planning process that is blind to the inequities can aggravate the challenges further. Communities with limited means or ability to participate effectively in planning often face various barriers that diminish their voice in decision-making processes. Commonly used enforcement-based countermeasures might not correct unsafe policy and built environment characteristics that create the safety risks.

By actively involving these communities in the planning process and valuing their perspectives and input, policymakers and planners can work towards more equitable outcomes and address specific needs of all residents. This not only enhances the effectiveness of planning and investment decisions but also fosters a stronger sense of community ownership and empowerment.

The Waco MPO CSAP acknowledges and places an equity-informed approach at each step of the planning and implementation process. Equity analysis enables the CSAP to identify disproportionate roadway safety burdens in communities facing transportation disadvantage within the Waco metropolitan region. This is supplemented by community input gathered through various engagement mechanisms that have been part of the process. By identifying projects in disadvantaged areas in line with the Justice40 goals, and including equity in the project prioritization process, this plan lays a foundation for Waco MPO, McLennan County, and cities to pursue investments that bring equitable futures for residents of the Waco metropolitan area.

## METHODOLOGY

USDOT's Equitable Transportation Community Explorer Screening Tool (ETC Explorer) has been used to identify communities facing transportation disadvantages within the Waco metropolitan area.

Transportation disadvantage is defined as consequences of inadequate transportation investment and infrastructure leading to transportation insecurity, environmental burden, social vulnerability, health vulnerability, and climate and disaster risks. The flow chart that follows describes these five components, each of which contain sub-components that are derived from 2020 census tract-level variables. For example, transportation insecurity combines transportation access – measured from commute time, access to various transportation modes, and access to jobs and destinations; cost burden – costs associated with using transportation options; and safety – traffic fatalities within communities. The ETC Explorer includes description of all subcomponents and their constituent variables.

The ETC Explorer assigns each census tract a disadvantage score for each of the five components. The scores are normalized based on all census tracts nationally, and reported as percentile ranks. The census tract having a 65th percentile rank or above is deemed disadvantaged.

**Appendix I** contains the census-tracts wise data used for the analysis. More information on the ETC Explorer, and links to the data platform is available on the USDOT website: <https://www.transportation.gov/priorities/equity/justice40/etc-explorer>

This chapter presents the equity analysis for the Waco metropolitan area, and for the Cities of Bellmead, Hewitt, Lacy Lakeview, McGregor, Robinson, Waco, and Woodway. The MPO-wide analysis relies on McLennan County boundaries to identify relevant census tracts. City-wide analysis includes all the census tracts within the city limits.

The census-tract based boundaries used in this analysis varies slightly from the actual city boundaries. This is because census tracts are larger than individual cities and often spread across multiple municipalities, however the analysis here provides a comprehensive idea of overall transportation disadvantages faced by communities. For cities with below 65th percentile scores for overall disadvantage, a secondary analysis focusing on disadvantaged communities – census tracts with transportation disadvantage – is included.

For analysis of roadway collisions, each injury collision was assigned a disadvantage indicator based upon the census tract in which it is located. The average annual fatality rate has been calculated based on the Safe Streets and Roads for All calculation methodology from US DOT. It relies on persons killed in fatal collisions between 2017 and 2021 from the Fatality and Injury Reporting System Tool (FIRST). The rate calculation worksheet, containing the methodology and crash reports, is included as **Appendix J**.



**Climate and Disaster Risk Burden:** Current and future risks to an area from climate and natural disasters, based on potential losses from existing hazard exposure and vulnerability.



**Environmental Burden:** Measures factors such as pollution, hazardous facility exposure, water pollution and the built environment.



**Health Vulnerability:** Prevalence of health conditions such as asthma, cancer, high blood pressure, diabetes, and poor mental health.



**Social Vulnerability:** Identifies populations that are at a higher risk due to certain social conditions.



**Transportation Insecurity:** It is the condition in which people are unable to regularly and reliably satisfy the travel necessary to meet the needs of daily life.

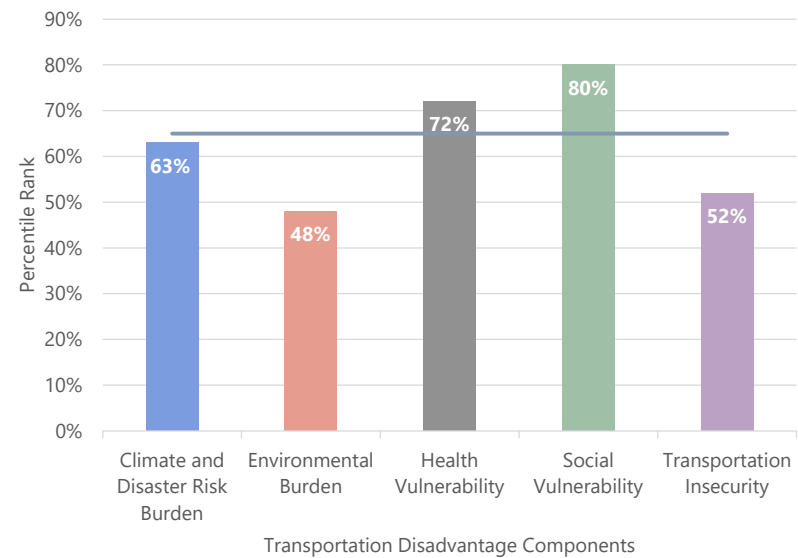
**TRANSPORTATION DISADVANTAGE IN WACO METROPOLITAN AREA**

57 percent of census tracts in the Waco metropolitan area are considered disadvantaged per the ETC Explorer. The map to the right shows these census tracts along with the city boundaries. KSI collisions are mapped with respect to the disadvantaged census tracts on the map on the following page. Cities including Waco, Bellmead, Lacy-Lakeview, Hewitt, Robinson, Woodway, and portions of McLennan County all have disadvantaged census tracts within their limits. The Waco metropolitan area, which covers all of McLennan County, is considered disadvantaged in terms of health vulnerability (65 percent). It ranks below the 65th percentile for social vulnerability (62 percent), transportation insecurity (54 percent), climate and risk burden (52 percent), and environmental burden (39 percent). Comparatively, 44 percent of census tracts in the State of Texas are considered disadvantaged.

