Waco Metropolitan Area Active Transportation Plan

Adopted by the Waco MPO Policy Board: July 18, 2019
Resolution 2019-5

Waco Metropolitan Planning Organization

This document was prepared and published by the Waco Metropolitan Planning Organization (MPO) and is prepared in cooperation with the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA), the Texas Department of Transportation (TxDOT), the Waco Transit System, and local governments in the Metropolitan Planning Area. The contents of this document do not necessarily reflect the official view or policies of these agencies.

Waco Metropolitan Planning Organization

RESOLUTION 2019-5

WHEREAS, the Waco Metropolitan Planning Organization was established to identify and support the implementation of regionally significant transportation projects to address future mobility needs of the Waco Region; and,

WHEREAS, the Waco Metropolitan Planning Organization Policy Board is composed of representatives appointed by the elected City Councils and Counties located within the jurisdiction of the MPO as well as the Texas Department of Transportation; and,

WHEREAS, the transportation planning process identified in 23 CFR 450 requires MPOs to consider of all modes of transportation when developing Metropolitan Transportation Plans and Transportation Improvement Programs; and,

WHEREAS, the eligibility for use of funds within the Transportation Alternatives Program and Safe Routes to School Program require project identification within the Metropolitan Transportation Plan; and,

WHEREAS, the Waco Metropolitan Area has very few existing bicycle or pedestrian facilities in a state of good repair thus limiting the viability of these modes as a mode of transportation; and,

WHEREAS, investments in active transportation help to create healthier communities and a more equitable transportation system by providing reasonable alternatives to driving; and,

WHEREAS, the Waco MPO Policy Board has expressed an interest in improving and expanding the active transportation network in McLennan County to provide better connectivity between neighborhoods and destinations for people of all ages and abilities; and,

WHEREAS, the MPO staff has developed a Waco Metropolitan Area Active Transportation Plan to prioritize active transportation projects and policies to support said connectivity and to increase the safety and convenience of walking, rolling, and biking; and,

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WHEREAS, the additional goals of the Waco Metropolitan Area Active Transportation Plan are to facilitate the use of public transit by improving pedestrian and bicycle connections to transit routes and stops and to enhance the quality of life in McLennan County by reducing vehicle emissions, encouraging physical activity, activating street life, and helping to creating dynamic, connected communities.

NOW, THEREFORE, BE IT RESOLVED BY THE POLICY BOARD OF THE WACO METROPOLITAN PLANNING ORGANIZATION:

That the Waco MPO Policy Board hereby adopts the Waco Metropolitan Area Active Transportation Plan (ATP).

That those recommendations contained within the ATP which can be realistically funded prior to the year 2045 will be incorporated into Connections 2045: The Waco Metropolitan Transportation Plan.

That it is hereby officially found and determined that the meeting at which this resolution is passed is open to the public and that public notice of the time, place and purpose of said meeting was given as required by law.

That all public participation requirements identified within the Waco MPO Public Participation Plan related to this action by the Policy Board were met and completed.

PASSED AND APPROVED this the 18th day of July, 2019.

Dillon Meek
Council Member – City of Waco
Chair – Waco MPO Policy Board

ATTEST:

Christopher Evilia, AICP
Director

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1 INTRODUCTION AND BACKGROUND

1.1 ABOUT THE WACO METROPOLITIAN PLANNING ORGANIZATION

The Waco Metropolitan Planning Organization (MPO) coordinates transportation planning activities for all of McLennan County. These efforts result in plans and programs that consider all transportation modes and support community development and social goals. Collectively, these plans and programs guide the use of federal and state dollars spent on transportation and lead to the development and operation of an integrated, intermodal national transportation system that facilitates the efficient, economic movement of people and goods.

The MPO is governed by a 20 member Policy Board representing McLennan County, the municipalities within McLennan County, and the various modal interests within the Waco Metropolitan Area. The Policy Board establishes regional transportation policy, identifies regional project priorities, and adopts all plans and programs produced by the MPO. The Policy Board receives advice and recommendations regarding project-level considerations from the MPO Technical Advisory Committee (TAC). The TAC is composed of professional planners, engineers, and staff from various modal interests, member governments, and transportation stakeholders.

1.2 WHAT IS ACTIVE TRANSPORTATION?

Active transportation relates to human-powered, multi-modal transportation solutions that connect people of all ages and abilities to where they need to go using active modes, primarily walking (or rolling) and bicycling. The term “active transportation” highlights the connection between our transportation choices and healthy and active living[1]. The term “rolling” is used to capture the mobility needs of pedestrians using a walker, wheelchair, stroller, or similar wheeled assistive device. When this plan refers to pedestrians, it is inclusive of those who walk and roll.

An active transportation network usually includes a combination of on-street and off-street facilities (i.e., infrastructure) that work together to help move pedestrians and bicyclists throughout a community safely and conveniently, and connect to other travel modes such as public transit. Examples of the different types of active transportation facilities include:

- On-Street Bike Facilities: bike lanes, bicycle boulevards, cycle tracks and protected bike lanes, bike routes, shared lanes, bicycle traffic signals, markings, and signage;
- Off-Street Shared-Use Facilities: off-street shared-use paths and trails (paved or unpaved), non-vehicular bridges and overpasses;
- On-Street Pedestrian Facilities: crosswalks and crossing signals, signage, roadway medians, and refuge areas;
- Off-Street Pedestrian Facilities: sidewalks, bulb outs, crossing signals, accessible accommodations at intersections and driveways.

All types of communities (rural, suburban, and urban) can benefit from investments in active transportation and a more balanced transportation system. These benefits are highlighted below[2].

[1] Partnership for Active Transportation. Why Active Transportation. https://www.railstotrails.org/partnership-for-active-transportation/why/

[2] Benefits are summarized from the Partnership for Active Transportation and local demographic statistics are from the American Community Survey (ACS) 2013-2017 5-Year Estimates, unless otherwise noted.

1.2.1. Transportation Benefits

Active transportation expands the mobility options of people who don't have access to a vehicle, are unable to drive, or choose not to drive. In McLennan County, 6.5% of households do not have access to a vehicle; this increases to 9.4% in the city of Waco [3]. The benefits of active transportation are compounded when combined with a complementary public transit network. Waco Transit provides public transportation services and averages 1,937 boardings a day on its fixed routes. Safe and accessible sidewalks and bikeways that connect to convenient transit routes are particularly beneficial for older adults, individuals with disabilities, children, and those who can't afford a car.

1.2.2. Economic Benefits

Active transportation infrastructure such as sidewalks and bikeways cost less to build and maintain per mile than a new roadway or highway. Active transportation systems foster economic health by creating dynamic, connected communities with a high quality of life that catalyzes small business development, increases property values, sparks tourism and encourages corporate investment that attracts a talented, highly educated workforce. Active transportation, especially when paired with public transit, also offers economic benefits to families and individuals by providing transportation options that don't require owning, insuring, and maintaining a personal vehicle.

According to a survey by the National Association of Realtors (NAR), more than 70% of those surveyed indicated that walkability and a short commute are important considerations in deciding where to live. The same survey found that millennials valued access to public transit just as much as highway proximity. Also, when comparing the 2017 survey results to previous years, there is almost equal preference for living in a walkable community (even if it means living in a townhouse or apartment), and living in the suburbs (with a detached, single-family home).[4]

1.2.3. Health and Safety Benefits

Neighborhood design, including proximity to multi-modal transportation systems, is directly related to physical activity levels. Making walking, rolling, and biking safe and convenient will help to enable people to build routine physical activity into their daily lives. People who live in neighborhoods with sidewalks on most streets are 47% more likely to be active at least 30 minutes a day, and public transit users take 30% more steps per day than those who drive[5]. According to a report by the US Surgeon General, in the U.S., only 50% of all adults and 25% of high-school students meet the guidelines for aerobic physical activity outlined in the 2008 national Physical Activity Guidelines for Americans.[6]

Walkable and bikeable communities can improve safety by design. Roadways with sidewalks and bikeways often include design features that indirectly (or directly) slow vehicle speed and reduce conflicts between travel modes. Programs such as Safe Routes to School provide a safe environment for children to walk and bike to school, which can reduce traffic-related injuries among school-aged children, and improve the pedestrian environment for all community members[7].

[3] American Community Survey (ACS). 2013-2017 5-Year Estimates. Selected Housing Characteristics (DP04)
[4] National Association of Realtors. 2017. National Community and Transportation Preferences Survey.
[5] Active Living Research. 2012. Infographic: the Role of Transportation in Promoting Physical Activity.
[6] US Department of Health and Human Services (US HHS). 2015. Step it up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities
[7] US Department of Health and Human Services (US HHS). 2015. Step it up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities

1.2.4. Environmental Benefits

When people move to a neighborhood designed to promote active transportation they spend less time in their cars and more time walking and biking. The US Department of Transportation's (USDOT's) Nonmotorized Transportation Pilot Project reported a 16% increase in walking and a 44% increase in biking (as a percentage of all trips over a five-year period) in participating communities.

In McLennan County, 82.4% of workers in McLennan County commute alone by car.[8] Shifting to biking, walking, or rolling could reduce traffic-related air pollution, including emissions of carbon dioxide, hydrocarbons, nitrogen oxide, carbon monoxide, and particulate matter.[9] Active transportation can also provide relatively large energy savings for short trips made by car. These types of trips pollute more per mile because engines are less efficient during the first few minutes of operation. Walking, rolling, and biking are natural substitutes for short vehicle trips, and could potentially result in large energy savings. The Victoria Transport Policy Institute found that a 1%shift from driving to walking or biking reduces fuel consumption by 2% - 4%.[10]

1.2.5. Social and Equity Benefits

Active transportation is equitable and benefits everyone in a community by providing a fair share of resources to non-drivers and providing basic mobility for physically, economically, and socially disadvantaged groups.[11] 19.3% of residents in McLennan County are below the poverty rate as compared to 16% in the state of Texas.[12] Slightly more than half of the census tracts within McLennan County (28 out of 50) qualify as an environmental justice (EJ) protected zone[13]. These EJ census tracts have a higher than average population of low-income and/or minority (black or Hispanic) residents[14].

Seniors and retirees also benefit from active transportation investments. About 13.6% of McLennan County residents are over the age of 65[15]. According to the American Association of Retired Persons (AARP), 18% of adults age 65 or older do not drive[16], and by 2030, one in five people in the United States will be 65 or older[17]. Communities that are designed to be walkable support personal interaction, sidewalk conversations, and social involvement, which are especially important for seniors and aging-in-place. These types of inter-personal interactions help strengthen the social ties that bring people and communities together, creating more social cohesion and building social capital[18].

2 PLAN OVERVIEW

2.1 ACTIVE TRANSPORTATION PLAN OVERVIEW

The purpose of this Active Transportation Plan (ATP) is to provide a framework for developing a comprehensive, regional, multi-modal transportation system in McLennan County over the next 25 years. This ATP includes a review of other planning efforts as they relate to active transportation; an overview of

[8] ACS. 2013-2017 5-Year Estimates. Commuting Characteristics by Sex (S0801)
[9] US HHS. 2015. Step it up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities, pg 12
[10] Victoria Transport Policy Institute. 2018. Evaluating Active Transport Benefits and Costs.
[11] Victoria Transport Policy Institute. 2018. Evaluating Active Transport Benefits and Costs.
[12] ACS. 2013-2017 5-Year Estimates. Poverty Status in the Past 12 Months (S1701)
[13] ACS. 2013-2017. Multiple tables.
[14] Environmental-justice protected zones includes census tracts that have a higher percentage of either low-income residents (below federal poverty threshold) or minority residents (black or Hispanic) than the regional average for McLennan County.
[15] ACS. 2013-2017 5-Year Estimates. Age and Sex (S0101)
[16] AARP. 2019. Self Driving Cars: A Guide to Technology and Safety. https://www.aarp.org/auto/trends-lifestyle/info-2018/self-driving-cars.html
[17] AARP. 2019. About the AARP Livable Communities Initiative. https://www.aarp.org/livable-communities/about/info-2014/what-we-do.html#
[18] US HHS. 2015. Step it up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities, pg 12

public outreach conducted to support the planning process; an analysis of existing conditions, including the existing pedestrian and bicycle network and crash statistics; and project, policy, and program recommendations and implementation priorities.

Individual municipalities within the Waco MPO planning area are encouraged to adopt the recommendations outlined in this ATP. Infrastructure projects described in the ATP are conceptual, and will need further study and refinement during the project implementation and engineering phase.

2.2 PLAN OBJECTIVES

Investments in active transportation help to create healthier communities and a more equitable transportation system by providing reasonable alternatives to driving. The specific objectives of this Active Transportation Plan are as follows:

- Improve and expand the active transportation network in McLennan County to provide better connectivity between neighborhoods and destinations for people of all ages and abilities.
- Prioritize active transportation modes in regional transportation planning so that people have a choice to utilize the transportation mode that best suits their trip.
- Increase the safety and convenience of walking, rolling, and biking.
- Facilitate the use of public transit by improving pedestrian and bicycle connections to transit routes and stops.
- Enhance the quality of life in McLennan County by reducing vehicle emissions, encouraging physical activity, activating street life, and helping to creating dynamic, connected communities.

3 STUDY AREA

3.1 COMMUNITY PROFILE

Waco is centrally located in the region known as the “Heart of Texas,” midway between Dallas and Austin in IH-35. The Waco Urbanized Area, as identified by the US Census Bureau, encompasses approximately 91 square miles and as of 2017, has an estimated population of 186,293. In order to account for future growth and activities that impact mobility within the urbanized area, the MPO studies a much larger area when developing its long-range transportation plans. This area is referred to as the Waco Metropolitan Area and it is coextensive with McLennan County, Texas. Map 3.1 shows the limits of McLennan County and the Waco Urbanized Area. McLennan County encompasses 1,037 square miles and as of 2017 had an estimated population of 245,720[19].

Much of the Waco Metropolitan Area can be described as rural in character. The urbanized uses are concentrated in a relatively small area in the center of the region. Based on a desktop analysis of aerial photography, in 2017, nearly 80% of land in McLennan County was used for either agricultural purposes or was considered forested. Of the land considered ‘developed’, nearly 70% was devoted to residential uses.

In McLennan County, the population breakdown as of 2017 is 24.8% under the age of 18, 14.9% from 18 to 24, 23.9% from 25 to 44, 22.7% from 45 to 64, and 13.6% who were 65 years of age or older; the median age was 33 years.[20] The median income for a household is $46,262, and the median income for a family is $59,078. Males had a median income of $41,804 versus $33,206 for females. The per capita

[19] ACS. 2013-2017 5-Year Estimates. ACS Demographic and Housing Estimates (DP05)
[20] ACS. 2013-2017 5-Year Estimates. Age and Sex (S0101)

income for the county is $24,273. About 13.2% of families and 19.3% of the population are below the poverty line, including 26.1% of those under age 18 and 8.2% of those age 65 or over.[21]

The racial makeup as of 2017 is 77.2% White, 14.4% Black or African American, 1.6% Asian, 0.5% American Indian or Alaska Native, less than 0% Native Hawaiian and Other Pacific Islander, 2.4% two or more races, and 3.9% identified as some other race. 25.6% of the population identified themselves as Hispanic or Latino (of any race). [22]

Of those commuting to work, 82.4% drive alone; 10.7% carpool; 0.4% use public transportation; 1.7% walk; 0.3% bike; 0.9% use a taxicab, motorcycle or other means; and 3.6% work from home.[23]

The climate in Waco can best be described as moderate. Winters are generally mild with temperatures occasionally dropping below freezing and rarely experiencing ice or snow. Summers are warm to hot with high temperatures often rising above 100 degrees Fahrenheit. Rainfall typically is concentrated during the spring with much drier conditions during summer and early fall. The moderate climate also makes bicycle and pedestrian travel modes more appealing to a larger segment of the population. Although the summers can be quite hot, the uncomfortable temperatures usually occur between 12:00 noon and 7:00 PM, which does not impose significant restrictions on these modes of travel.

3.2 RELEVANT PLANS AND POLICIES

There are many existing plans and policies that address bicycle and pedestrian mobility in McLennan County, such as comprehensive plans, parks and recreation master plans, corridor studies, transit studies, and municipal ordinances. Relevant plans and policies were reviewed to ensure that the ATP is consistent with previous local planning efforts. A summary of this review is provided in Appendix C. Relevant projects and priorities were incorporated into the ATP whenever possible.

Local ordinances pertaining to sidewalk and bikeway requirements were also reviewed. Most municipalities in the ATP study area do not have ordinances that require construction of sidewalks or bikeways for new development projects. The city of Waco requires sidewalks under the following circumstances: on all new arterial or collector streets (or for substantial renovation projects which have frontage along these streets); in the Downtown District and College and University zoning overlay districts; on streets identified in the city's Sidewalk Plan; and/or in infill areas (see Sections 22-63, 28-839, and 28-880.11 of the Waco Municipal Code). No municipalities within McLennan County have an ordinance requiring the construction of bikeways.