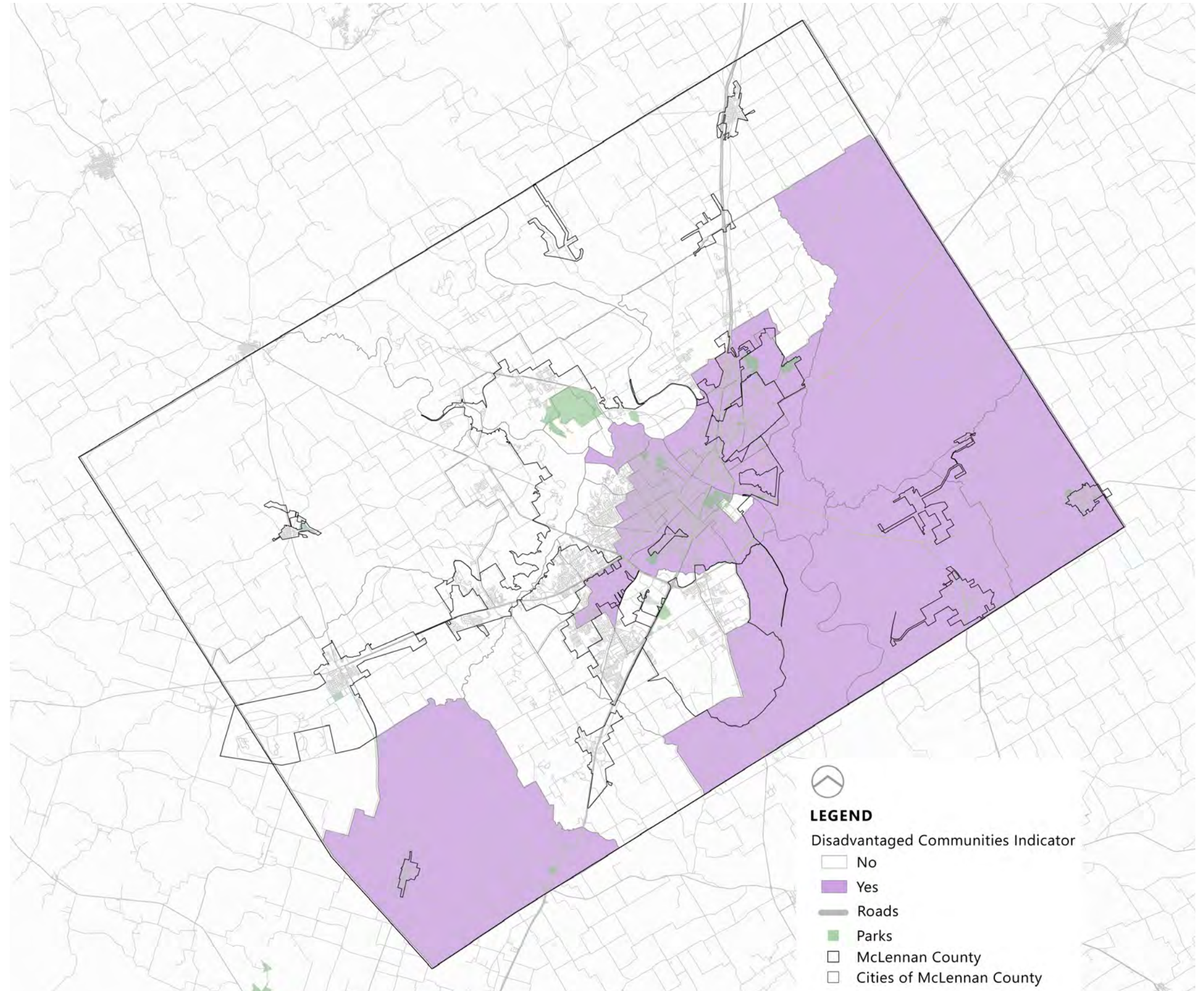
The graph below focuses on the transportation disadvantage component scores for disadvantaged communities within the MPO limits. The horizontal line indicates the 65th percentile rank, and any score above this line indicates a disadvantage. These census tracts exhibit high levels of social vulnerability (80 percent) and health vulnerability (72 percent). These tracts also face moderate climate and disaster risk burden (60 percent), transportation insecurity (52 percent), and environmental burden (48 percent). 138,100 people live in these census tracts, which represents 54 percent of the population of McLennan County. The transportation disadvantage percentiles are mapped for all census tracts in the Waco metropolitan area for each of the five components on the following page.

Further analysis of trends in roadway collision data, and identified safety projects for Waco metropolitan area, with respect to these equity areas, is presented on the following pages.