[21] ACS. 2013-2017 5-Year Estimates. Selected Economic Characteristics (DP03)
[22] ACS. 2013-2017 5-Year Estimates. ACS Demographic and Housing Estimates (DP05)
[23] ACS. 2013-2017 5-Year Estimates. Commuting Characteristics by Sex (S0801)

Waco Urbanized Area*

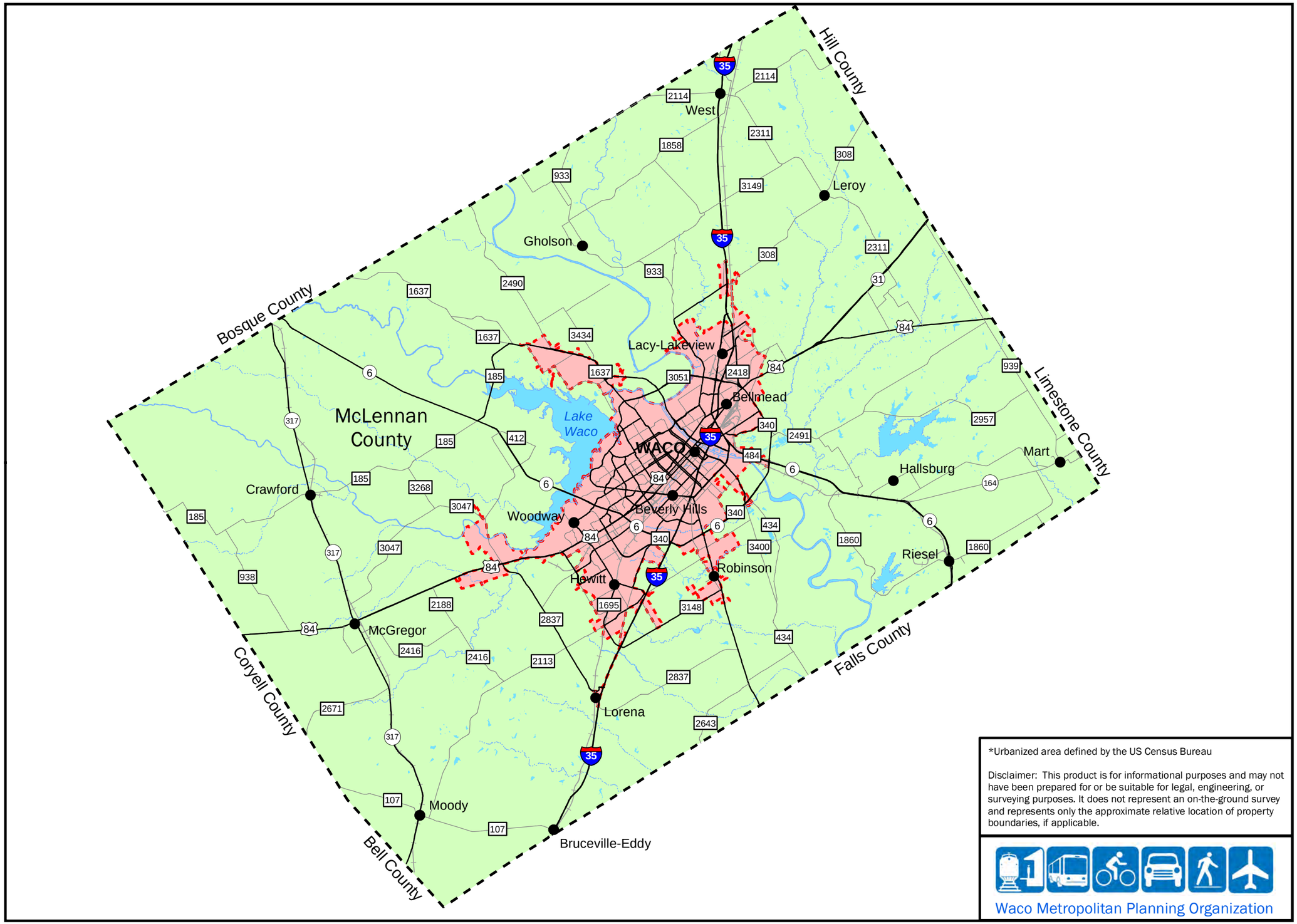
Waco Metropolitan Area

0 1 2 4

Miles

March 2019

Map 3.1
Waco Metropolitan & Urbanized Areas



*Urbanized area defined by the US Census Bureau

Disclaimer: This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries, if applicable.

Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\3.1 urban_metro_area.mxd

4 OVERVIEW OF PUBLIC OUTREACH

The Waco MPO conducted public and stakeholder outreach to better understand community needs and priorities related to active transportation. The MPO asked people where they want to walk, roll, and bike; what is preventing them from walking, rolling, and biking more often; and how active transportation projects should be prioritized. Additionally, the MPO sought to document short- and long-term active transportation planning goals of stakeholder groups and local jurisdictions. Outreach efforts conducted in support of the ATP were conducted in person and online. Major outreach activities are summarized in Table 4.1 below.

Table 4.1: List of Public Outreach Activities

Outreach	Date	Method
Public Comment Meetings: • Community Gathering – Presentation and Design Charrette • Public Input Meeting #2 • Public Input Meeting #3	• March 23, 2017 , South Waco Community Center • April 6, 2017, South Waco Community Center • April 11, 2017, Waco Transit Center	In-person presentation and Design Charrette
Waco Walks walking tour	April 8, 2017 East Waco neighborhood	In-person presentation
Waco North East Riverside Neighborhood Association Meeting	April 13, 2017 East Waco Library	In-person presentation; Distributed hard copy surveys
Live Well Waco Meeting	April 27, 2017 Waco-McLennan Health District Office	In-person presentation and distributed comment forms
Informal Work Sessions with Waco MPO's ad-hoc bicycle and pedestrian committee	April 2017 - July 2018 Dr Mae Jackson Development Center	In-person presentations and work sessions
Stakeholder Interviews	April 2017 – February 2019 Various Locations	In-person interviews and work sessions
Public Opinion Survey	April 13 to May 4, 2017	Online via Survey Monkey and in-person
GIS Online Route Mapper	April 13 to May 4, 2017	Online Map via ESRI Online
Public Comment Forms	April 13 to May 4, 2017	Online via City of Waco website, Waco MPO website, Act Locally Waco website
Waco MPO Ad-Hoc Bicycle and Pedestrian Advisory Committee	Second Thursday of every month (Spring 2017 - Spring 2019)	Presentations, discussions, and mapping activities at monthly committee meetings

4.1 SUMMARY OF STAKEHOLDER INTERVIEWS

4.1.1. Waco Housing Authority

The Waco Housing Authority (WHA) operates several low-income public housing properties in Waco, including the South Terrace Apartments, Estella Maxey Place, and Kate Ross Homes. These properties are located in north and south Waco, and together, house about 1,000 residents. Most residents of WHA properties own or have access to a car. Elderly residents are transported via a WHA van or bus. Typical destinations include the Valley Mills and Bellmead H-E-B grocery stores, Bellmead Walmart, family health centers (such as the Meyer Center Community Clinic and S 18th St Community Clinic), and other medical appointments. According to administrators of the WHA program, providing accessible sidewalk connections between WHA properties and transit routes/stops is their top active transportation priority. Comment cards were made available to residents of the WHA properties; no completed comment cards were received.

4.1.2. Midway Independent School District

Midway Independent School District (Midway ISD) serves part of the city of Waco, the neighboring communities of Woodway, Hewitt, Speegleville, plus parts of McGregor, Lorena and Crawford. Midway ISD enrolls approximately 7,800 students at six elementary schools, two intermediate schools, one middle school, one high school, and one alternative school. According to Midway ISD administrators, some Midway High School students walk to school. If high school students live over 2 miles from campus they are eligible to take the school bus. After school, it's common for high school students to walk from campus to fast-food restaurants along Hewitt Dr. Elementary school students are not bused unless they have special needs.

Important active transportation priorities for Midway ISD include pedestrian and bicycle accommodations in the vicinity of, and connections between, the various school campuses in the school district. Students and families at Hewitt Elementary School have expressed interest in wanting to walk to school.

Upcoming roadway improvement projects on Ritchie Rd, Speegleville Rd, and Mars Dr, should include sidewalks and bike lanes. Additionally, sidewalks are needed on Oak Road from the residential area to at least Queen Elizabeth Dr. Gap closure sidewalk improvements are needed along Woodgate Dr in the vicinity of Woodgate Intermediate School, from the intersection of Woodgate Dr and Chapel Rd to Panther Way. Sidewalk gap closure is also needed along Chapel Rd from Ritchie Rd to Woodgate Dr. These sidewalks would serve Woodgate Elementary School and other community gathering places like St. Jerome's Church. Buffered bike lanes and sidewalk should continue on Panther Way into Hewitt city limits. Cities such as Hewitt and Waco should look for opportunities to strengthen their sidewalk ordinances.

4.1.3. McLennan Community College

McLennan Community College (MCC) is a community college with an enrollment of approximately 10,000 students and 800 faculty and staff. MCC mostly offers two-year degrees, however they also offer partnerships with universities such as Texas Tech University and Tarleton State University, so students can complete their four-year degree in Waco. MCC is located on a 215-acre campus adjacent to Cameron Park and the Bosque River in Waco.

MCC conducted a student transportation survey in the spring of 2016. According to the survey, only 3% of those surveyed travel by public transit, mostly because the majority of students have their own car. Major off-campus destinations for MCC students include fast-food restaurants on N 19th St near campus. The survey did not ask students if they walked or biked to class.

An important active transportation priority for MCC is a well-lit sidewalk or multi-use paved path along N 19th St, at least between the Community Service Center on campus and the fast-food restaurants near Meridian Ave. This would help students move safely between campus and their desired destinations along N 19th St, would probably encourage even more students to travel via active modes. MCC's international student cohort lives on campus. Many of these students don't have cars and therefore, they frequently walk from campus to the H-E-B at N 19th St and Park Lake Dr.

Improvements to the existing pedestrian crossing signals at Powell Dr and N 19th St are needed; MCC employees have been hit while crossing the street to go to the post office. On-campus, vehicles speeding on College Dr is a safety problem. The Hawk signal at College Dr and McLennan Dr does not seem to be effective; drivers speed, do not always yield to pedestrians, and they use this street as a cut-through to Lake Shore Dr. Students need to cross College Dr on foot to travel between classes, events, and the Community Service Center. There is a need to reduce conflicts between modes on, and across, College Dr.

In addition to MCC's needs, there is an alternative school (Premier High School) across the street on N 19th Ave near Tanglewood Ave. Studentes get off the bus at College Dr and cross N 19th St. A mid-block pedestrian crossing should be considered.

In the past, MCC had a program to rent an MCC-branded bike for a semester for $10, however that program no longer exists. MCC is accessible by bike via Mockingbird Ln. The Cameron Park River Trail is connected to the MCC amphitheater, but this is only accessible by mountain bike or walking. It is not ADA accessible. MCC is also interested in creating a gateway for the campus at N 19th St and Powell Dr and/or College Dr with streetscape and light pole banners. MCC is willing to partner with the city of Waco and/or Waco MPO on pedestrian and bicycle improvements.

4.1.4. City of McGregor

The city of McGregor has a population of approximately 5,000 people, and is located at the junction of US Hwy 84 and State Hwy 317, south of Waco. McGregor is a predominately rural residential community, with commercial and businesses oriented along US Hwy 84 and State Hwy 317 (Main St), and industrial uses primarily in the McGregor Industrial Park, located in the southern portion of the city.

McGregor recently acquired a portion of the old Cottonbelt Railroad right-of-way for a utility project, and plans to improve the former railroad corridor with crushed granite or other ADA surface for use by pedestrians and potentially bicyclists. The trail will extend from approximately Cottonbelt Parkway (FM 2188) at its northern terminus, to its southern terminus in downtown McGregor, possibly near E 4th St and Hayes.

Sidewalk gap closure is desired in the downtown McGregor area, including along both sides of Main St (State Hwy 317) from W 11th St to US Hwy 84. The desired sidewalk would then continue up along the west side of Lone Star Pkwy (State Hwy 317) to Alamo Dr, and west along the south side of US Hwy 84 to Johnson Dr. This would provide a continuous pedestrian connection between residential subdivisions, Amsler Park, and downtown McGregor businesses and city services. ADA-compliant pedestrian crossing improvements, crossing signals, and countdown timers are desired in the downtown area (intersections of W 3rd St, W 6th St, and US Hwy 84 and Main St/State Hwy 317). Potential future roadway improvements could include pedestrian and/or bicycle accommodations. For example, if Bluebonnet Parkway is extended to US Hwy 84, it could include a wide shoulder or bike lane for cyclists.

4.1.5. City of Hewitt

The city of Hewitt has a population of approximately 14,300 people and encompasses 6.86 square miles. It is located south of Waco immediately west of IH-35. Hewitt is mostly residential with a commercial corridor primarily along Hewitt Drive. City services such as the public library and City Hall are located on Ritchie Rd near Hewitt Dr. Several Midway ISD schools are located in city limits.

Desired active transportation projects in Hewitt include connections between existing and future school campuses, public parks, and along Castleman Creek. For example, the city envisions an off-street shared-use path beginning at the southwestern city limits (near Old Temple Rd, Warren Park, and the site of a future Midway ISD school campus), and extending up along Castleman Creek to Castleman Creek Elementary School, Hewitt Park, and another future Midway ISD campus near Ritchie Rd. A connecting sidewalk could also be installed along Spring Valley Rd to Val Highland Dr, which would connect Spring Valley Elementary School to this active transportation corridor.

Panther Way (in Waco city limits) has sidewalks on both sides of the street and buffered bike lanes extending from Ritchie Rd to the Hewitt city limits. Hewitt desires to continue the sidewalk and buffered bike lanes to Hewitt Dr. The buffered bike lane may need to transition to a shared lane as it approaches the intersection at Hewitt Dr. From Hewitt Dr, the sidewalk would be extended north along the east side (adjacent to Midway Middle School) to connect to a future city of Waco shared-use path along the south side of Mars Dr. Sidewalk gap closure is needed along the west side of Hewitt Dr between Park Place Dr and Ritchie Rd, and again from Chama Dr to Hewitt city limits north of Mars Dr. Sidewalks should also be installed along Warren Street from Ritchie Rd to 1st Street.

Hewitt residents and visitors ride bikes for transportation and recreation. Potential bike routes include Old Temple Rd, 1st Street, Warren Street, and Bagby Ave. This route could then connect to the city of Waco's future shared-use path along Ritchie Rd, and existing/proposed buffered bike lanes on Panther Way.

4.1.6. City of Lorena

The city of Lorena is a small, primarily single-family residential community of approximately 1,662 people. The city straddles IH-35 to the east and west. Businesses are primarily along IH-35, with the exception of a historic downtown (Old Town) along Center St. There are large tracts of undeveloped/agricultural land to the east of IH-35.

The city of Lorena would like to see sidewalk improvements in downtown Lorena, particularly along Center Street/Pecan Ridge from Lorena High School to IH-35. Sidewalks are also desired to connect residential neighborhoods to Lorena ISD schools via Williams Rd and Leopard Ln. Sidewalk extension along Old Lorena Road from the Conoco gas station to at least Williams Road would connect residences to the Brookshire Brothers grocery store. Bicycle routes are desired, however, the condition of roadways (rural in design; limited to no street lighting) can make it challenging to sign bike routes without being accompanied by a larger roadway improvement project. Bike routes with stamped sharrows could be beneficial along Williams Road and Leopard Lane, in the immediate vicinity of Lorena Middle School and Lorena High School.

4.1.7. City of Robinson

The city of Robinson has a population of approximately 10,500 people. The city is located east of IH-35 with its city limits extending to IH-35 to the west and Loop 340 to the north. US Highway 77 runs through the city. Commercial development is mostly found along IH-35 and US Highway 77. A large portion of the city is devoted to agricultural land use, and there are tracts of undeveloped land in the northern section of the city.

The city of Robinson is interested in improving bicycle and pedestrian connectivity in the vicinity of Robinson ISD schools on Peplow Dr, Old Robinson Rd, and Tate Ave. Improvements should extend west along Tate Ave to at least Pompano Park D rto accommodate students that live in adjacent subdivisions. Sidewalk improvements are desired along Shamrock Dr, Stegall Dr, Lyndale Dr, and Tate Ave, to complement future Town Center economic development and to accommodate safe crossing across Business 77. Sidewalk along Business 77 is desired from at least Moonlight Dr to Loop 340, which will serve existing commercial, restaurants, residential, and future development along the corridor. Sidewalk is especially needed in the vicinity of Tejun the Texas Cajun restaurant. Rural transit service is also important for Robinson, especially for older adults.

4.2 SUMMARY OF ATP PUBLIC OPINION SURVEY AND MAPPING EXERCISE

During the spring of 2017, Waco MPO staff conducted a 25-question online survey of residents of McLennan County, Texas, and provided an online GIS map where respondents could map their current and desired biking and walking/rolling routes. “Rolling” refers to using wheeled transportation such as a wheelchair or stroller. This type of pedestrian movement is especially important to capture, because poor-quality sidewalks, sidewalk obstructions, incomplete sidewalk networks, and lack of accessible curb ramps at intersections are especially hindering.

The purpose of the survey and online map was to learn about the bicycle and pedestrian experience in Waco and McLennan County, and to ask respondents about their top concerns and priorities for future investments in active transportation modes.

226 people responded to the survey. Generally, responses to the online survey indicated that while not many people ride bikes or walk/roll as their means of transportation, they are interested in driving less and biking or walking/rolling more. However, the lack of basic bicycle and pedestrian infrastructure and connectivity makes it challenging. New bicycle infrastructure should, at least at first, focus on the novice rider. Pedestrian improvements should, at least at first, focus on connecting residential areas to potential destinations such as parks, basic services, and amenities. A more detailed discussion of online survey results, and the survey instrument, are provided in Appendix A.

The online map provided an opportunity for people to map the routes they currently cycle or walk/roll. In total, 76 routes were mapped. According to the results of the mapping exercise, the majority of current cycling routes are centered in greater downtown Waco, Cameron Park, and the Elm Avenue area. One route spanned from Woodway to McGregor and a few were in the Dean Highland neighborhood of Waco. Desired routes were also primarily concentrated in central Waco with obvious cross-town patterns:

- North-South on University Parks (Cameron Park to Baylor University); 19th Ave (Park Lake Dr to Baylor Ave); and 26th Ave (Park Lake Dr to Mary Ave)
- East-West on Bosque Blvd (Lake Air Dr to 18th St); Park Lake Dr (MacArthur to 19th St); and numerous numbered streets in downtown Waco
- A regional bike route from at least downtown McGregor to downtown Waco.