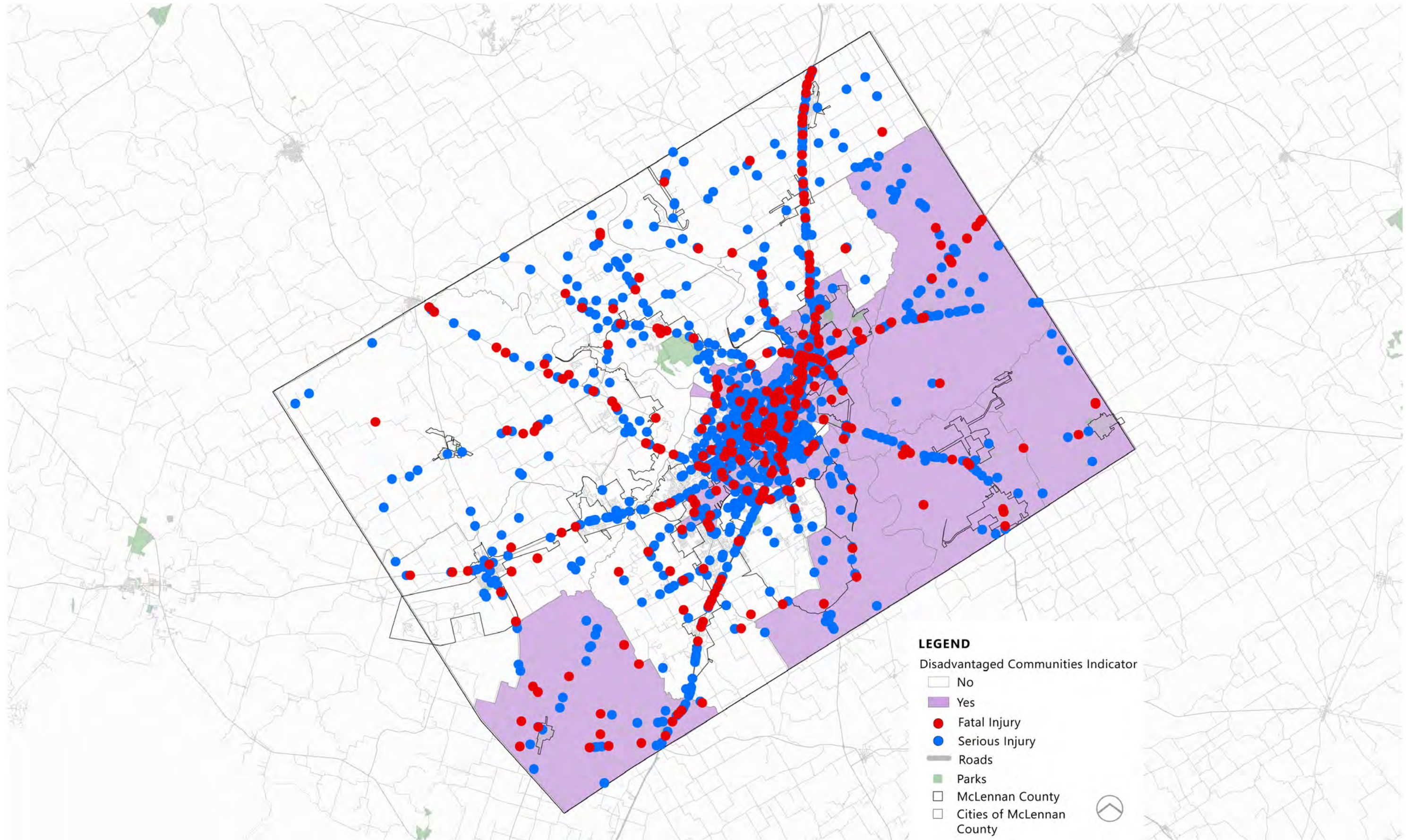
TRANSPORTATION DISADVANTAGE IN WACO METROPOLITAN AREA



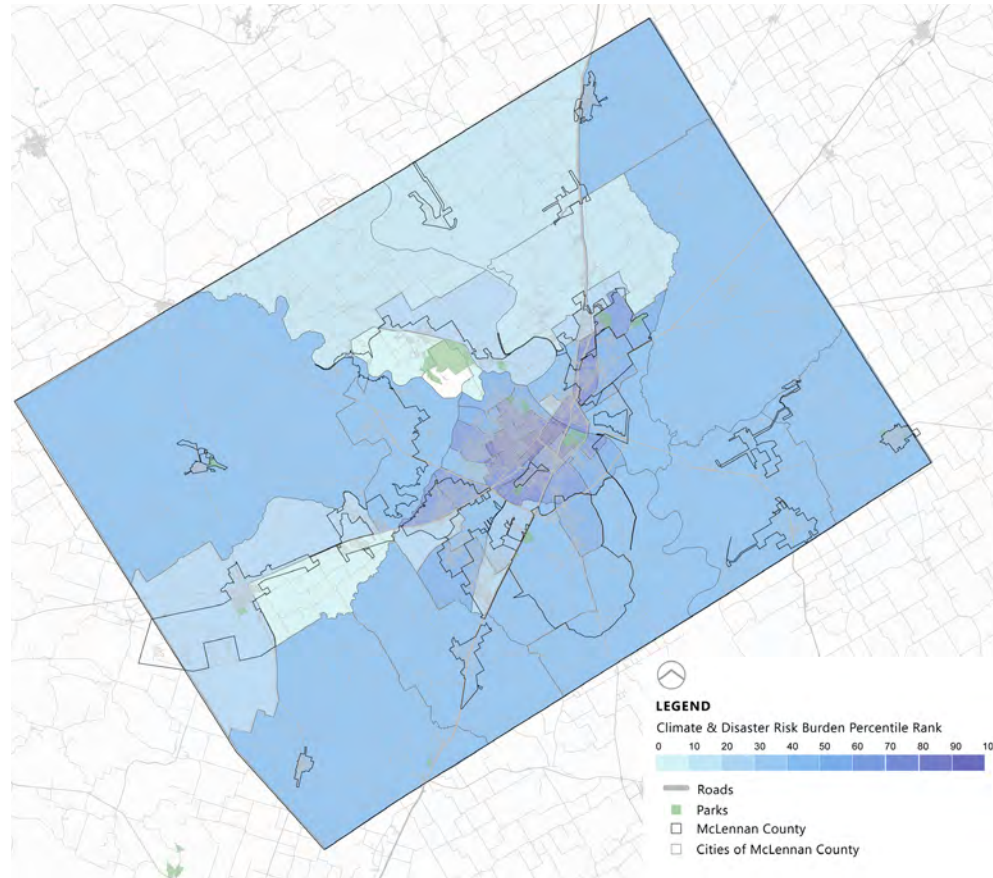
**DISADVANTAGED COMMUNITIES IN MCLENNAN COUNTY**



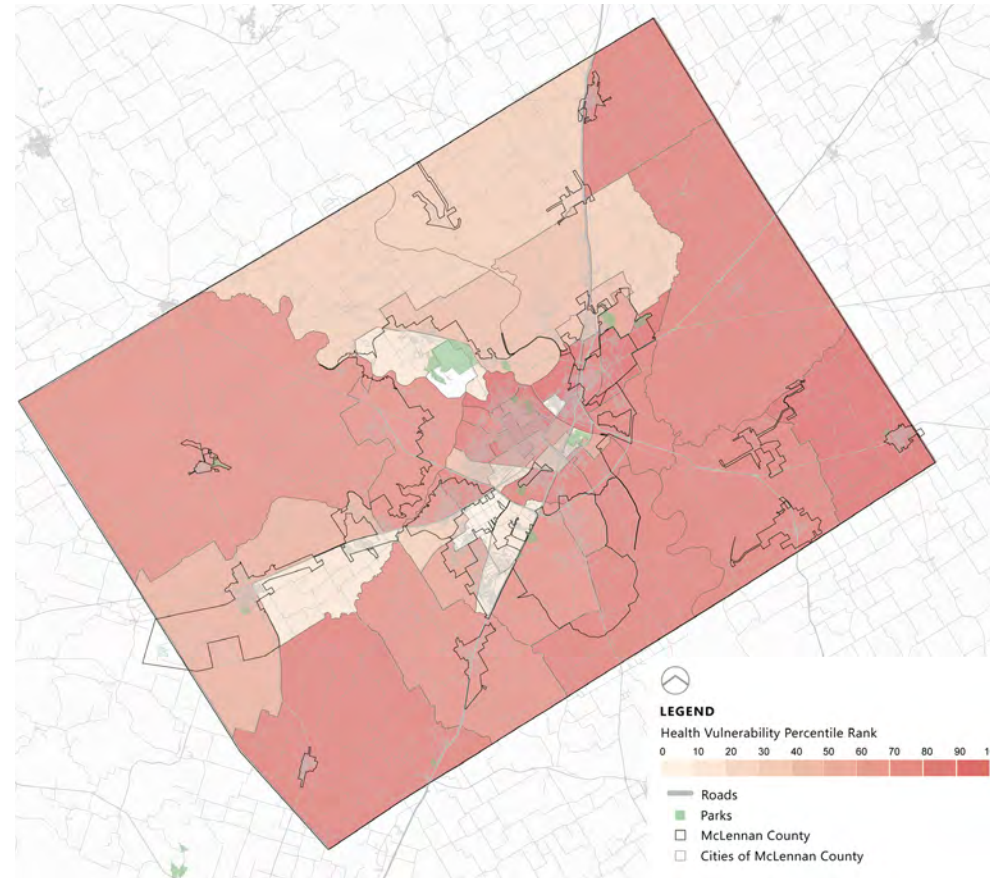
### KSI COLLISIONS & DISADVANTAGED COMMUNITIES



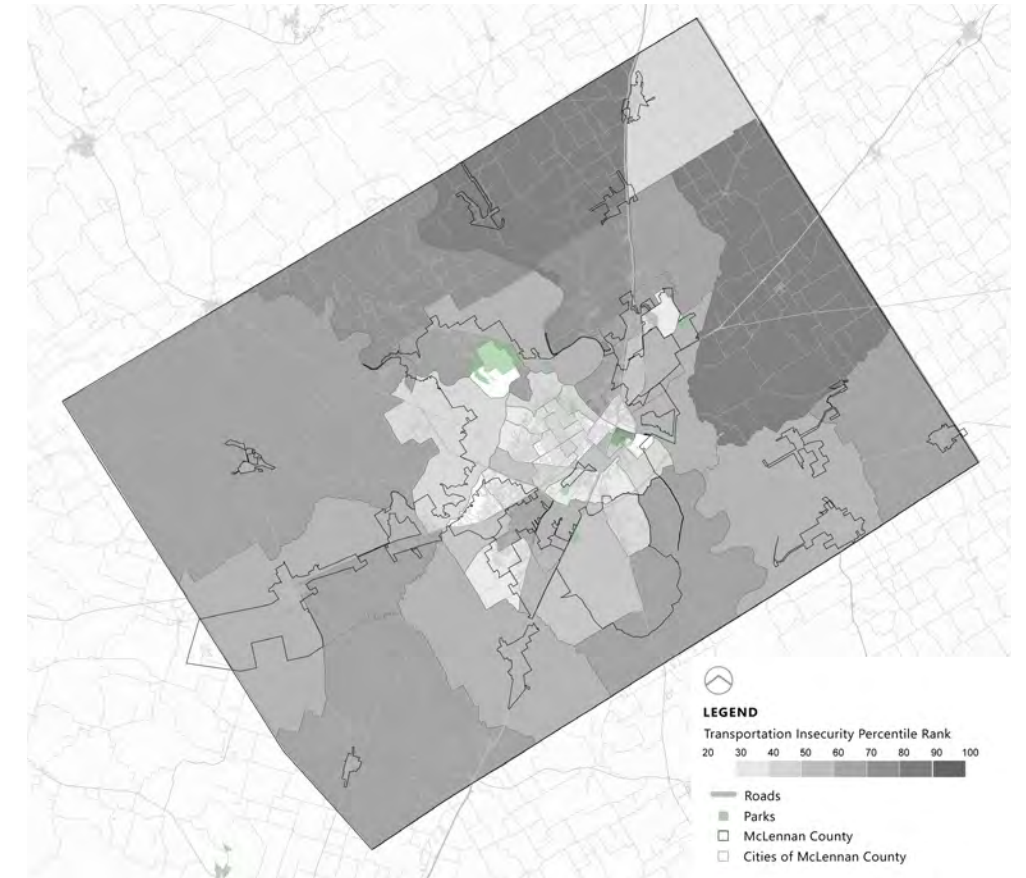
CLIMATE & DISASTER RISK



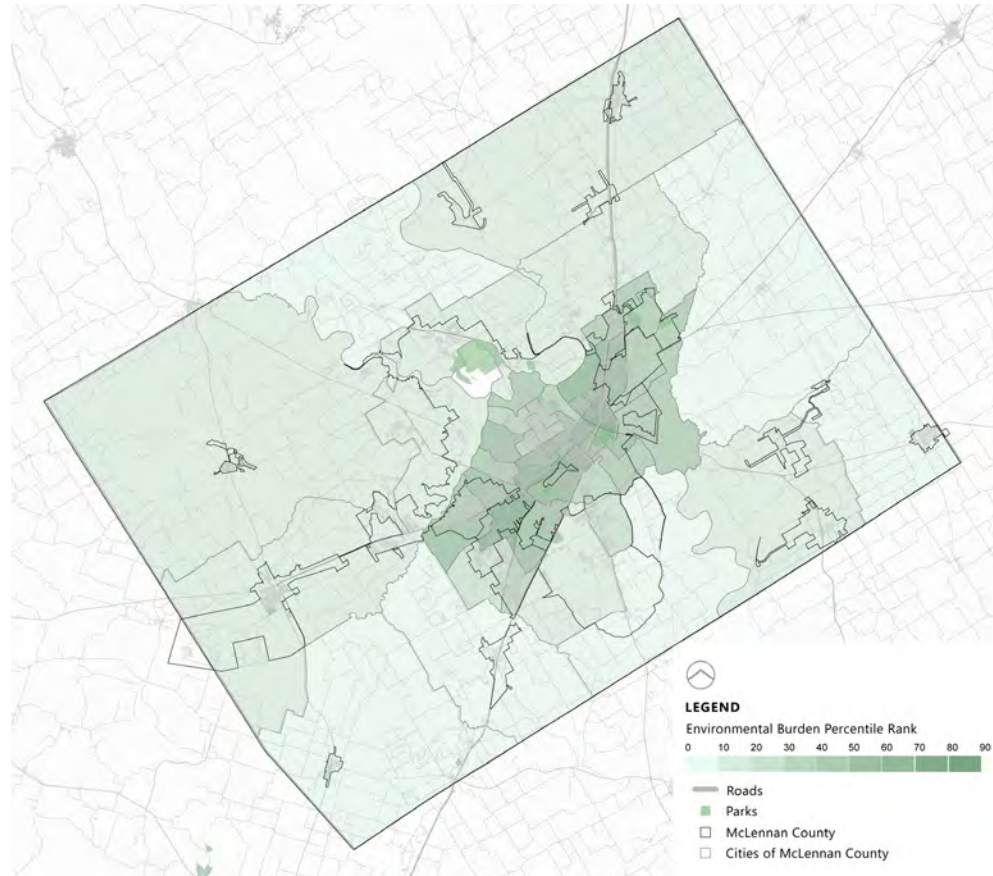
HEALTH VULNERABILITIES



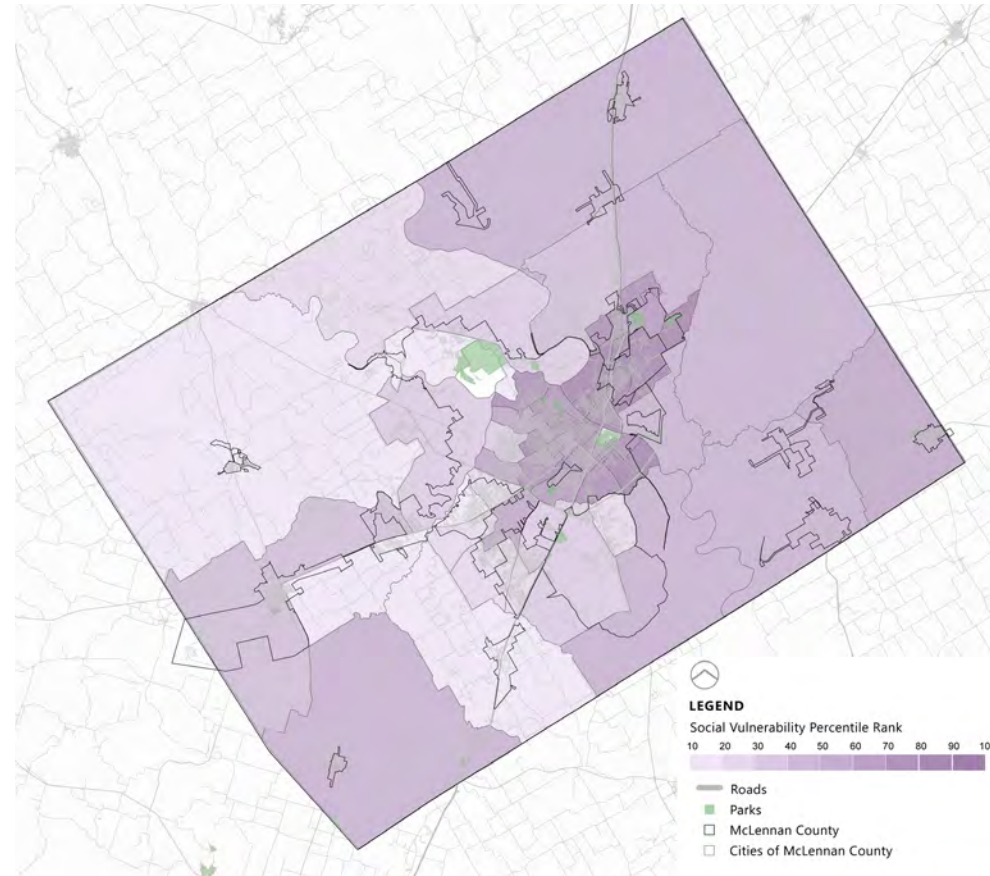
TRANSPORTATION INSECURITY



ENVIRONMENTAL BURDENS



SOCIAL VULNERABILITIES



The transportation disadvantage component scores for each census tract in Waco metropolitan area is mapped here. Maps are color coded to darken with increasing percentile rank. Despite the variation in how the various components are spatially distributed, there are overlaps in areas with environmental burden, social vulnerability, health vulnerability, and climate and disaster risks. Census tracts within core areas of the cities of Waco, Bellmead, Lacy Lakeview, and Robinson have higher risk levels. Transportation insecurity is higher among parts of unincorporated McLennan County, than in city cores.

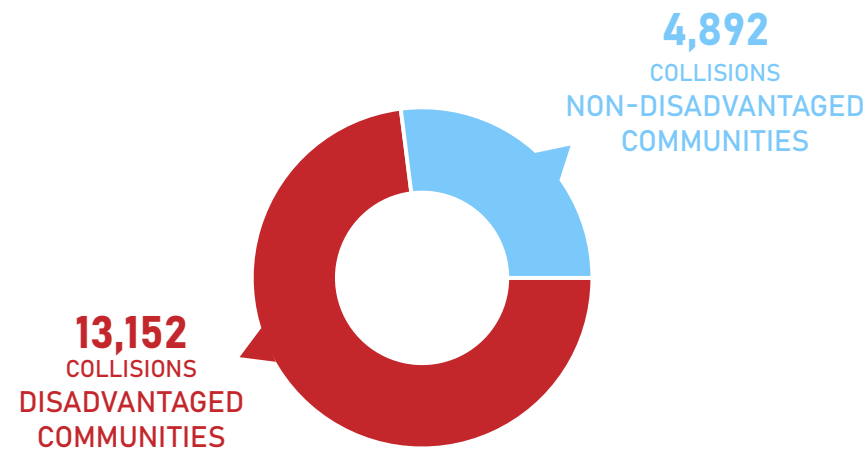
### COLLISION TRENDS

Of the total 18,044 Collisions in the Waco metropolitan area, 73 percent (13,152) have occurred in disadvantaged communities. 54 percent of the County’s population experiencing 73 percent of collisions is a cause for concern. Disadvantaged communities experience a disproportionately higher number of injury collisions in the MPO’s planning area, however, KSI collisions are lower in these census tracts as compared to the rest of the County. The average annual fatality rate for McLennan County, which encompasses the Waco metropolitan area, is 14.72 per 100,000 residents. The comparable rate for the State of Texas is 13.55 persons killed per 100,000 residents. McLennan County presents an equity concern as it has a higher fatality rate and percentage of disadvantaged census tracts than the State of Texas.