Examples of desired destinations include Baylor University and athletic facilities, downtown Waco, 15th/Colcord area, various schools and neighborhood parks, food trucks and Indian Spring Park, Cameron Park, VA Hospital, Richland Mall.

Current and desired walking/rolling routes include Cottonbelt Trail (including an extension of Cottonbelt Trail to McGregor and a connection from Hwy 84 near Woodway and Twin Rivers subdivision); a connection between the subdivisions to the south off Chapel Rd and services/amenities on Hewitt Dr;

various routes connecting residential neighborhoods to parks and athletic facilities; and a continuous pedestrian connection along neighborhood streets such as Austin Avenue, Colcord Avenue, Park Lake Dr, McArthur Dr, Lake Shore Dr, N 29th St, and N 4th/5th Streets. Examples of walking/rolling destinations include workplaces, Baylor athletic facilities, food trucks, Indian Spring Park, grocery stores, and the 15th/Colcord area.

4.3 SUMMARY OF OTHER PUBLIC COMMENT

General comments were accepted via online/hard copy comment cards, email, and phone. Hard copy comment cards were made available at locations such as the Waco MPO office, the Waco Housing Authority office, Waco Transit office, and also distributed at public and neighborhood association meetings. Appendix B summarizes the public comments that were submitted to help inform development of the plan.

Several commenters suggested that active transportation improvements should be prioritized in low-income and/or at-risk neighborhoods, because residents of these neighborhoods may benefit the most. Benefits could include both public health and economic outcomes, such as providing opportunities to increase physical activity, and providing safe and convenient ways to travel to/from work and other destinations (including connections to transit routes) without needing to rely on a car.

Other commenters stressed the importance of protected bike lanes and off-street bicycle/pedestrian infrastructure because increased separation from vehicle traffic will appeal to people of all ages and abilities. The City of Waco's Tax Increment Financing (TIF) program was also discussed, with one commenter suggesting that "complete street" infrastructure improvements be required for projects receiving these incentive funds. TIF-funded projects often include pedestrian improvements (wide sidewalks, street trees, and pedestrian lighting). In 2019, TIF recommended committing funds for a two-way protected-bike lane and sidewalk improvements, which are components of a project to convert Washington Ave (in Waco) from one-way to two-way operation. Another commenter suggested making TIF dollars available for groups that are not private developers, such as neighborhood associations or non-profit organizations, so they can champion sidewalk improvement projects in their neighborhood.

5 EXISTING PEDESTRIAN AND BICYCLE NETWORK

5.1 PEDESTRIAN NETWORK

According to the 2013-2017 American Community Survey (ACS) 5-Year Estimate, only 1.7% of workers in McLennan County walk to work. 93.1% drive to work, either alone or carpool (see Map 5.1).[24] Responses to the ATP survey were a little different; 17.6% of walk as a primary means of transportation, and 63.3% drive alone or carpool.[25] The two surveys differed in several ways. First, the ACS is a US Census product and a fair representation of the typical McLennan County commuter, while the ATP survey is a non-scientific and voluntary public feedback survey. Second, the ATP survey asked people to consider all types of trips whereas the ACS only asked about work-related trips. However, despite these differences, both surveys tell a similar story. Only a small fraction of McLennan County residents choose to walk or roll (using a wheelchair or stroller, or other wheeled mobility device) as their primary mode of transportation. Driving, especially driving alone, is still the first choice for most people. This is likely due to a combination of factors, most notably land use (proximity of trip origins and desired destinations), the lack of pedestrian-oriented culture, and the existing condition of the pedestrian network.

[24] ACS. 2013-2017 5-Year Estimates. Commuting Characteristics by Sex (S0801)
[25] The ACS is a US Census product, and is a fair representation of the typical McLennan County commuter, and the ATP survey is a non-scientific, public feedback survey.

5.1.1. Extent of Existing Pedestrian Network

Approximately 25% of the county's street network includes sidewalks. Areas developed prior to 1950, such as older downtown grid streets, contain most of the pedestrian facilities. Beyond these areas the sidewalk network is scattered and desired destinations are generally well beyond a walkable 0.25 mile from residences. Map 5.2 shows the distribution of sidewalks by Transportation Analysis Zones (TAZ) within the Urbanized Area.

Only a few of the cities in McLennan County require the construction of sidewalks or have formally planned for the buildout of a pedestrian network. For example, the Waco and Hewitt comprehensive plans include a map of their preferred pedestrian network. Bruceville-Eddy, Lorena, and Robinson have policies in their comprehensive plans to encourage walking and sidewalk connectivity in their downtowns and/or residential areas.

Waco city ordinance requires the construction of sidewalks under the following circumstances: all arterial and collector streets, including new streets and new/redevelopment on existing streets; new or redevelopment on all existing streets in the College & University and Downtown District zoning overlays; infill projects that would provide sidewalk gap closure; and infill projects fronting a street identified on the City Sidewalk Plan. These ordinances have incrementally increased the sidewalk network in Waco. This has been most successful in the downtown and college overlays because of highly-concentrated growth and Tax Increment Financing (TIF) contributions, which together result in continuous sidewalk improvements for entire blocks. In other parts of the city, the sidewalk network remains patchy because of the piecemeal and discontinuous nature of development/redevelopment.

Good sidewalk connectivity in residential neighborhood.

Gap in sidewalk network along IH-35 frontage road.[26]

Good sidewalk connectivity in residential neighborhood.

Utility pole obstructing a sidewalk.

5.1.2. Condition of Existing Pedestrian Network

The existing sidewalk network is in various states of repair. Much of the existing sidewalk is in poor or fair condition with broken and uneven concrete, missing segments, obstructions (such as fire hydrants and utility poles) and lack of ADA treatments at driveways and intersections. MPO staff conducted a desktop sidewalk condition inventory[27] to determine if a sidewalk was accessible for someone using a wheelchair (e.g., presence or absence of cracks or upheaving, overgrowth of vegetation, sidewalk width or clear walk area). Staff looked first for the existence of sidewalks and then estimated the sidewalk condition as either poor, fair, or good. “Good” means a sidewalk is in good condition and ADA accessible. “Fair” means a sidewalk is in mostly good condition and mostly ADA accessible, but may have less-than-ideal characteristics, such as narrow width, minor cracking, or out-of-date curb ramps. “Poor” condition means a sidewalk is not ADA-accessible and/or is in serious disrepair. While this methodology is not as robust as a dashboard survey or walking audit, it does offer a helpful estimate of the extent of the existing sidewalk network in McLennan County, the overall condition of the network, where sidewalk improvements have been concentrated, and which areas need urgent attention.

Approximately 26% of the existing sidewalk network in McLennan County is in “Poor” condition. 52% is in “Fair” condition and 21% is in “Good” condition (see Table 5.1). Overall, the proportion of “Poor” sidewalk

[26] Lisette Lopez, KXXV. 2018.
[27] MPO staff utilized 2017 Google Earth satellite imagery and Google street view.

has decreased; in 2015, 43% of existing sidewalk was rated "Poor"[28]. This can probably be attributed to several factors: 1) new or replaced sidewalk, especially in downtown Waco, in the vicinity of Baylor University, and near schools; and 2) a more accurate desktop analysis (with higher quality satellite imagery). See Maps 5.3, 5.4, and 5.5 for the Sidewalk Condition Inventory for the Waco Urbanized Area and Rural Cities.

Table 5.1: 2017 Sidewalk Inventory

Sidewalk Condition Rating	Sidewalk Miles	Percentage of All Sidewalks
Poor	93.59 miles	26%
Fair	186.54 miles	52%
Good	75.84 miles	21%

Example of poor sidewalk condition.[29]

Example of fair sidewalk condition.

Example of good sidewalk condition.

5.1.3. Walking Propensity Index

Walkability is a measure of how easy it is to travel to desired destinations by walking or rolling. Walkability considers not just the extent of the pedestrian network but also the proximity and density of attractors[30]; in other words, is your desired destination located within walking distance, and if so, is there an easy, mostly direct, way to walk there?

Waco MPO developed a Walking Propensity Index for each traffic analysis zone (TAZ) in McLenann County using demographic data developed to inform the MPO's long-range planning efforts. This demographic data was then used to understand the following characteristics of the physical environment that contribute to pedestrian-friendly design.

- **Residential density** measures the number of residential units per acre within a neighborhood.
- **Commercial density** measures the amount of area designated for commercial use within a neighborhood. Higher density means a higher concentration of businesses, restaurants, retail shops and other commercial uses.

[28] Waco MPO. 2015. Connections 2040: The Waco Metropolitan Transportation Plan.
[29] Waco Tribune-Herald. 2016. Funding tweak could accelerate new sidewalk connections in downtown Waco. https://www.wacotrib.com/news/roads/funding-tweak-could-accelerate-new-sidewalk-connections-in-downtown-waco/article_e4c07a4a-b5aa-5f60-bd5c-7f6da7ed8717.html
[30] Attractors include land uses that attract or draw people, such as schools, grocery and retail stores, parks, workplaces, medical offices, restaurants and entertainment.

- **Land use mix** measures the degree of mixing of different types of land uses (such as residential, commercial, entertainment, and office development). More land use mixing indicates a more even distribution of land between the different types of land uses.
- **Street connectivity** measures the number of street intersections in a neighborhood. More connectivity enables more direct travel between two points using existing streets and pathways.

The Walking Propensity Index provides a Walking Score for existing conditions (year 2015, which is the latest available data) and future conditions (projections for year 2045, which is the planning horizon for the next iteration of the Metropolitan Transportation Plan). MPO staff identified current and future areas with the greatest walking propensity. Overall, scores for existing conditions ranged widely from 0 (vacant land) to 13,310 (downtown Waco). Because it is a simple additive scoring system, the higher the score, the more walkable the TAZ. As shown on Map 5.6, TAZs with the highest Walking Scores for existing conditions are concentrated in the urban core of downtown Waco. TAZs with moderate Walking Scores include major commercial corridors as well as neighborhoods surrounding Baylor University. Neighborhoods comprised of predominately single-family homes have lower Walking Scores. It is expected that this trend will continue through year 2045, with the highest increase in walking propensity concentrated in and around downtown Waco and Baylor University.

5.2 BIKEWAY NETWORK

Despite the presence of three institutions of higher education within the Waco Metropolitan Area, bicycling is not a significant mode of transportation for commuting purposes. According to the 2013-2017 ACS 5-Year Estimate, only 0.3% of commuters in McLennan County use this mode as their preference[31]. Map 5.7 shows the census tracts with the highest percentage of bicycle commuters. 13% of those who responded to the MPO's ATP survey said biking is their primary mode of transportation.

There are several categories of bikeways (also called bicycle facilities) that can be grouped by the degree of separation they provide from motor vehicle traffic. The following bikeway descriptions are summarized from the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide[32] and the Caltrans Guide to Bikeway Classification[33] and are presented in order from most- to least-separated from motor vehicle traffic.

> Off-Street Separated Bikeways. Off-street separated bikeways, sometimes described as Class I bikeways, include paved bike-only paths or paved shared-use paths. These facilities provide exclusive right-of-way for bicyclists (and pedestrians) away from the roadway with limited motor vehicle traffic crossings. Sometimes bicycle and pedestrian paths of travel are delineated by pavement markings or striping. Frequently these facilities are designed for recreational use. However, off-street separated bikeways can serve both recreational and transportation purposes, because they can provide high-quality, safe, and important connectivity to other parts of the bikeway network. Common applications of off-street separated bikeways include along rivers and drainage canals, utility rights-of-way, railroad rights-of-way, within or adjacent to school campuses, within and between parks, and alongside high-volume/high-speed roadways.

[31] ACS. 2013-2017 5-Year Estimates. Commuting Characteristics by Sex (S0801)
[32] NACTO. 2014. Urban Bikeway Design Guide, Second Edition.
[33] Caltrans. 2017. A Guide to Bikeway Classification.

290 Toll Shared Use Path, Austin, TX. [34]

Shared-Use Path with delineated paths of travel, Boulder, CO.[35]

On-Street Separated Bikeways. An on-street separated bikeway, such as a cycle track or protected bike lane, is for the exclusive use of bicycles, and are separated from motor vehicle travel lanes, parking lanes, and sidewalks. Sometimes these are referred to as Class IV bikeways. On-street separated bikeways combine the user experience of an off-street bikeway with the on-street infrastructure of a conventional bike lane. On-street separated bikeways are physically separated from motor traffic with a vertical feature such as grade separation, flexible posts, inflexible barriers (such as a curb or planters), or on-street parking. On-street separated bikeways can be one-way or two-way, as shown in the photo examples below.

Some benefits of on-street separated bike facilities include providing a dedicated and protected space for bicyclists; improving perceived comfort and safety for bicyclists; reducing risk and fear of collisions with over-taking vehicles; reducing risk of "dooring"; low implementation cost when making use of existing pavement, or using a parking lane for protection from traffic; and appealing to cyclists of all ages and abilities.

Protected Bike Lane in Chicago, IL. [36]

Two-Way Protected Bike Lane in Washington, DC [37]

On-Street Bike Lanes and Buffered Bike Lanes. A conventional bike lane (sometimes called a Class II bikeway), is defined as a portion of the roadway that has been designated by striping,

[34] Central Texas Regional Mobility Authority. Shared Use Paths. https://www.mobilityauthority.com/projects/programs/SUP
[35] Go Boulder, via Pedestrian and Bicycle Information Center. Development of Boulder's Multimodal System. http://www.pedbikeinfo.org/cms/downloads/ENG.OneCity'sDevelopmentofaMultimodalSystem.pdf
[36] People for Bikes. A Field Guide to North American Bike Lanes. https://peopleforbikes.org/blog/a-field-guide-to-north-american-bike-lanes/
[37] People for Bikes. A Field Guide to North American Bike Lanes. https://peopleforbikes.org/blog/a-field-guide-to-north-american-bike-lanes/

signage, and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes enable cyclists to ride at their preferred speed without interference from motor vehicle traffic, and typically run in the same direction as traffic. A bike lane is distinguished from a cycle track or protected bike lane in that it has no physical barrier (bollards, medians, raised curbs, etc.) that prevents or restricts the encroachment of vehicles. Conventional bike lanes increase comfort and confidence for cyclists on busy streets; offer some separation between bicyclists and motor vehicles; increase predictability of bicyclist and motorist positioning and interaction; and visually remind drivers of bicyclists' right to ride in the street.

Buffered bike lanes are conventional bicycle lanes paired with a painted buffer space separating the bike lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes provide greater distance between motor vehicles and bicyclists than conventional bike lanes; provide space for cyclists to pass another cyclist without encroaching into the motor vehicle travel lane; help to keep cyclists out of the door zone when the buffer is placed between parked cars and the bike lane; provide more space for cyclists without making the bike lane appear so wide that it might be mistaken for a travel lane or a parking lane; and appeal to a wider range of cyclists.

Conventional Bike Lane in Del Mar, CA. [38]

Buffered Bike Lane in Fairfax, CA. [39]

On-Street Shared Bikeways. On-street shared bikeways (sometimes classified as Class III bikeways) include bicycle routes and bicycle boulevards. Bike routes designate a preferred route for bicyclists on streets shared with motor vehicle traffic, such as: a local neighborhood street (with no yellow center line); a wide outside travel lane; or a paved shoulder. Bicycle boulevards are usually located on streets with low motorized traffic volumes and speeds. Bicycle boulevards are designed to prioritize and "optimize" bike traffic, and to be appealing to bicyclists of all ages and abilities. Bicycle boulevards use signs, pavement markings, and traffic calming measures to discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets. Because there is no separation from motor vehicle traffic, on-street shared bikeways are generally are not suitable for high-traffic and high-speed roads. However, the threshold may vary depending on the type of roadway (rural or urban/suburban)[40].

Bicycle routes and bicycle boulevards play a key role in developing a connected, low-stress bicycle network because they can provide strategic, often lower-cost connections between higher classifications of bikeways (such as cycle tracks, off-street shared-use paths, and bike lanes).

[38] NACTO. Urban Bikeway Design Guide. Conventional Bike Lanes. https://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/conventional-bike-lanes/
[39] NACTO. Urban Bikeway Design Guide. Buffered Bike Lanes. https://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/buffered-bike-lanes/
[40] FHWA. 2019. Bikeway Selection Guide.

Bike routes and bike boulevards often include signage, such as wayfinding signs, “share the road” signs, and “bikes may use full lane” signs. Sharrows and other pavement markings can alert road users of the lateral position bicyclists are expected to occupy within the travel lane; encourage safe passing by motorists; reduce the incidence of sidewalk riding and wrong-way bicycling; and indicate the proper path for bicyclists through difficult or potentially hazardous situations, such as railroad tracks or the “door zone” of parked cars.

Bicycle Boulevard in San Luis Obispo, CA. [41]

Bike Route with Sharrows in Seattle, WA. [42]

5.2.1. Existing Bikeways

Off-street separated bikeways in McLennan County include the Brazos Riverwalk, the Lake Waco Dam Trail, and the Cotton Belt Trail. The Brazos Riverwalk is a 7-mile long shared-use path between Redwood Shelter in Cameron Park, Brazos Park East, the Baylor McLane Stadium complex, and the Baylor Turner Riverfront Complex. The Lake Waco Dam Trail stretches 3 miles, starting on the north end of the lake near Skeet Eason Road in Airport Park and terminating to the south at Lake Shore Drive. The Cotton Belt Trail is approximately 2.5 miles and extends from Hannah Hill Road at its northern terminus to Trailblazer Park at its southern terminus.