For disadvantaged and non-disadvantaged communities in the Waco metropolitan area, this analysis compares trends in crash severity, harmful event, manner of collision, lighting conditions, modes, and top violation categories. The data reveals disadvantaged communities have higher broadside car-related collisions, automobile right-of-way violations, traffic signals and signs violations, and intersection collisions as compared to their non-disadvantaged counterparts.

### DISADVANTAGED COMMUNITIES, NON-DISADVANTAGED COMMUNITIES & MCLENNAN COUNTY – RELATIVE SHARES

	DISADVANTAGED COMMUNITIES	NON-DISADVANTAGED COMMUNITIES	WACO METROPOLITAN AREA
<b>Total Collisions</b>	13,152	4,892	18,044
<b>COLLISION SEVERITY</b>			
Fatal Injury	1%	3%	2%
Serious Injury	8%	12%	9%
Minor Injury	37%	38%	38%
Possible Injury	53%	48%	52%
<b>MODE</b>			
Bike	1%	1%	1%
Car	86%	84%	85%
Motorcycle	3%	5%	4%
Pedestrian	3%	2%	3%
Truck	7%	8%	7%
<b>MANNER OF COLLISION</b>			
Broadside	46%	30%	42%
Hit Object	24%	38%	28%
Rear End	23%	25%	24%
Others	6%	8%	7%
<b>TOP VIOLATION CATEGORIES</b>			
Automobile Right-of-Way	24%	17%	22%
Unsafe Speed	21%	28%	23%
Traffic Signals and Signs	14%	7%	12%
Distracted Driving	8%	9%	8%
Other Improper Driving	5%	8%	6%
<b>HARMFUL EVENT</b>			
Fixed Object	14%	24%	17%
Motor Vehicle in Transport	76%	62%	72%
Overtaken	3%	7%	4%
Others	7%	6%	7%
<b>LOCATION</b>			
Roadway	49%	66%	53%
Intersection	51%	34%	47%
<b>LIGHTING CONDITIONS</b>			
Daylight	71%	67%	70%
Dark - Not Lighted	9%	17%	11%
Dark - Lighted	18%	13%	16%
Other Conditions	2%	3%	3%