Waco has approximately 7.25 miles of on-street striped bike lanes, as listed below:

- 4th St from Jefferson Street to Baylor University;
- 5th St from Jefferson Street to Cleveland Avenue;
- Washington Avenue from University Parks Drive to 5th Street;
- Park Lake Drive from 19th St to Lake Shore Drive;
- Panther Way between Woodgate Drive and Ritchie Road;
- Martin Luther King Jr Drive from Bus 77/SH 6 to the IH-35 southbound frontage road; and
- Orchard Lane from Martin Luther King Jr Drive to Bus 77/ SH 6.

Baylor University has also striped a little more than one mile of bike lanes within their campus, including:

- S 3rd Street from Dutton Avenue to mid-block between Bagby Avenue and Daugherty Avenue;
- Bagby Avenue from S 4th Street to S University Parks Drive;
- Dutton Avenue from S 4th Street to S 5th Street;
- S 5th Street from Dutton Avenue to MP Daniel Esplanade; and

[41] Pedestrian and Bicycle Information Center. Bicycle Boulevards. http://www.pedbikeinfo.org/planning/facilities_bike_bikeblvds.cfm
[42] Seattle Department of Transportation Blog. 2009. Sharing the Road with Sharrows. http://sdotblog.seattle.gov/2009/09/24/sharing-the-road-with-sharrows/

- S 7th Street from MP Daniel Esplanade to Speight Ave.

Waco has two signed bike routes totaling 3.5 miles. The first is along University Parks Drive from the IH-35 southbound frontage road to Herring Avenue. The second is along 11th/12th Streets from Garden Drive to Columbus Avenue; this route will be upgraded to a conventional bike lane in 2019. Table 5.2 below summarizes the existing bikeways by facility type.

Table 5.2: Summary of Existing Bikeways

Bikeway Type	Length (Miles)
Off-Street Separated Bikeways (paved shared-use paths)	13.63
On-Street Separated/Protected Bikeways (protected bike lanes or cycle tracks)	0
On-Street Bike Lanes, including Baylor Campus (conventional and buffered bike lanes, and bicycle/pedestrian lanes)	8.92
On-Street Shared Bikeways (signed bike routes with or without sharrows)	3.52

Several other bikeways are scheduled for construction in the near future. This includes a new off-street shared-use path on Mars Drive from Hewitt Drive to Old Hewitt Road, and along Ritchie Road from Panther Way to Warren Street. In 2019 a new protected two-way bike lane will be installed along Washington Avenue from University Parks Drive to S 18th Street. New bike lanes will be installed on Lake Shore Drive from Wooded Acres Drive to N 19th Street; 11th/12th Streets from Garden Drive to Columbus Avenue; S 26th Street from Bagby Avenue to Clay Avenue; and MacArthur Drive from Alexander Avenue to McFerrin Avenue. Also, a combination bike lane and shared lane with sharrows will be installed along Washington Ave and Elm Ave from University Parks Drive to Forrest Street. Combined, this amounts to approximately 14.8 miles of future bikeways. See Map 5.8 for a map of existing and planned bikeways.

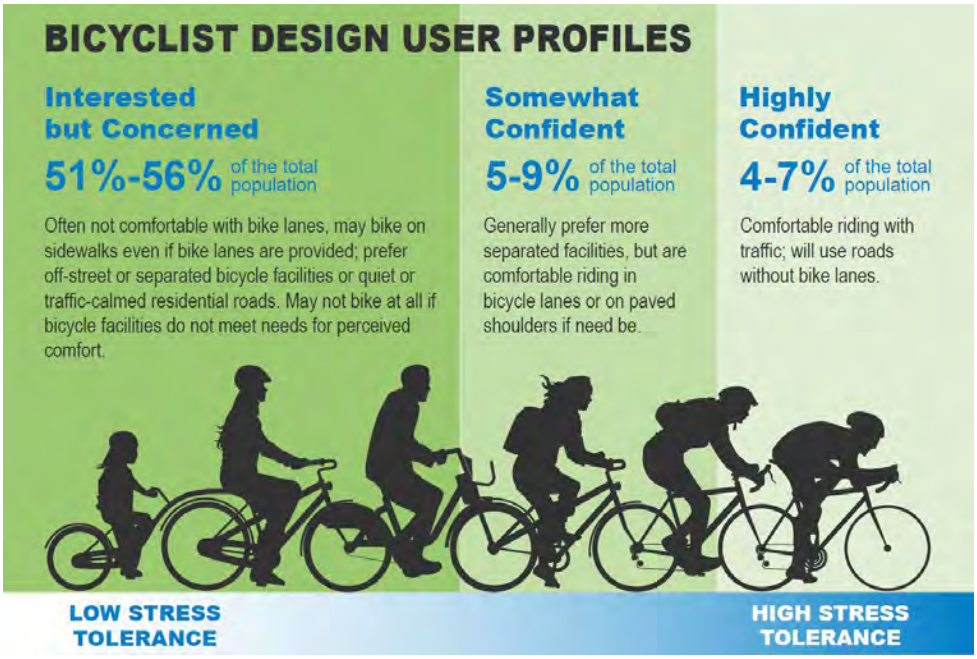
The existing bikeway network is almost entirely within greater downtown Waco. Major arterial streets (with heavy traffic volumes and high speeds), highways, and freeways, such as Waco Drive/US Hwy 84, IH-35, Highway 6/Loop 340, Franklin Avenue, Bosque Boulevard, Valley Mills Drive, Business 77/La Salle Avenue, New Road, China Springs Hwy, Spring Valley Road, and Hewitt Drive, hinder the development of a connected bicycle network. The Brazos River and Lake Waco are also natural barriers to connectivity. These physical constraints limit the ability of residents to safely commute from their homes to work, school, and other destinations outside of their immediate neighborhood.

In addition to a lack of designated bikeways, public bicycle parking outside of the Baylor University campus is extremely limited. Public bicycle racks are located at the Waco Transit Center, downtown Waco, and at some public buildings such as schools, libraries, and municipal buildings. Currently none of the jurisdictions in McLennan County require bike parking for new development or expansion of existing developments. Since 2012, the City of Waco zoning ordinance has allowed the reduction of building setbacks or vehicle parking if major urban design and/or multi-modal features are added to the project (e.g., wider sidewalks, pedestrian lighting, street furniture, and bike parking). Several projects have taken advantage of this requirement and added bicycle racks to their development (mostly university student housing).

5.2.2. Bike Suitability

Bicyclists vary in their level of experience, their willingness to mix with motor vehicle traffic, and their level of comfort on different types of streets and different types of bicycle facilities.

According to the US Department of Transportation Federal Highway Administration's (FHWA's) Bikeway Selection Guide, bicyclists vary in their level of experience and their willingness to use certain types of bikeways and navigate certain types o helps to inform bikeway selection and assess their potential comfort level for riding on different types of streets. As shown in the image below, many adults are interested in bicycling for transportation, but are discouraged by the potential for stressful interactions with motor vehicles[43]. There are some bicyclists that are generally comfortable on the roadway, but prefer separated facilities; and there is a small percentage of bicyclists that are very comfortable riding on almost any type of bikeway, including mixed with traffic[44].



Source: FHWA. 2019. Bikeway Selection Guide.

When used to inform bikeway design, the bicyclist user profile becomes the "design user profile." The Waco MPO has developed a Bicycle Suitability Index for arterial and collector roadways within McLennan County. The design user profile for the Bicycle Suitability Index is the novice rider, which fits within the "interested but concerned" category. According to the FHWA, "to maximize the potential for bicycling as a viable transportation option, it is important to design bicycle facilities to meet the needs of the Interested but Concerned Bicyclist category. This is generally the recommended design user profile as the resulting bikeway network will service bicyclists of all ages and abilities, which includes Highly Confident and Somewhat Confident Bicyclists" (Bikeway Selection Guide, p 13).

The MPO's Suitability Index is a useful tool that can help cyclists map their route from Point A to Point B to best match their comfort level and ability. The index was initially developed in 2015 and it was updated for use in this ATP (as well as the next iteration of the MTP). The scoring criteria are modified from a system first developed by the US Department of Transportation. Table 5.3 summaries the criteria used in

[43] The remaining percent of adults are in the "no way, no how" group, that are not interested in bicycling for transportation.
[44] FHWA. 2019. Bikeway Selection Guide.

scoring bicycle suitability and Table 5.4 lists the scores used to define the levels of comfort for novice bicyclists.

Table 5.3: Bicycle Suitability Criteria

Criteria	Add / Subtract from Beginning	Score
Beginning Score	n/a	3.67
Presence of 15' Curb Lane	Subtract	Speed Score*
Curb Lane Width	Subtract	Width x Speed Score
Curb Lane Volume	Subtract	Volume x 0.002
Other Lane Volume	Subtract	Volume x 0.004
Per Hour Truck Volumes	Add	< 10 = 0 10 to 19 = 0.1 20 to 29 = 0.2 30 to 59 = 0.3 60 to 119 = 0.4 >120 = 0.5
Speed Limits**	Add	Posted Speed x 0.22
Presence of On-Street Parking	Add	0.506
Parking Type	Add	Parallel = 0.2 Angle = 0.6
Rural / Residential / Undeveloped Land Use	Add	0.264
Driveway & Street Intersections per Mile	Add	<20 = 0 >20 = 0.1 every 10/mi
Railroad Crossing	Add	0.2
Steep Slope	Add	0.3

*Speed Score: Less than 50 mph = 0.966, 51 to 55 mph = 0.8, 56 to 60 mph = 0.6, Greater than 60 mph = 0.4.
**Facilities with posted speed limits of 70 mph were automatically given a comfort level of "Not Recommended."

Table 5.4: Bicycle Comfort Level Score

Score	Comfort Level
Less than 2.5	Easy
2.51 to 5.00	Moderate
5.01 to 10.00	Difficult

10.01 to 15.00	Not Recommended
Greater than 15.00	Not Recommended (Extremely Challenging)

Maps 5.9 and 5.10 show the bicycle suitability scores for the Waco Urbanized Area and McLennan County, respectively. Scores outside of the urbanized area were generally rated “Easy” if the posted speed limit was below 70 mph or “Not Recommended” if above 70 mph. In conversations with the local bicycling community, roadways with speed limits of 70 mph or greater are generally avoided unless no other option is available. The maps also identify roadways that prohibit bicycle use. For example, state law prohibits the use of IH-35 main lanes and other expressways by bicycles. Additionally, frontage road use, although permitted, is generally discouraged due to the high number of merging movements, speed, and significant number of driveway access points.

The Suitability Index was also utilized to inform recommended bikeways within the ATP planning area. For example, corridors identified as “Easy” were more likely to be recommended as bicycle routes requiring only signage and pavement markings. Recommended bikeways along corridors identified as either “Moderate” or “Difficult” were more likely to include some degree of separation, such as striped bicycle lanes, buffered bicycle lanes, or separated bikeways.

5.3 PUBLIC TRANSIT

According to the McLennan County Transit Needs Study (2018), Waco Transit has 599,940 total annual boardings on their fixed routes (which averages to 1,937 boardings per day and 49,995 boardings per month). Transit service is important to provide mobility options to older adults, individuals with disabilities, low-income individuals, and other population groups with limited transportation options. Safe and convenient walking, rolling, and bicycling routes can make it easier for transit riders to get to the stop of their choice and use transit service.

Waco Transit System (WTS) operates fixed-route urban and rural transit service, including the following services described in Table 5.5 and shown on Map 5.11.

Table 5.5: Summary of Transit Services

Type of Service	Service Routes	Description of Service
Fixed Route	9 urban fixed-routes 1 rural fixed-route	8 of the 9 WTS urban fixed-routes and the one rural fixed route are based out of, and provide service through, the Downtown Waco Transit Terminal. These routes provide access to downtown Waco and surrounding residential and commercial destinations. The remaining fixed route operates as a circulator for West Waco, the City of Hewitt, and portions of the City of Woodway and does not extend to the Downtown Terminal.
Shuttle	6 Baylor University Shuttles Downtown Connect	6 fixed-route Baylor Shuttles connect Baylor University’s main campus with surrounding university buildings, student residences, and key commercial activities for faculty, students and guests.

Type of Service	Service Routes	Description of Service
	Silo District Trolley La Salle/Circle Shuttle	The Downtown Connect provides shuttle service between the Baylor campus and Downtown Waco. The Silo District Trolley and the La Salle/Circle Shuttle provide access primarily from the Waco Convention Center and park-and-ride areas in downtown to tourist activities such as shopping, dining, restaurants and art venues within a 5-mile radius.
Demand Response (by reservation only)	Disability Group Transport as required by Americans with Disabilities Act (ADA)	Door-to-door service provided to persons who, through some type of mobility disability, are unable to utilize the fixed route system. This service is only available to residents living within 0.75 mile of the fixed route system. Other demand response services include Evening LINK and the Airport Shuttle.

All WTS fixed routes and non-reservation shuttle services are flag-stop routes, meaning passengers may board the bus at any safe and preferred location along the route by making eye contact and flagging down the transit operator. WTS provides bicycle racks on vehicles operating fixed route and non-reservation shuttle services with the exception of the Silo District Trolley. However, because the WTS system operates as a flag-stop system, only some locations have adequate bicycle or pedestrian connections. The most accessible connections between the active transportation network and the transit system occur in the following locations, which are grouped by geographic area.

5.3.1. Downtown Waco Connectivity

Connections may occur between the active transportation and transit networks in numerous locations within Downtown Waco (in the area bordered by Mary Ave and Columbus Ave and 4th St and 8th St). The most accessible locations are along Austin Ave and Franklin Ave and at the Downtown Terminal near Mary Ave and 8th St. The majority of fixed and shuttle routes may be accessed within this area except for Baylor Shuttles and Route 6 – Hwy 6 Loop which serves areas of West Waco west of State Hwy 6.

The Silo District Trolley connects with the S 11th St bike route (future bike lanes) and the N University Park Dr bike route at intersections between Webster Ave and Franklin Ave. It also connects to the S 5th St bike lane at Franklin Ave and at Webster Ave. Most of the streets on which the Downtown Connect operates contain designated bike lanes or bike routes. Connection points are generally accessible.

Connections between the 11th St bike route (future bike lanes) and Route 3 – VA/Colcord (clockwise operation) and Route 4 –Colcord/VA (counterclockwise operation) and Route 8 – Bosque/Sanger may occur at Clay Ave. A connection to Route 1- MCC/Valley Mills (counterclockwise operation) and Route 2 – Valley Mills/MCC (clockwise operation) may be made at Austin Ave.

5.3.2. East Waco Connectivity

East Waco is served primarily by two fixed transit routes, Route 5 – TSTC/Bellmead and Route 7– East Waco. The most accessible connection between Route 5 and bicycle and pedestrian facilities east of the Brazos River is available west of the intersection of E Waco Dr and Dallas St. Accessible connections

between Route 7 and the bicycle and pedestrian facilities are available on Martin Luther King Jr. Blvd at the intersections of Elm Ave (East Trice St) and Taylor Ave west of Martin Luther King Jr. Blvd near the Franklin Ave bridge. Connections are also available near Baylor's McLane Stadium Complex east of IH-35 along M L King Jr. Blvd between Orchard Ln and E 11th St.

5.3.3. North Waco Connectivity

The most accessible connections between bicycle and pedestrian facilities and the fixed route transit system in North Waco occur in two locations along N 19th Street: 1) at Park Lake Dr by Dollar General or the H-E-B Grocery, and 2) N Lake Shore Dr near the Valero Corner Store. These facilities include the Lake Waco Dam Trail and the Park Lake Dr and (future) W Lake Shore Dr bike lanes. Route 2 – Valley Mills Dr/MCC may be accessed at these spots and connects the McLennan Community College campus with two key retail centers near Bosque Blvd. at Wooded Acres Dr, Franklin Ave at 35th Street, and with Downtown Waco. Route 1 – MCC/Valley Mills Dr (counterclockwise operation) may be accessed on North 19th St at Park Lake Dr.

5.3.4. South Waco Connectivity

Cyclists using the 11th Street bike route (future bike lanes) may access Route 9 – South Terrace and the La Salle/Circle Shuttle at the intersection of La Salle Ave and 12th St. However, the intersection is not fully accessible at this time.

5.3.5. West Waco Connectivity

Cyclists and pedestrians from areas of West Waco and Hewitt wishing to access the WTS transit system may connect to Route 6 – Hwy 6 Loop near Midway Middle School and Midway Middle School, and then connect to the rest of the transit system at Richland Mall near State Hwy 6 and West Waco Dr (US 84).

5.3.6. Baylor Campus Connectivity

Fully accessible connections between Baylor Shuttle routes and the S 3rd Street campus bike lane are available at Bagby Ave and S 3rd St near the McLane Student Life Center and Elliston Chapel. Connections between Baylor Shuttle routes and the Brazos Riverwalk shared-use path west of the Brazos River may occur along S University Parks Dr at both Daugherty Ave and La Salle Ave (Business 77) near the Ferrell Center.

5.3.7. Rural Connectivity

WTS provides one weekday commuter fixed-route service between Downtown Waco and rural portions of southeast McLennan County and north Falls County via Route 10 – Waco/Marlin. Commuters from the communities of Riesel, Marlin, Chilton, Golinda, and Robinson can access WTS fixed routes and many shuttle services at the Downtown Waco Transit terminal on weekday mornings and can reverse commute from the downtown terminal to these communities on weekday evenings. Accessible connections to bicycle and pedestrian facilities are available at the Downtown Terminal.