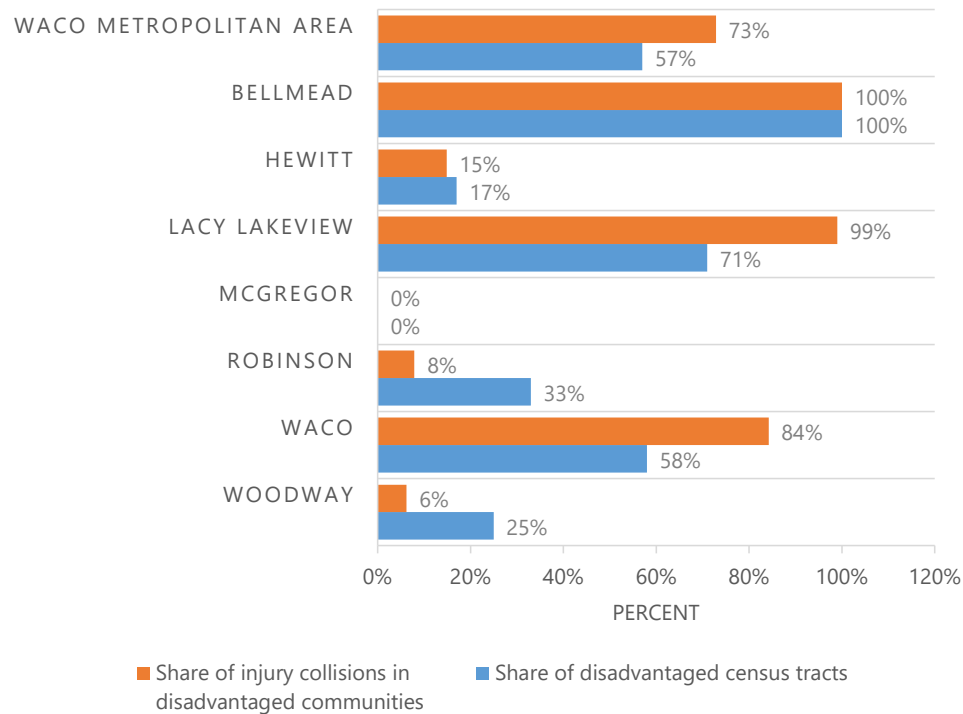
## TRANSPORTATION DISADVANTAGES IN CITIES

Three cities – Bellmead, Lacy Lakeview, and Waco – face higher levels of transportation disadvantage within McLennan County. Of these, Bellmead and Lacy Lakeview face severe disadvantages, with 100 percent and 71 percent of census tracts respectively considered to be disadvantaged. Transportation insecurity, when taken as a stand-alone disadvantage, is higher in McGregor, Lacy Lakeview, and Hewitt than other cities.

Bellmead, Lacy Lakeview, and Waco have a higher proportion of their injury collisions in disadvantaged communities. This is also higher than the overall trend for McLennan County. 100 percent of injury collisions in Bellmead, 99 percent in Lacy Lakeview, and 84 percent in Waco take place inside disadvantaged communities. This higher trend can be attributed to a greater percentage of downtown and core areas of these cities falling within the disadvantaged census tracts.

Sections that follow discuss how each city experiences transportation disadvantages. This plan identifies projects in areas with a disadvantage, and lays the foundation for cities to pursue investments that brings equitable futures for their residents in roadway safety.

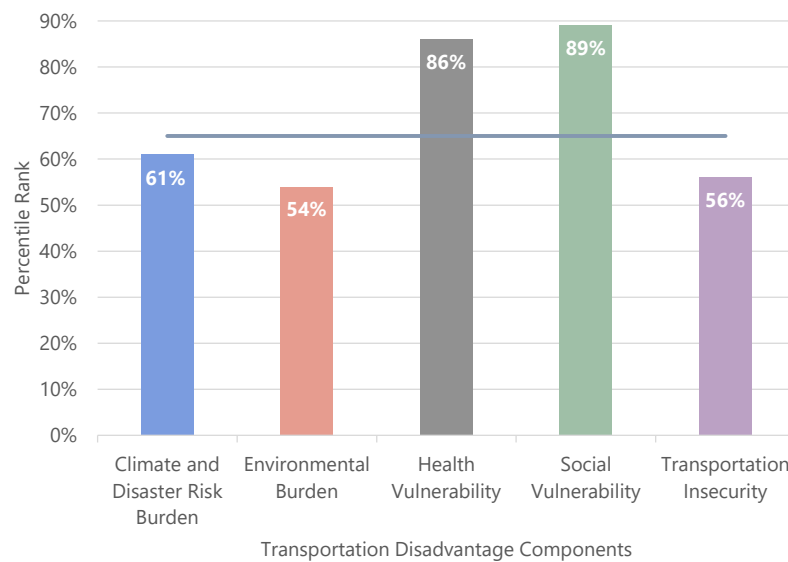
### SHARE OF INJURY COLLISIONS & TRANSPORTATION DISADVANTAGE



## Bellmead

All census tracts in the City of Bellmead are classified as disadvantaged, therefore all collisions in the city occurred in disadvantaged communities. These census tracts are home to 20,100 people. Bellmead faces higher levels of social vulnerability (89 percent), and health vulnerability (86 percent) due to transportation disadvantage. While the city is not disadvantaged in terms of transportation insecurity (56 percent), the residents of Bellmead face disproportionate transportation cost burden (90 percent), and transportation safety challenges (72 percent). The average annual fatality rate for the City of Bellmead is 12.94 per 100,000 residents.

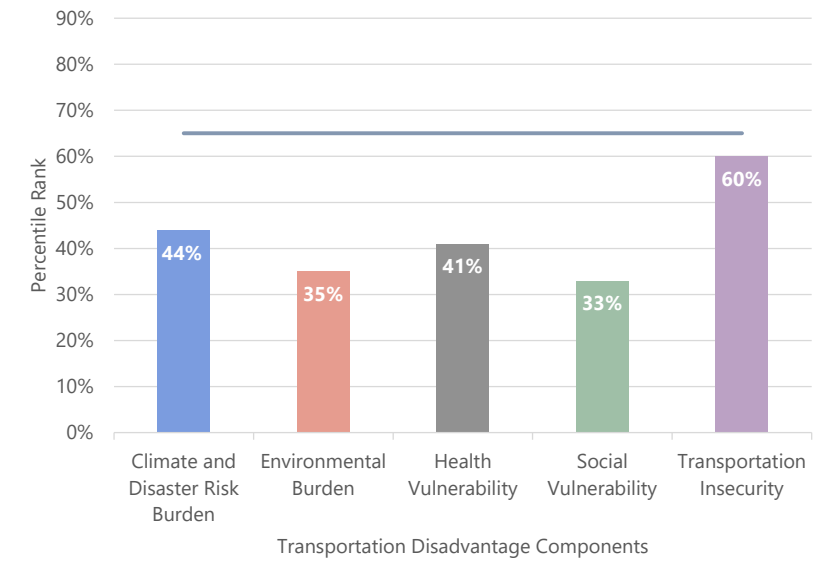
### TRANSPORTATION DISADVANTAGE IN BELLMEAD



## Hewitt

Of the census tracts in the City of Hewitt, 17 percent face transportation disadvantages. These census tracts are home to 6,100 people. Hewitt ranks below the 65th percentile for all components of transportation disadvantages as shown in the image that follows, however it faces disadvantages with respect to transportation safety (72 percent). Disadvantaged communities in Hewitt face high levels of transportation insecurity (78 percent), environmental burden (71 percent), and social vulnerability (68 percent). These census tracts face disadvantages both in terms of transportation access (71 percent) and transportation safety (89 percent). For the injury collisions, 15 percent happened in disadvantaged areas, generally located to the north of Panther Way and east of N Hewitt Drive. The average annual fatality rate for the City of Hewitt is 1.61 per 100,000 residents.