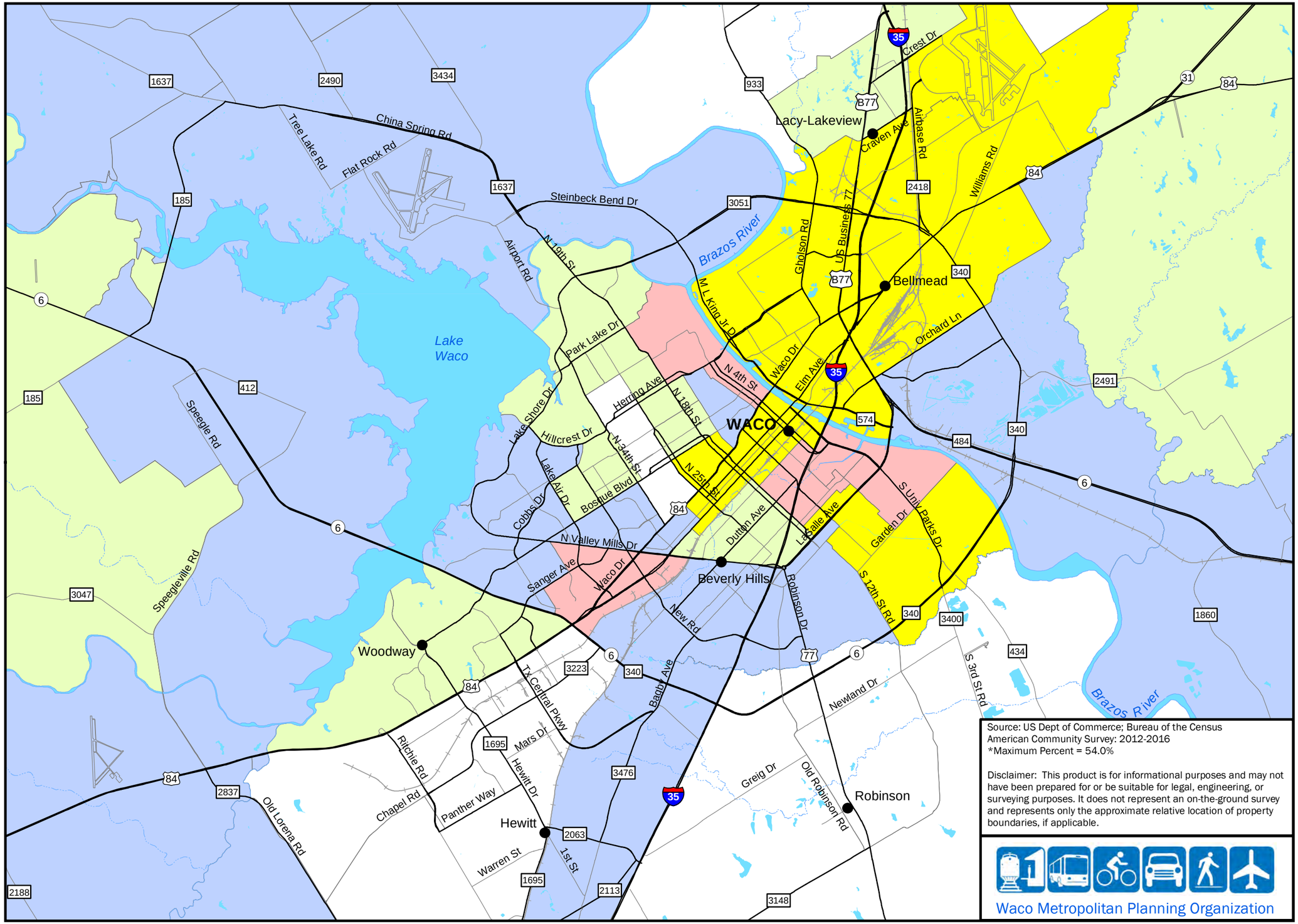
Through an inter-local agreement, WTS and McLennan County Rural Transit District (MCRTD) concurrently provide rural commuter demand response services anywhere within McLennan County. WTS also provides specialized transportation services to seniors and those with ADA-certified disabilities within McLennan County. Although connections between demand response services and bicycle and pedestrian facilities may be made at many locations in the Waco area, the most accessible transfer points are in or near Downtown Waco as specifically described above.

No Walking Commuters
Less than 1.0%
1.0% to 2.0%
2.1% to 5.0%
Greater than 5.0%*

0 0.5 1 2
Miles

March 2019

Map 5.1
Percent of Workers Age 16 or Older Commuting to Work by Walking



Source: US Dept of Commerce; Bureau of the Census
American Community Survey: 2012-2016
*Maximum Percent = 54.0%

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Waco Metropolitan Planning Organization

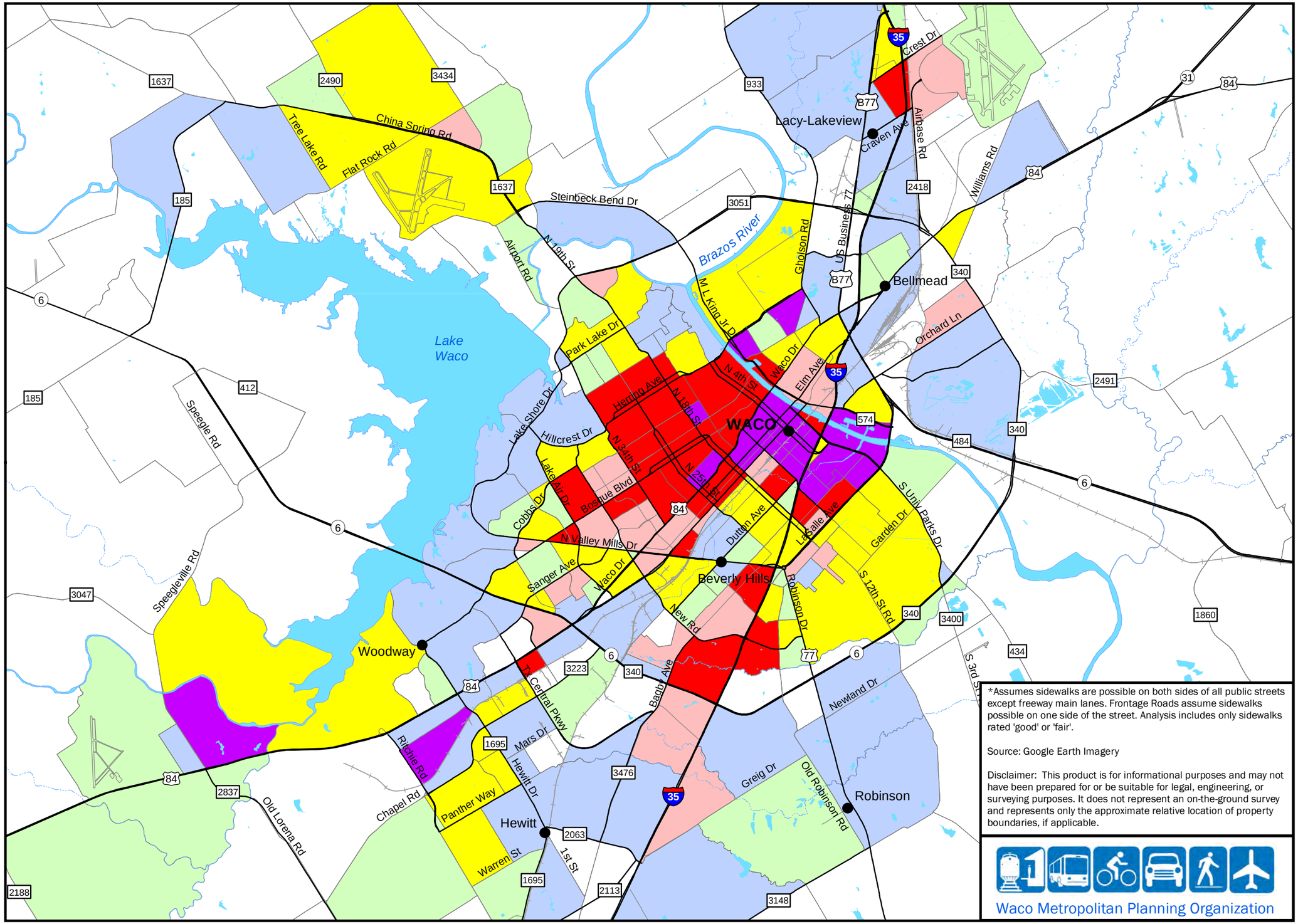
Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.1 walk_percent_commute.mxd

Map 5.2
Percent of Public Roadways with Sidewalks*
by Traffic Analysis Zone
Waco Urbanized Area

- No Sidewalks
- Less than 5.0%
- 5.0% to 10.0%
- 10.1% to 20.0%
- 20.1% to 30.0%
- 30.1% to 50.0%
- Greater than 50.0%

0 0.5 1 2
Miles

March 2019



*Assumes sidewalks are possible on both sides of all public streets except freeway main lanes. Frontage Roads assume sidewalks possible on one side of the street. Analysis includes only sidewalks rated 'good' or 'fair'.

Source: Google Earth Imagery

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Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.2 percent_sidewalk_taz_urban.mxd

Sidewalk Condition

- Good
- Fair
- Poor

0 0.5 1 2

Miles

March 2019

Map 5.3
2017 Sidewalk & Pedestrian Facility Condition
Waco Urbanized Area

Lake Waco

Brazos River

WACO

Lacy-Lakeview

Bellmead

Beverly Hills

Woodway

Hewitt

Robinson

Source: Google Earth Imagery

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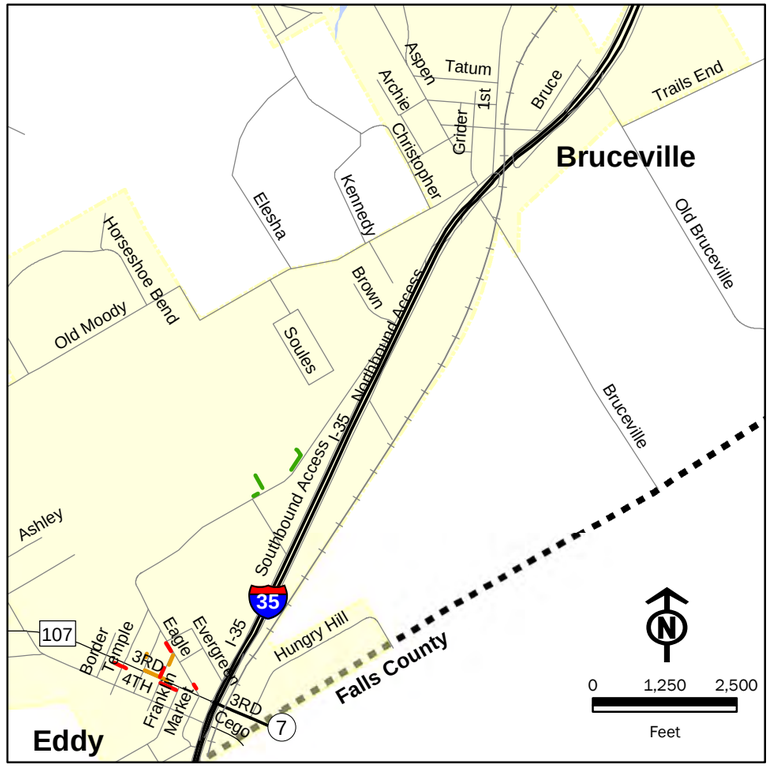
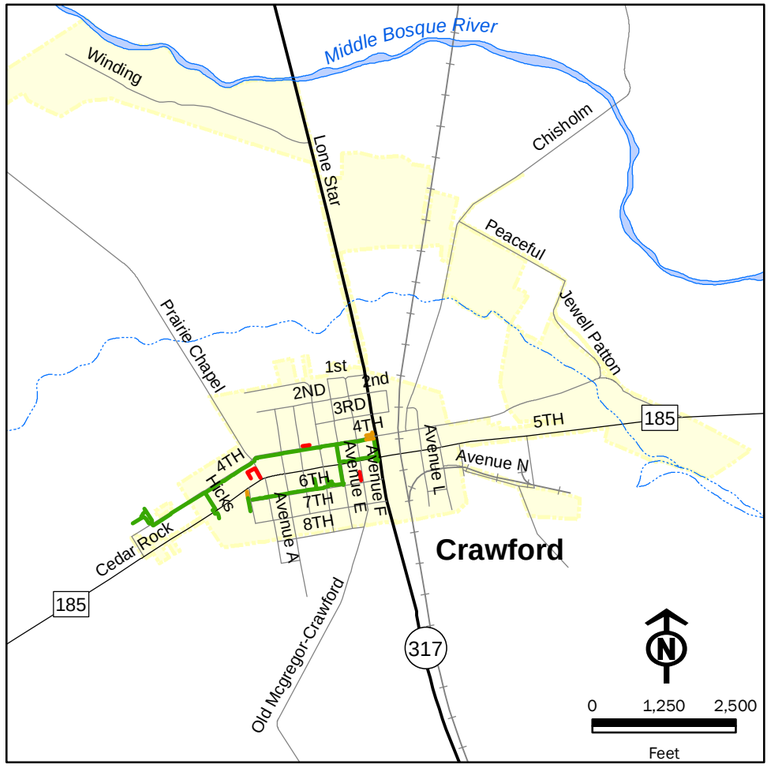
Waco Metropolitan Planning Organization

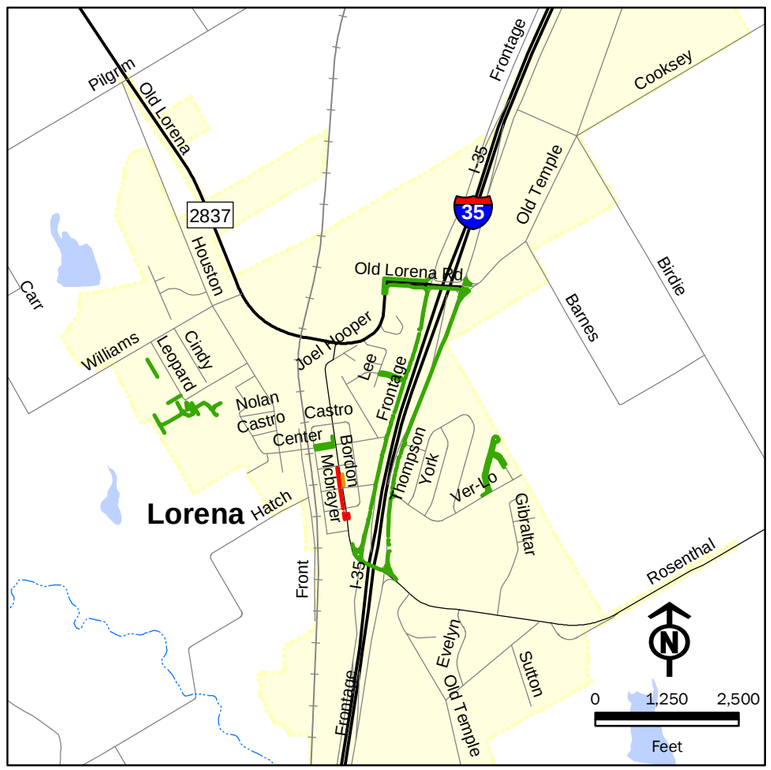
Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.3 sidewalk_condition_urban.mxd

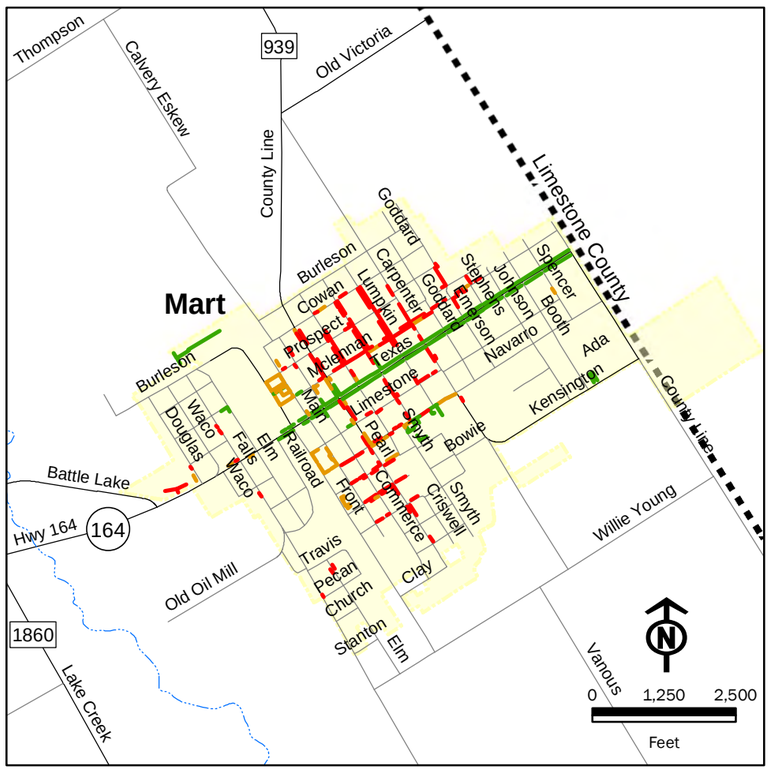
Map 5.4
2017 Sidewalk & Pedestrian Facility Condition
Rural Cities - Bruceville-Eddy, Crawford, Lorena, Mart