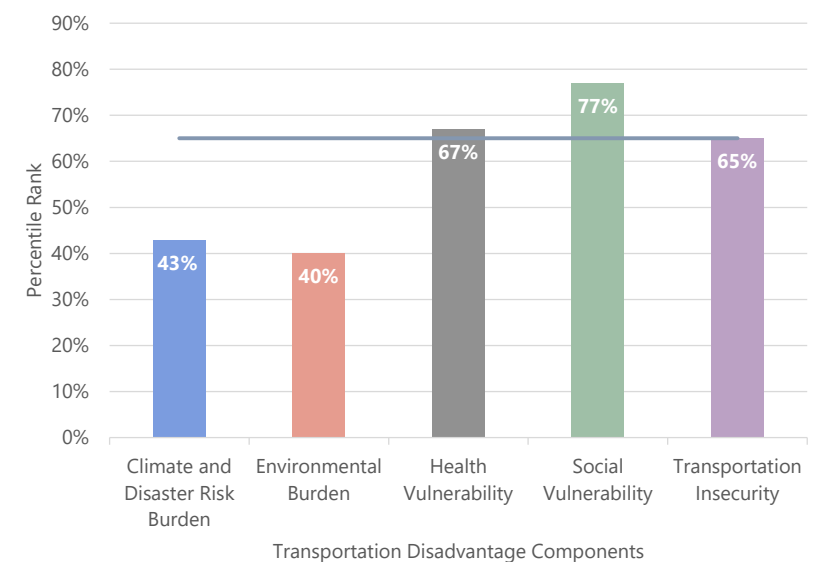
### TRANSPORTATION DISADVANTAGE IN HEWITT



## Lacy Lakeview

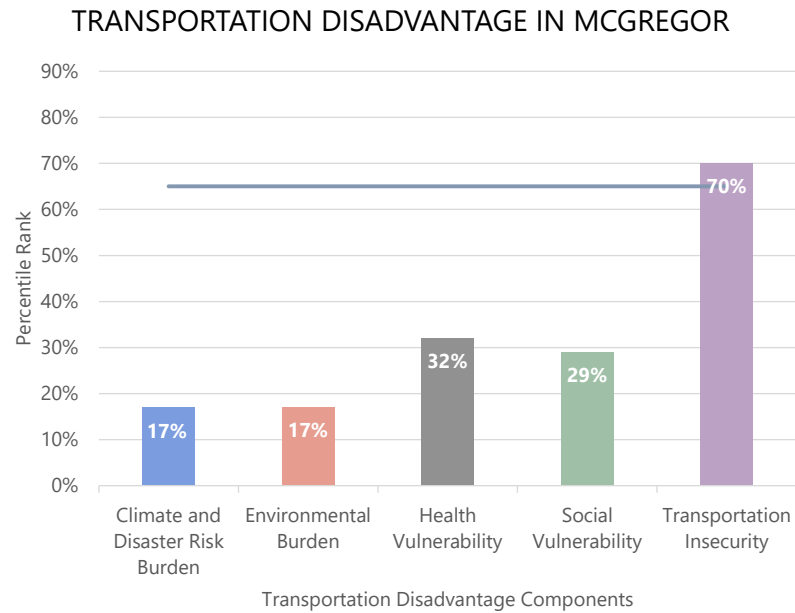
For the City of Lacy Lakeview, 71 percent of census tracts are classified as transportation disadvantaged. These tracts are disadvantaged in terms of social vulnerability (77 percent), health vulnerability (67 percent), and transportation insecurity (65 percent) as shown in the graph that follows. City residents also face transportation cost burden (81 percent) and transportation safety challenges (67 percent). Of the injury collision that occurred in Lacy Lakeview, 99 percent took place in disadvantaged communities, which is home to 24,600 residents. These communities face a lower level of transportation insecurity (58 percent), but rank higher for components of transportation insecurity such as cost burden (90 percent), and safety (76 percent). The average annual fatality rate for the City of Lacy Lakeview is 3.19 per 100,000 residents.

### TRANSPORTATION DISADVANTAGE IN LACY LAKEVIEW



### McGregor

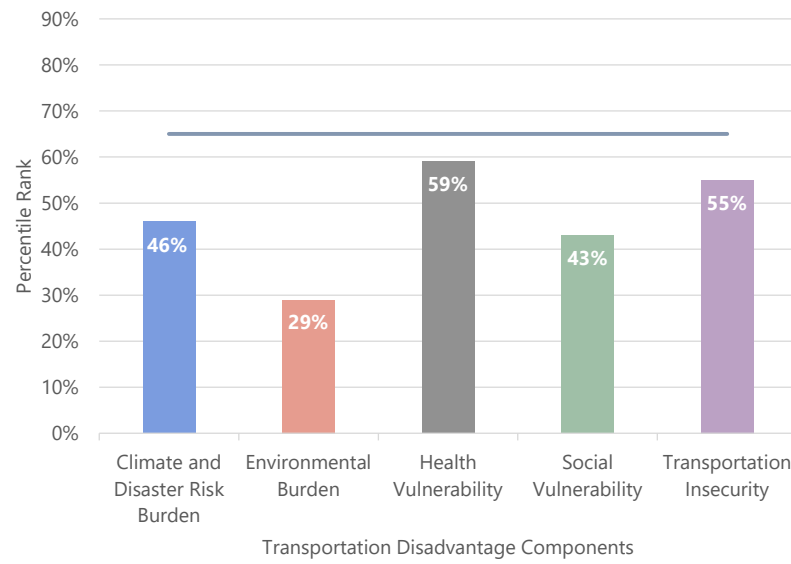
The City of McGregor does not face overall transportation disadvantages due to lower levels of environmental burden, social and health vulnerability, and climate disaster risks. However, the City experiences severe transportation insecurity (70 percent) due to a lack of adequate transportation access (71 percent). The average annual fatality rate for the City of McGregor is 7.48 per 100,000 residents.