Sidewalk Condition
- Good
- Fair
- Poor









March 2019

Source: Google Earth Imagery

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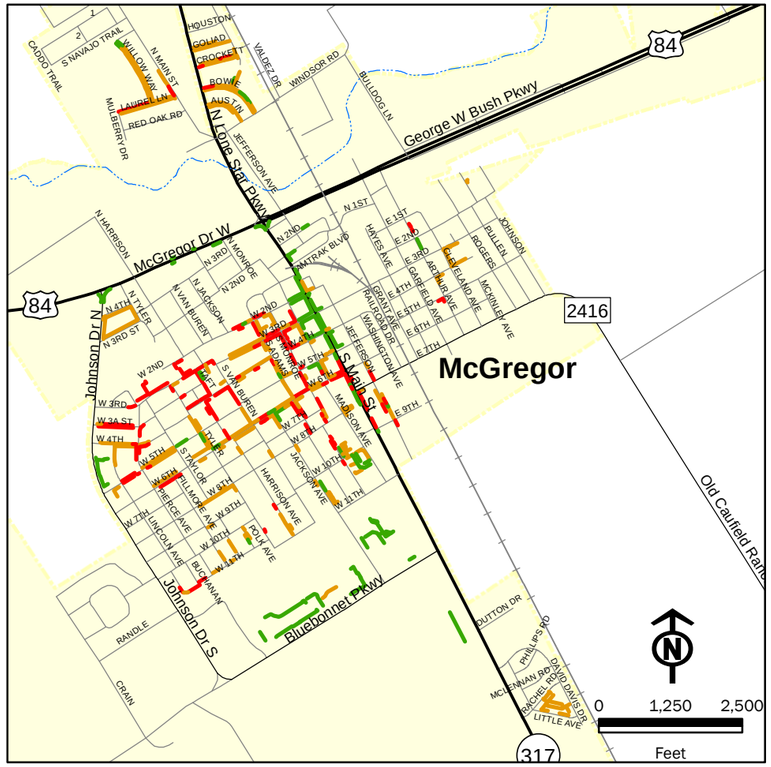
Waco Metropolitan Planning Organization

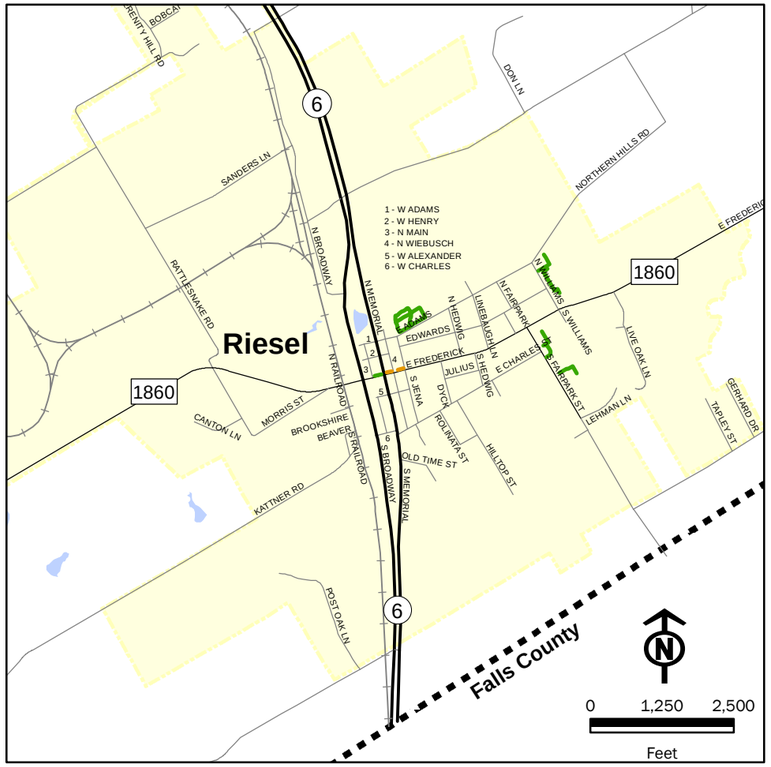
Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.4 sidewalk_condition_rural cities.mxd

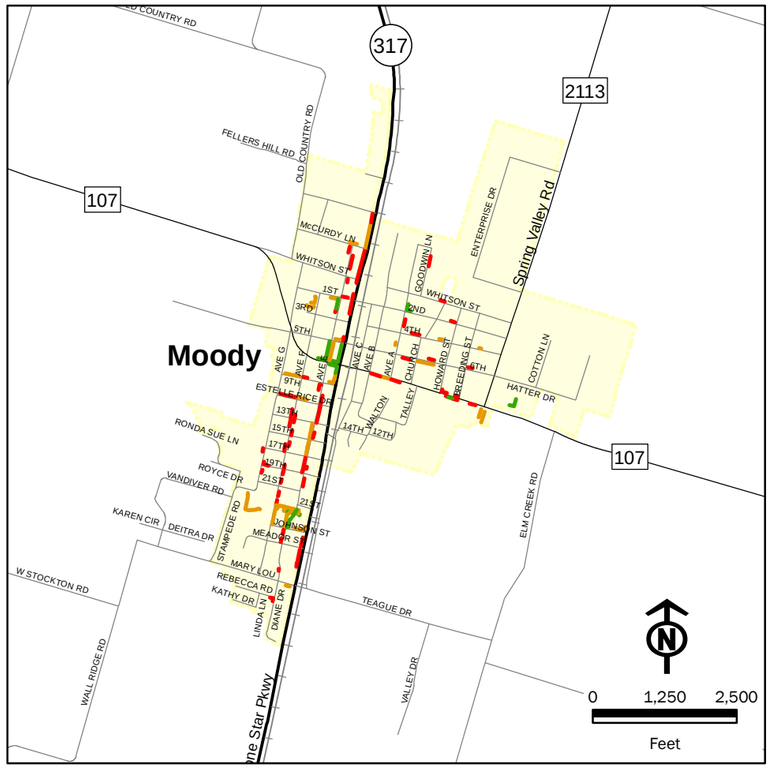
Sidewalk Condition

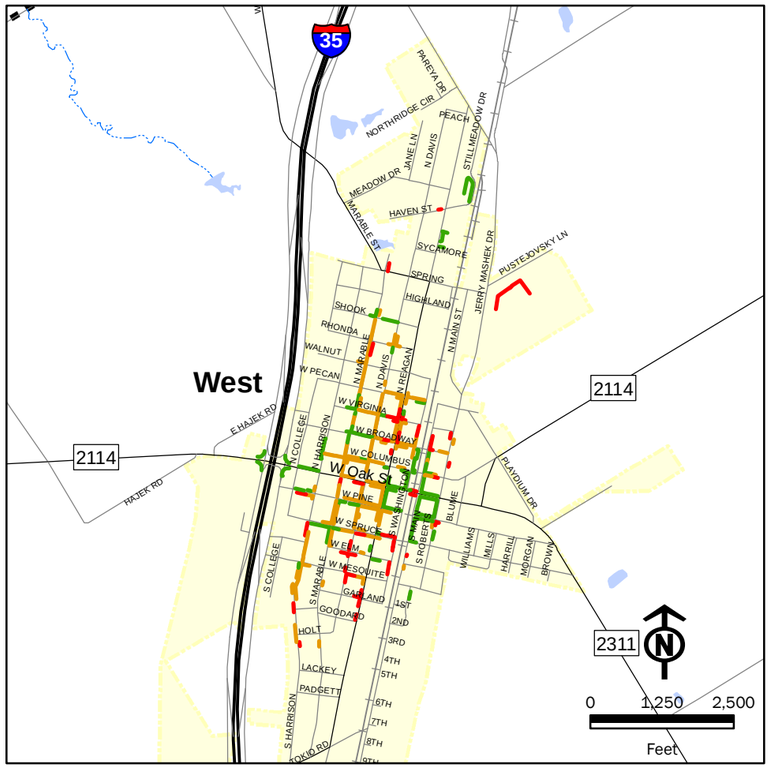
- Good
- Fair
- Poor

Map 5.5
2017 Sidewalk & Pedestrian Facility Condition
Rural Cities - McGregor, Moody, Riesel, and West









March 2019

Source: Google Earth Imagery

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Waco Metropolitan Planning Organization

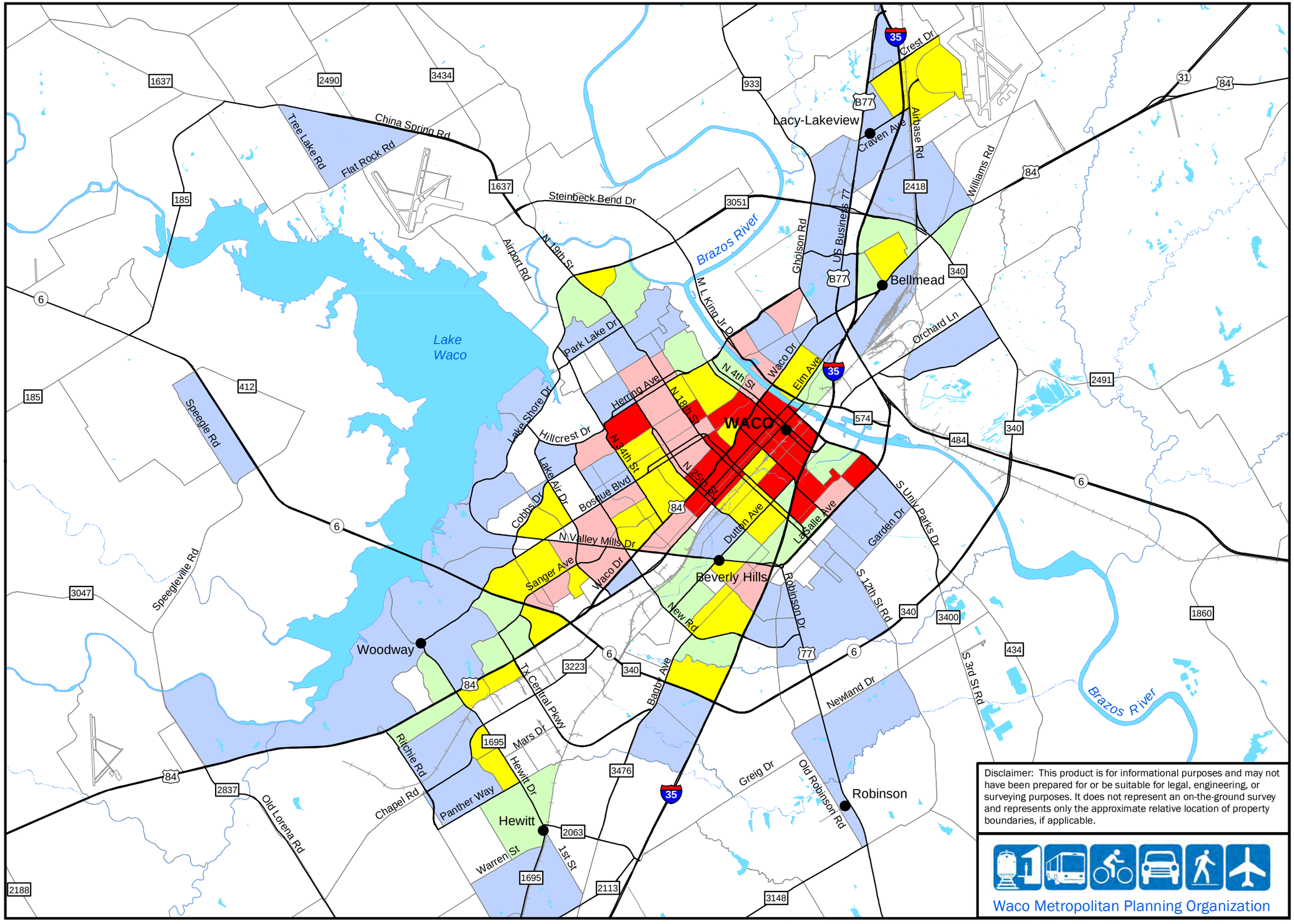
Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.5 sidewalk_condition_rural cities2.mxd

Less than 100
100 to 500
501 to 1000
1001 to 2000
2001 to 5000
Greater than 5000

0 0.5 1 2
Miles

March 2019

Map 5.6
Walking Propensity Index (Existing Conditions)
by Traffic Analysis Zone
Waco Urbanized Area



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Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.6 walking_propensity_index_taz_urban.mxd

Map 5.7
Percent of Workers Age 16 or Older Commuting to Work by Bicycling

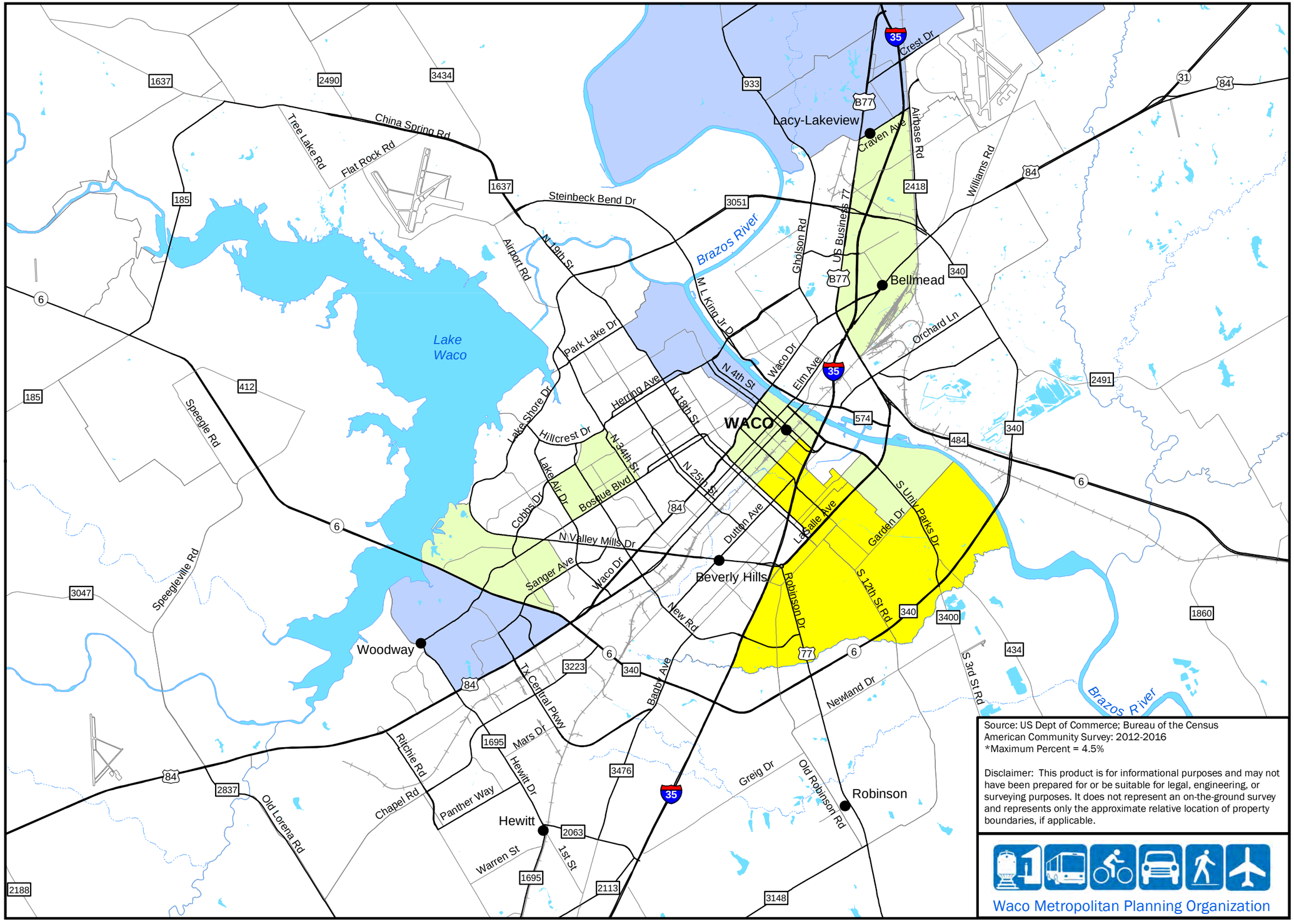
- No Bicycle Commuters
- Less than 1.0%
- 1.0% to 2.0%
- Greater than 2.0%*

N

0 0.5 1 2

Miles

March 2019



Source: US Dept of Commerce; Bureau of the Census
American Community Survey: 2012-2016
*Maximum Percent = 4.5%

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Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.7 bike_percent_commute.mxd

Map 5.8
Existing and Planned Bikeways in Waco Urbanized Area

Bikeways
- Shared Use Path
- Bike Lane
- Bike Ped Lane
- Bike Route
- Future Shared Use Path
- Future Protected Bike Lane
- Future Bike Lane

0 0.5 1 2
Miles

March 2019

Downtown Waco Bikeways

0 1,250 2,500
Feet

WACO
Lacy-Lakeview
Bellmead
Beverly Hills
Woodway
Hewitt
Robinson

Brazos River

Source: City of Waco; Google Earth Imagery

Disclaimer: This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries, if applicable.

Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.8 existing_planned_bikeways.mxd

2017 Bicycle Suitability Rating

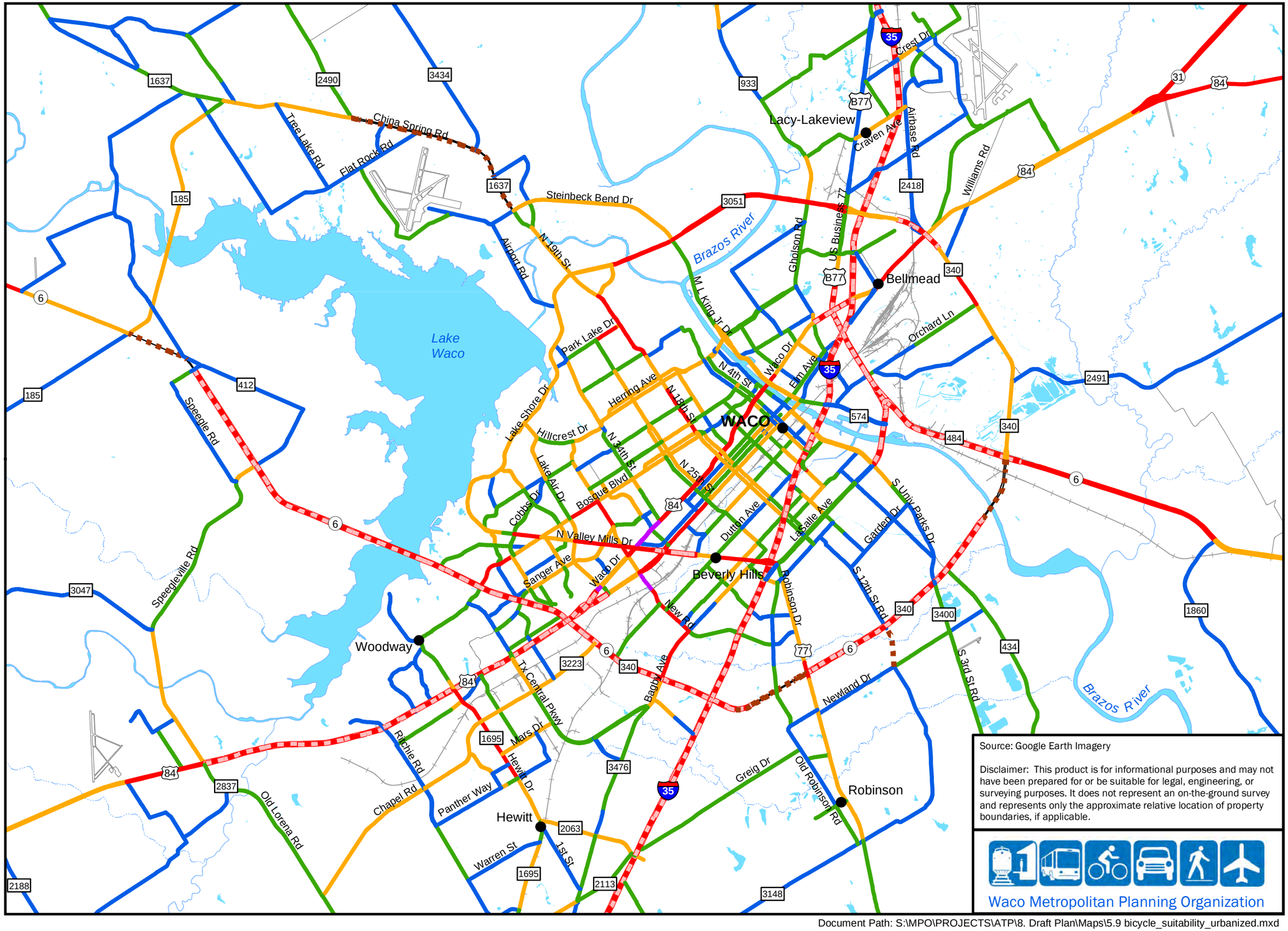
- Easy
- Moderate
- Difficult
- Not Recommended
- Not Recommended (Extremely Challenging)
- Prohibited
- Under Construction

0 0.5 1 2

Miles

March 2019

Map 5.9
2017 Bicycle Suitability Rating
Waco Urbanized Area



Source: Google Earth Imagery

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Waco Metropolitan Planning Organization

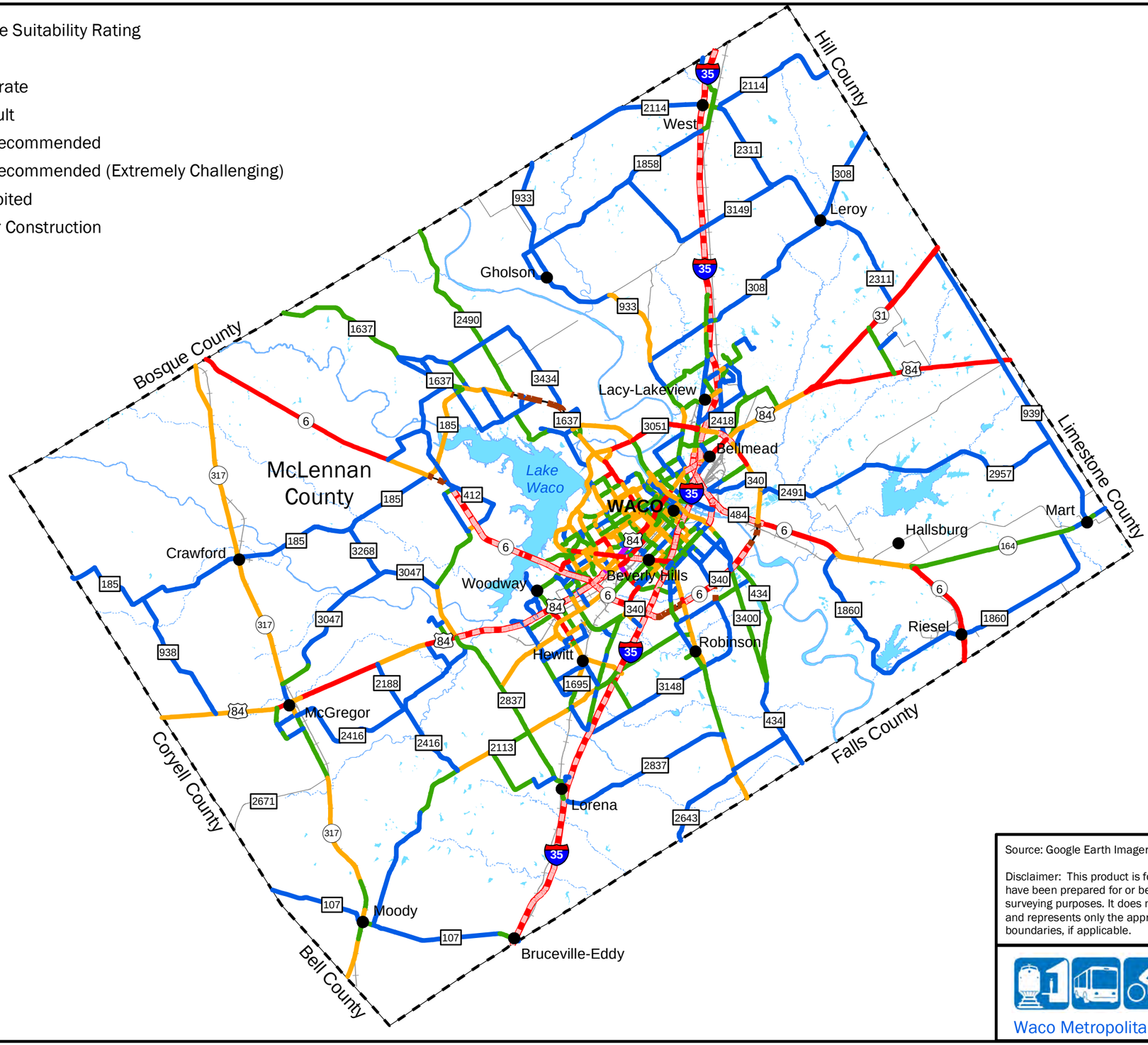
Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.9 bicycle_suitability_urbanized.mxd

Map 5.10
2017 Bicycle Suitability Rating
McLennan County

March 2019

0 1 2 4
Miles

2017 Bicycle Suitability Rating
- Easy
- Moderate
- Difficult
- Not Recommended
- Not Recommended (Extremely Challenging)
- Prohibited
- Under Construction



Source: Google Earth Imagery

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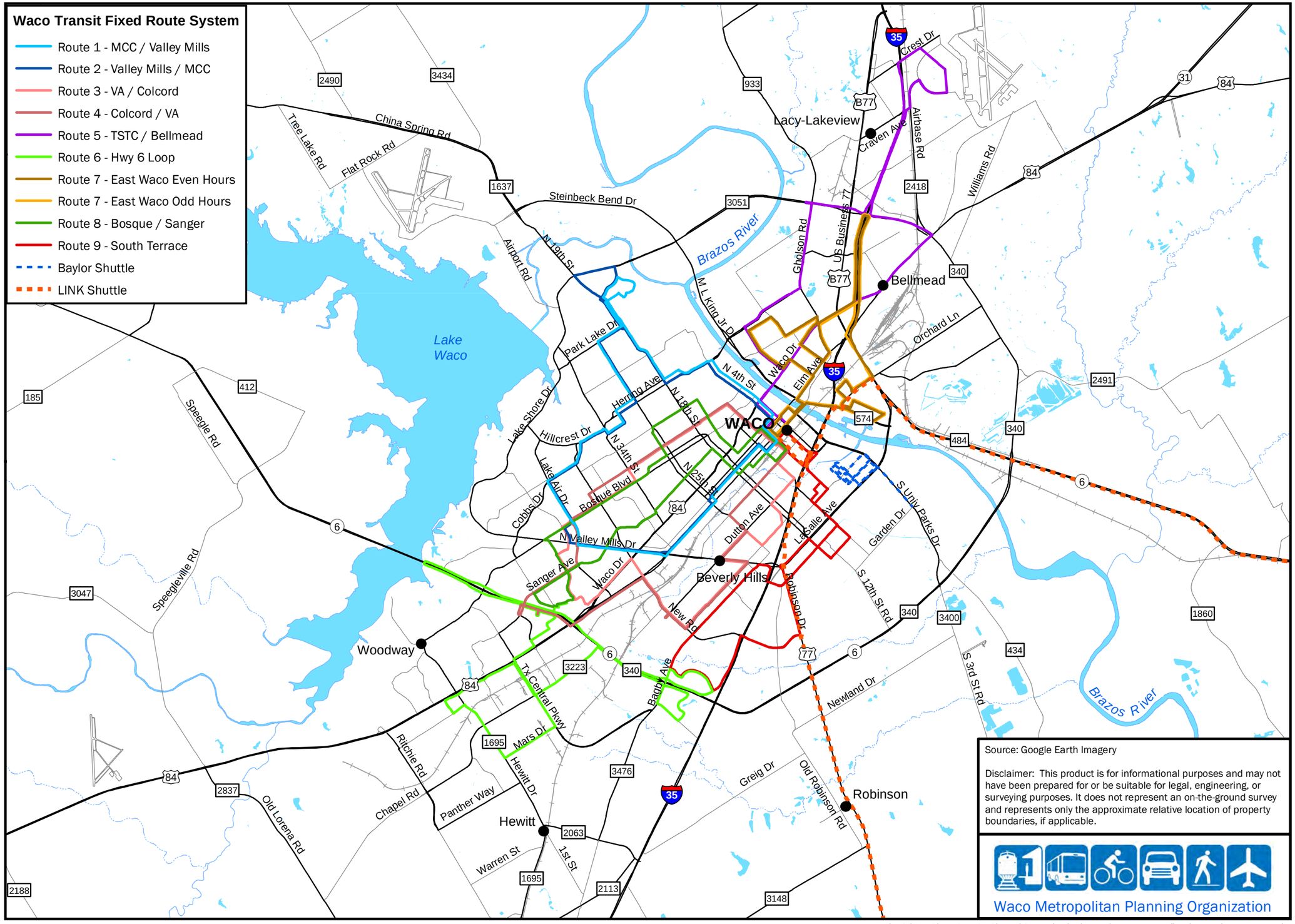
Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.10 bicycle_suitability_county.mxd



0 0.5 1 2

Miles

March 2019

Map 5.11
Waco Transit Fixed Route System

Source: Google Earth Imagery

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Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\8. Draft Plan\Maps\5.11_waco_fixed_transit_routes.mxd

6 BICYCLE AND PEDESTRIAN SAFETY

In general, all destinations within the Waco Metropolitan Area are accessible by automobile and everything from roadways to alleys to parking areas are designed to accommodate automobiles. Similar accommodations for bicyclists and pedestrians, however, have not been a consideration until the past 5 to 10 years. As a result, there are many areas within the region that are difficult to access by biking or walking, and/or are considered too dangerous for these modes. Examples include freeway main lanes (which specifically prohibit bike and pedestrian travel), narrow bridges, and other high-speed arterial roads. Where bicycle and pedestrian access is not specifically prohibited, often times there is inadequate separation between modes.

MPO staff evaluated collision (crash) data from the Texas Department of Transportation (TxDOT) Crash Records Information System (CRIS), to gain an understanding of where frequent collisions between bicyclists or pedestrians and automobiles occur. MPO staff did not include those incidents that occurred on private property as the recommendations of this document only apply to investments on public rights-of-way. A limitation of the CRIS system is that it does not include incidents where no motor vehicles were involved (for example, a crash involving a bicyclist and pedestrian).[45]

This ATP aims to identify the circumstances of those collisions and provide analysis that can be used to inform the development of projects and recommendations. These types of collisions are of particular interest because they are significantly more likely to result in a serious injury[46] or fatality than collisions only involving motor vehicles, and an important component of measuring safety performance as required by the Fixing America's Surface Transportation (FAST) Act[47].

6.1 WACO METROPOLITAN AREA CRASHES: 2010 TO 2017

During the period from January 1, 2010 to December 31, 2017[48], the CRIS system identified 553 crashes within McLennan County that involved bicyclists or pedestrians. Bicyclist-involved crashes were far less frequent with 172 incidents, whereas there were 381 crashes involving pedestrians. On average, one collision involving a bicyclist or pedestrian occurred every 5.3 days during this time period. Of these crashes, 397 (71.7%) resulted in at least one injury with a severity of non-incapacitating or greater and 57 (10.3%) resulted in a fatality.[49]

Compared to all crashes reported during this time period, bicycle- and pedestrian-involved crashes were 4.5 times more likely to result in a non-incapacitating injury or greater, and approximately 1.6 times more likely to result in a fatality (see Table 6.1 and Chart 6.1). A major factor in this difference is that bicyclists and pedestrians have limited protection from the forces involved in a collision with a motor vehicle. Bicyclists can wear a helmet to protect against head injuries, however, helmet usage is not required by Texas Law. Pedestrians, on the other hand, generally have no physical protection.

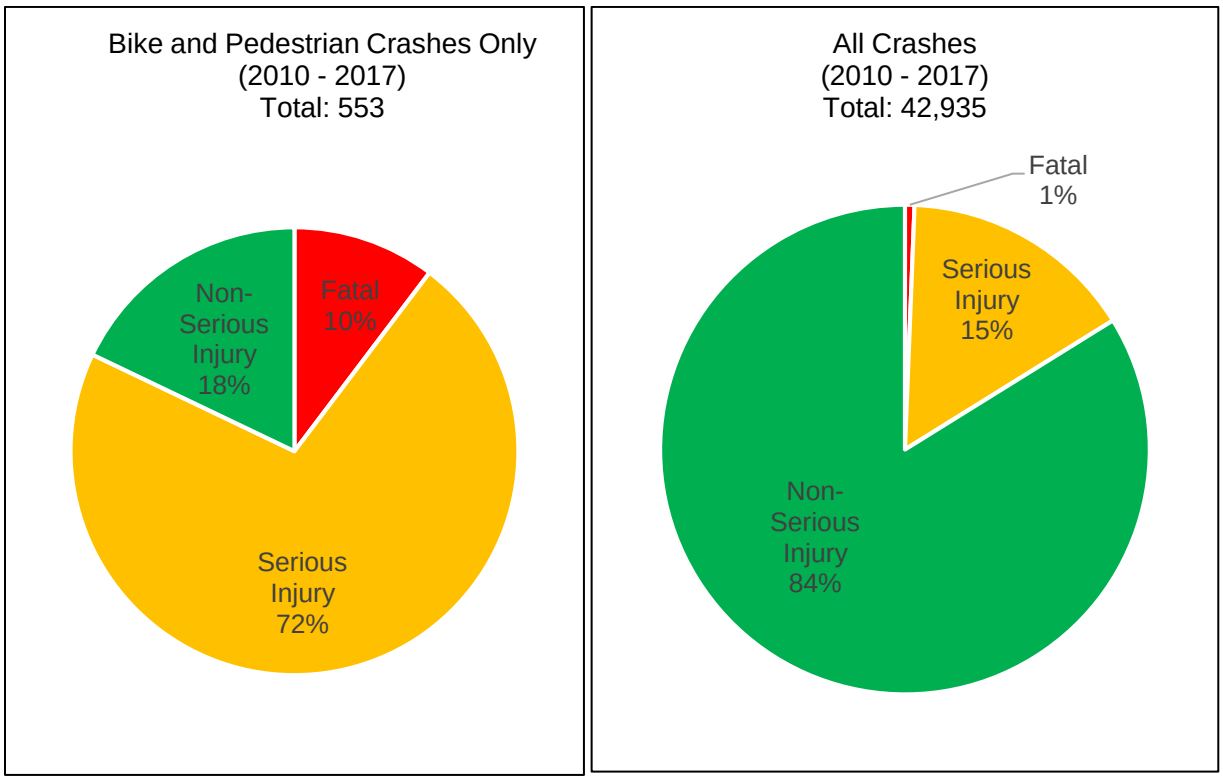
[45] There are no readily available data sources to permit an adequate analysis of crashes that do not involve a motor vehicle.
[46] Within the State of Texas, serious injuries are defined as 'incapacitating injuries' within the TxDOT CRIS.
[47] Under the FAST Act, MPOs are required to set performance targets for five safety performance measures, and demonstrate a performance-based decision process in its Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP) that ties back to regional performance targets. The Safety Performance Rule (PM1) establishes requirements to assess fatalities and serious injuries on all public roads. TxDOT adopted 2019 safety performance targets for Texas in the summer of 2018 (in the middle of the development of this ATP) for five federally required safety performance measures, including non-motorized fatalities and serious injuries. This ATP is consistent with PM1 because it evaluates fatalities and serious injuries for bicycle- and pedestrian-involved crashes and has considered this data in formulating recommended projects. Priority projects identified in this ATP will be considered for inclusion in the MTP based on whether they assist TxDOT in achieving their safety targets
[48] CRIS provides detailed information regarding nearly all motor vehicle crashes reported to public safety officers within the state since 2010. Evaluation of this 7-year time frame maximizes the 'N' number for statistical purposes.