### Robinson

For the City of Robinson, 33 percent of census tracts, with 8,700 residents, are considered transportation disadvantaged. eight percent of the injury collisions have occurred in these areas. Robinson ranks low on all components of disadvantage as shown in the graph that follows, however it is ranked at the 70th percentile for transportation safety sub-component. Disadvantaged communities in Robinson face above the 65th percentile health vulnerability (85 percent), and social vulnerability (71 percent). The average annual fatality rate for the City of Robinson is 5.26 per 100,000 residents.

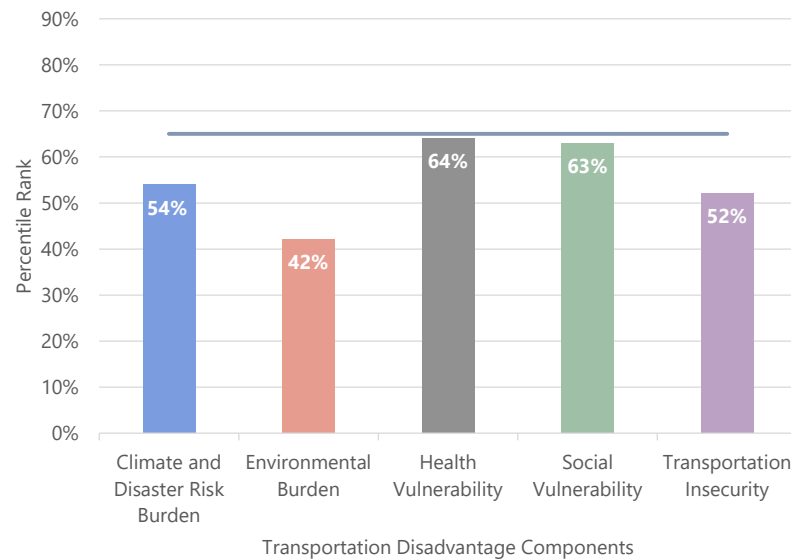
TRANSPORTATION DISADVANTAGE IN ROBINSON



### Waco

For the City of Waco, 58 percent of census tracts are classified as disadvantaged. Of injury collisions, 84 percent occur in these disadvantaged areas, which are home to 125,700 residents. Waco faces moderate levels of health vulnerability (64 percent), and social vulnerability (63 percent) due to transportation disadvantage as shown in the graph that follows. Residents of Waco also face transportation cost burden (67 percent). The average annual fatality rate for the City of Waco is 6.45 per 100,000 residents.

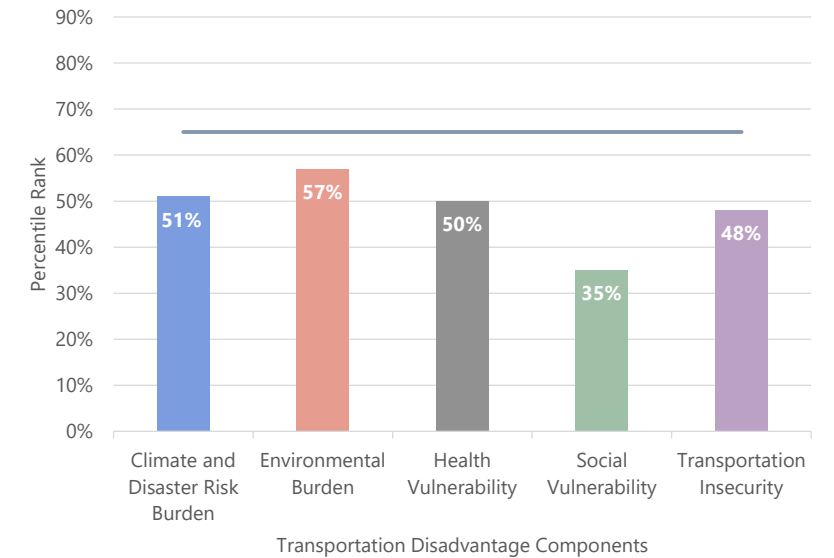
TRANSPORTATION DISADVANTAGE IN WACO



### Woodway

In Woodway, 25 percent of census tracts are considered to be transportation disadvantaged although the City falls below the 65th percentile rank for transportation disadvantage components, as shown in the graph that follows. The 6,100 residents that live in disadvantaged areas face transportation insecurity (78 percent), environmental burden (71 percent), and social vulnerability (68 percent). They also experience challenges in transportation access (74 percent), and safety (89 percent). six percent of all injury collisions in Woodway took place in disadvantaged communities. The average annual fatality rate for the City of Woodway is 2.13 per 100,000 residents.

TRANSPORTATION DISADVANTAGE IN WOODWAY





**EQUITABLE INVESTMENT**

Equitably distributing improvements and investments, with a fair share of resources directed towards disadvantaged communities, is an important consideration in transportation safety planning. The US federal government’s environmental justice initiative, Justice40, establishes a goal to direct 40 percent of the overall benefits of certain federal investments to disadvantaged communities.

The proposed safety projects for each jurisdiction and cost estimates are analyzed to determine the share of the total investment allocated to disadvantaged areas. The following table shows the result for each jurisdiction, and for the Waco metropolitan area. Detailed cost share analysis for each project within each jurisdiction is provided in **Appendix K**.

Approximately 54 percent of the proposed transportation safety investments, totaling approximately \$287 million, would flow to disadvantaged areas within the Waco metropolitan area. While the metropolitan area as a whole exceeds the Justice40 threshold, there are variations in how each jurisdiction meets this goal.

The City of McGregor does not have any areas identified as disadvantaged, and only a small portion of the City of Woodway is disadvantaged. These cities do not have proposed improvements in disadvantaged areas. In contrast, the entirety of the Cities of Bellmead and Lacy Lakeview are identified as disadvantaged. 100 percent of improvement costs flow to disadvantaged areas in these cities.

Efforts have also been made to consider equity within the project prioritization as outlined in Chapter 6. This, along with the analysis presented in this chapter, demonstrates a commitment to ensure transportation resources and benefits flow to communities experiencing disadvantage. As projects identified in the Waco MPO CSAP advance to implementation, continued monitoring will ensure investments remain aligned with the Justice40 principles.

JURISDICTION	TOTAL COST ESTIMATES OF PROPOSED SAFETY PROJECTS	ESTIMATED COST OF PROJECTS IN DISADVANTAGED AREA	PERCENT OF COST APPLICABLE TO DISADVANTAGED AREAS
Bellmead	\$60,453,900	\$60,453,900	100%
Hewitt	\$89,405,360	\$28,014,600	31%
Lacy Lakeview	\$68,519,100	\$68,519,050	100%
McGregor	\$71,103,730	\$0	0%
Robinson	\$57,268,300	\$10,221,280	18%
Waco	\$142,456,800	\$104,185,100	73%
Woodway	\$21,086,800	\$483,400	2%
Unincorporated County	\$47,486,700	\$14,967,120	32%
<b>Waco Metropolitan Area</b>	<b>\$532,376,660</b>	<b>\$286,844,450</b>	<b>54%</b>

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