Table 6.1: Crash Severity for Waco Metropolitan Area (2010 to 2017)

Universe	Total Crashes	Fatal Crashes	Percent Fatal	Serious Injury Crashes	Percent Serious Injury
All crashes	42,935	269	6.3%	6,668	15.5%
All Bike/Ped	553	57	10.3%	397	71.7%
Bicycle Only	172	2	1.2%	115	66.9%
Pedestrian Only	381	55	14.4%	227	59.5%

Source: Texas Department of Transportation – Crash Records Information System

Chart 6.1: Crash Severity in Waco Metropolitan Area: 2010 to 2017



Source: Texas Department of Transportation – Crash Records Information System

6.2 CRASH COMPARISION BY SEVERITY

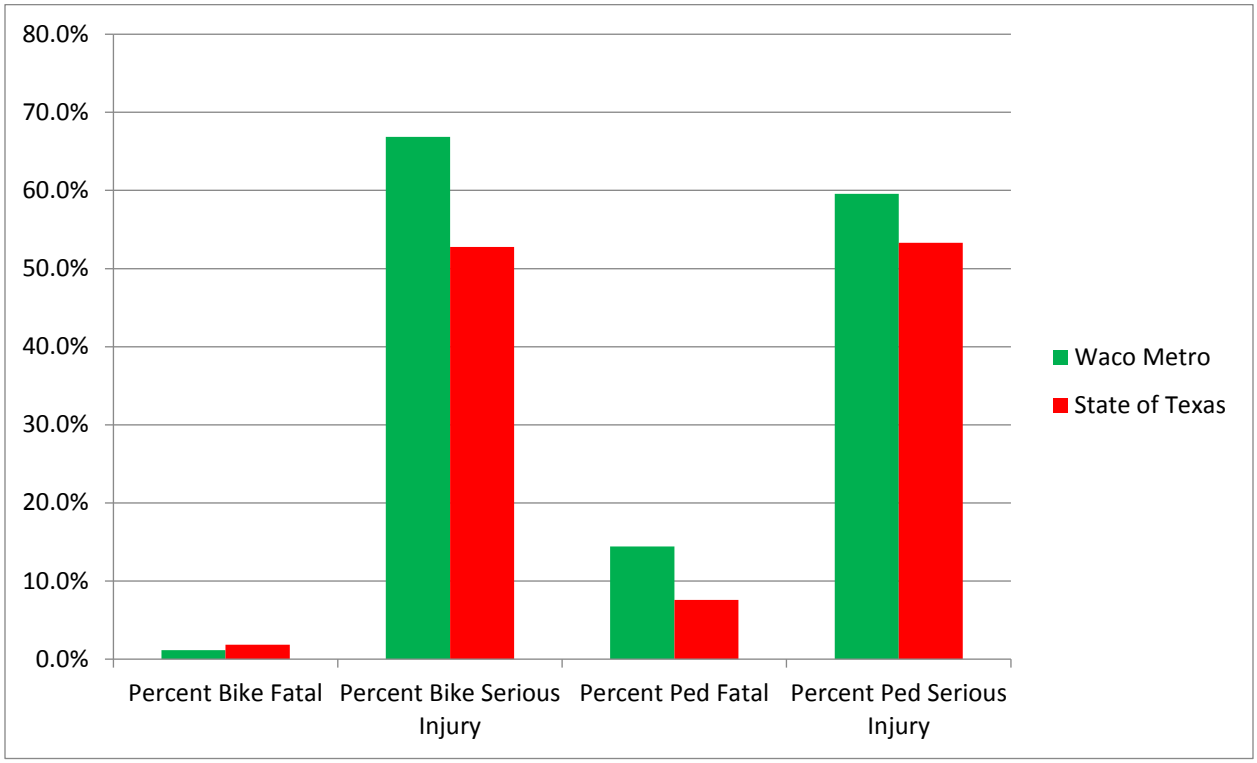
Bicycle- and pedestrian-involved crashes within the Waco Metropolitan Area generally have more severe outcomes than the State of Texas. The difference in severe outcomes can partly be attributed to the lack of traffic congestion experienced in Waco, especially as compared to other regions with greater population. Vehicles tend to move slower in congested traffic conditions and faster in less-congested conditions; it is widely understood that vehicle speed positively correlates with bicycle/pedestrian injury severity (for example, this is why school zones have reduced speed limits). See Table 6.2 and Chart 6.2 for a comparison of crash severity between the Waco Metropolitan Area and the State of Texas.

Table 6.2: Comparison of Crash Severity between State of Texas and Waco Metro (2010 to 2017)

Universe	Total	Fatal Crashes	Percent Fatal	Serious Injury Crashes	Percent Serious Injury
State of Texas					
All Bike / Ped	86,096	5,091	5.9%	45,748	53.1%
Bicycle Only	24,930	463	1.9%	13,152	52.8%
Pedestrian Only	61,166	4,628	7.6%	32,596	53.3%
Waco Metro Area					
All Bike / Ped	553	57	10.3%	397	71.7%
Bicycle Only	172	2	1.2%	115	66.9%
Pedestrian Only	381	55	14.4%	227	59.5%

Source: Texas Department of Transportation – Crash Records Information System

Chart 6.2: Comparison of Crash Severity between State of Texas and Waco Metro (2010 to 2017)

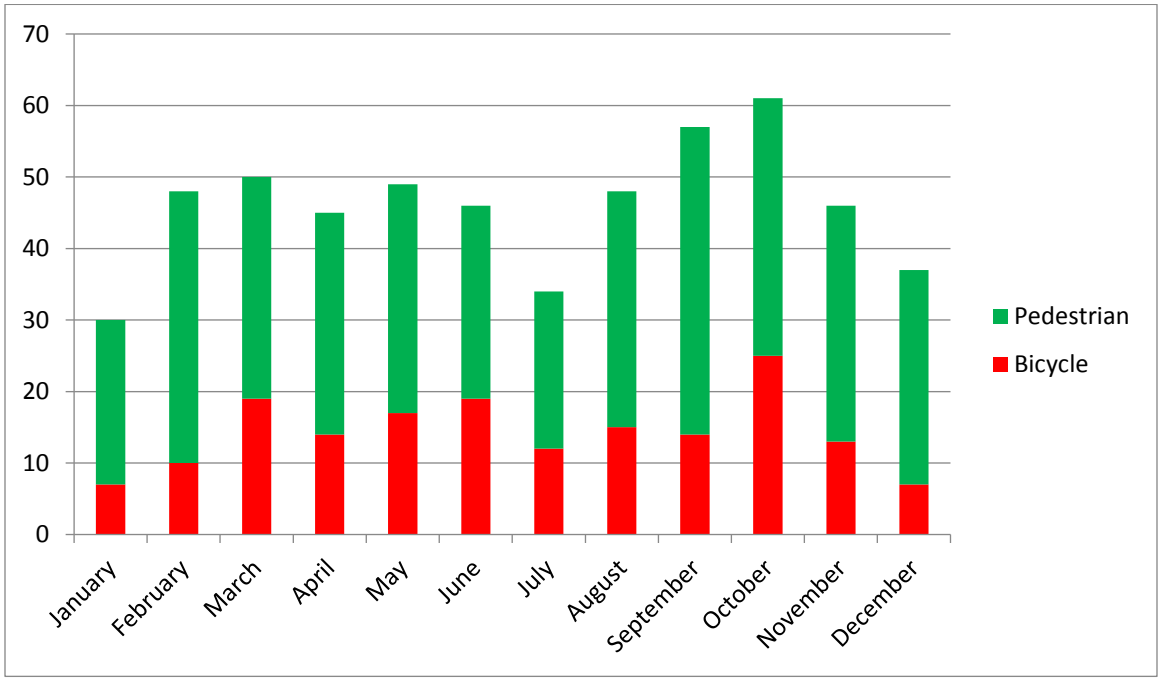


6.3 CRASH COMPARISION BY MONTH/SEASONALITY

Active transportation modes are more sensitive to environmental conditions (such as weather and temperature) than other transportation modes. The Waco region is also home to 3 institutions of higher

education and there is a significant decrease in activity across all transportation modes when classes are not in session. Crash rates increase when there are more people on the road and decrease when activity declines. In Waco, this means that crashes peak during autumn and spring when school activity is greatest and temperatures are moderate (see Chart 6.3). Crash observations are the lowest during the winter and summer months when classes are not is session and temperatures are less temperate, with frequent days of heavy precipitation. Summer months can have high daytime temperatures and indices which significantly reduce overall bicycle and pedestrian activity.

Chart 6.3: Total Bicycle- and Pedestrian-Involved Crashes by Month (2010 to 2017)



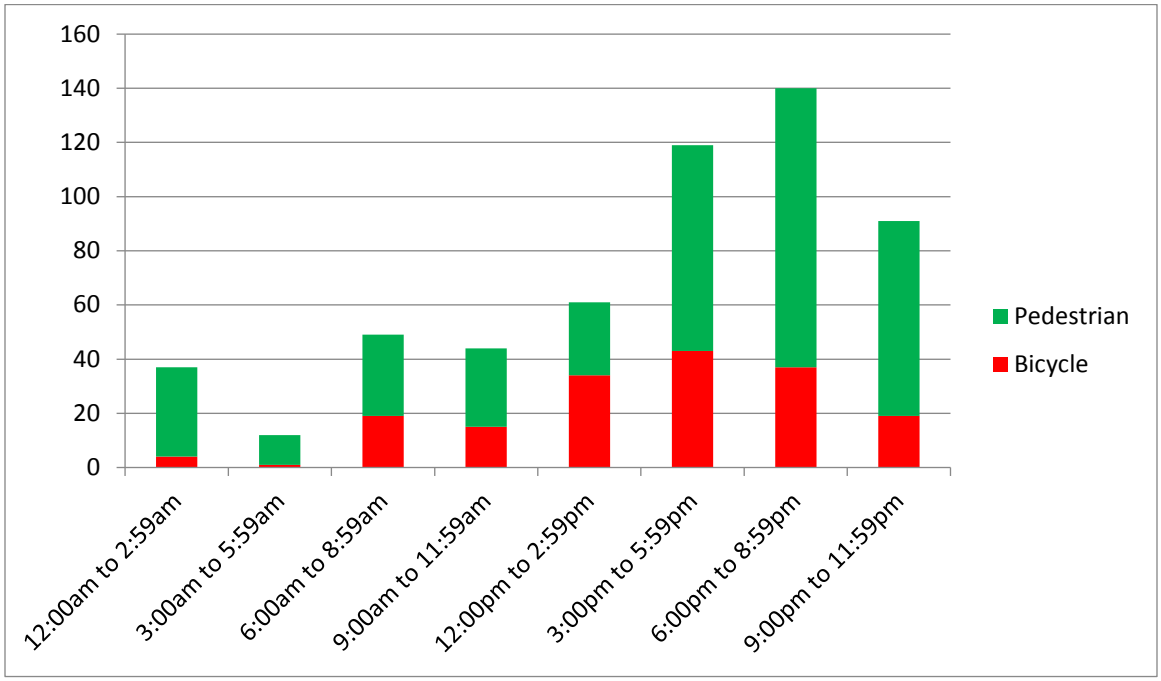
Source: Texas Department of Transportation – Crash Records Information System

6.4 CRASH COMPARISION BY TIME OF DAY

Similar to other transportation modes, bicycle and pedestrian activity is predominantly a daytime activity with a peak during the afternoon to early evening hours. While a secondary morning peak is also observable, it is generally significantly smaller for bicycles and pedestrians than for other modes. As crashes closely correlate positively to activity levels, total crashes for bicycles and pedestrians have a significant peak between 3:00pm and 9:00pm representing nearly half of all crashes (see Chart 6.4).

There is a slight, but significant, time-of-day difference between bicycle and pedestrian crashes. Bicycle crashes begin their peak after 12:00pm (noon) and significantly decrease after 9:00pm. In addition, there are very few crashes in the overnight hours between 12:00am (midnight) and 6:00am. Pedestrian crashes, however, were observed with some frequency at all hours of the day. The peak for pedestrian crashes began somewhat later than bicycles at 3:00pm but continued well after dark to 12:00am (midnight). It's possible that more people are willing to walk than bike to nearby destinations in the late evening/early morning hours; however, there are likely several factors that contribute to this difference in crash patterns.

Chart 6.4: Total Bicycle- and Pedestrian-Involved Crashes by Time of Day (2010 to 2017)

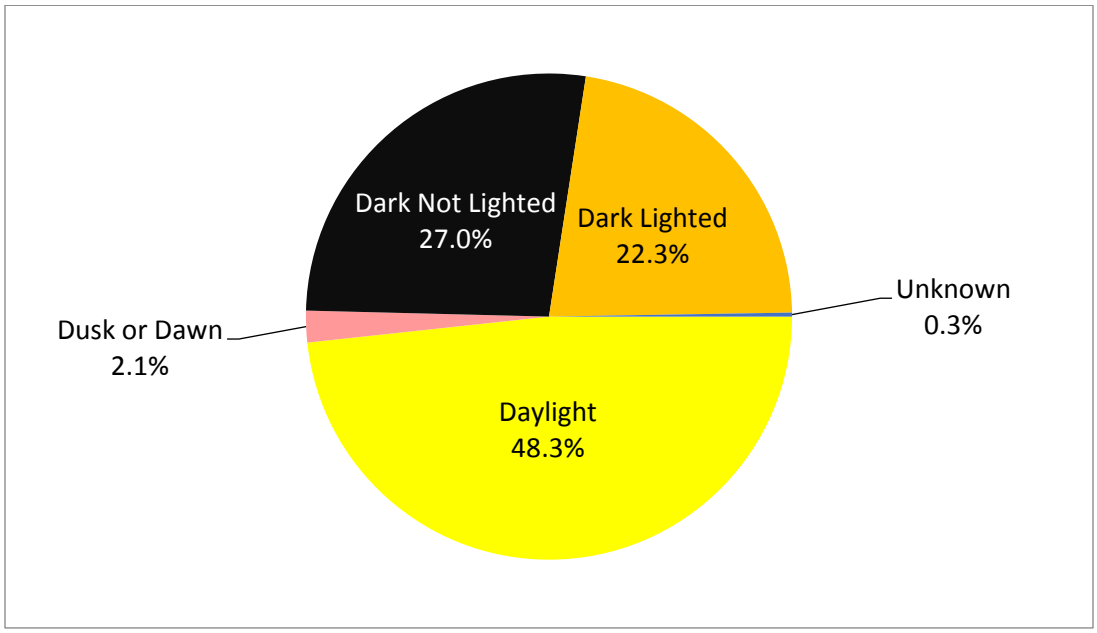


Source: Texas Department of Transportation – Crash Records Information System

The amount of daylight and/or street lighting also appears to be a contributing factor in bicycle- and pedestrian-involved crashes. More than 70% of bicycle-involved crashes occurred during daylight conditions, with the remaining 30% evenly split between locations where street lights were present (turned on and operating) and not present (no street lights, or street lights not operating). However for pedestrian crashes, almost 50% occurred during “dark” conditions (nighttime) and of these nighttime crashes, slightly more than half occurred in areas where no street lights were present (see Chart 6.5).

Research from other regions has shown that visibility of pedestrians, or lack thereof, is a significant factor in ”dark” condition crashes, with clothing color worn by the pedestrian being a primary factor. Unfortunately, the CRIS system does not record clothing color in its crash reports; therefore, it’s not possible to analyze crash data based on this factor.

Chart 6.5: Pedestrian-Involved Crashes by Light Conditions (2010 to 2017)



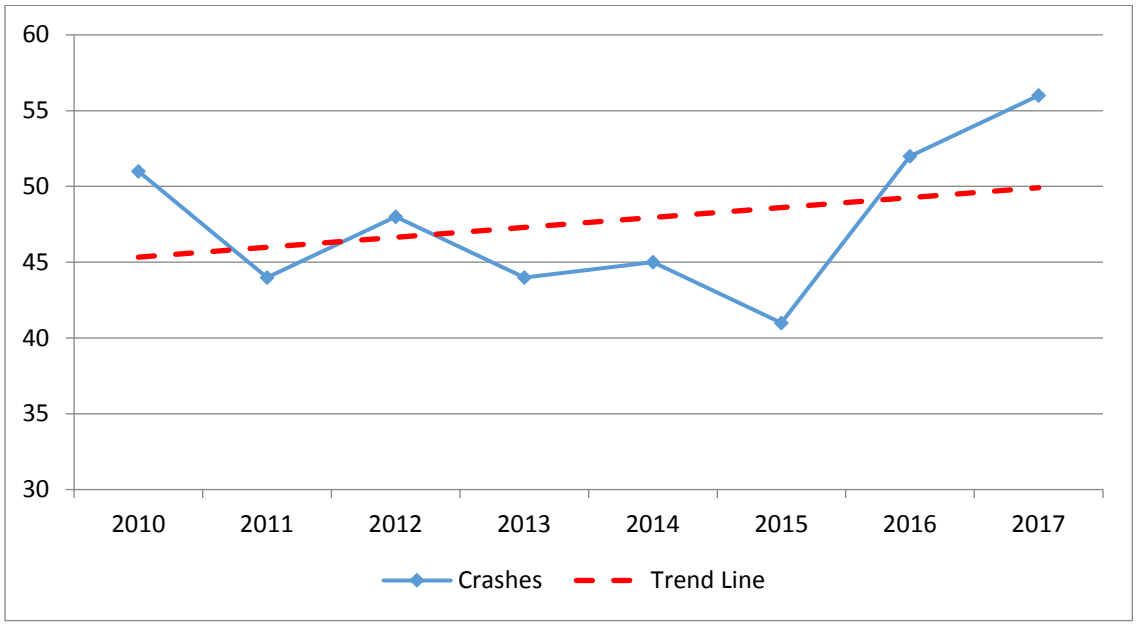
Source: Texas Department of Transportation – Crash Records Information System

6.5 CRASH TRENDS: 2010 TO 2017

This ATP analyzed crash data for bicycle- and pedestrian-involved crashes that occurred between 2010 and 2017. Because the number of crashes can change significantly year-to-year, and can be influenced by temporary situations such as construction projects, it's helpful to evaluate several years' worth of data to understand larger trends.

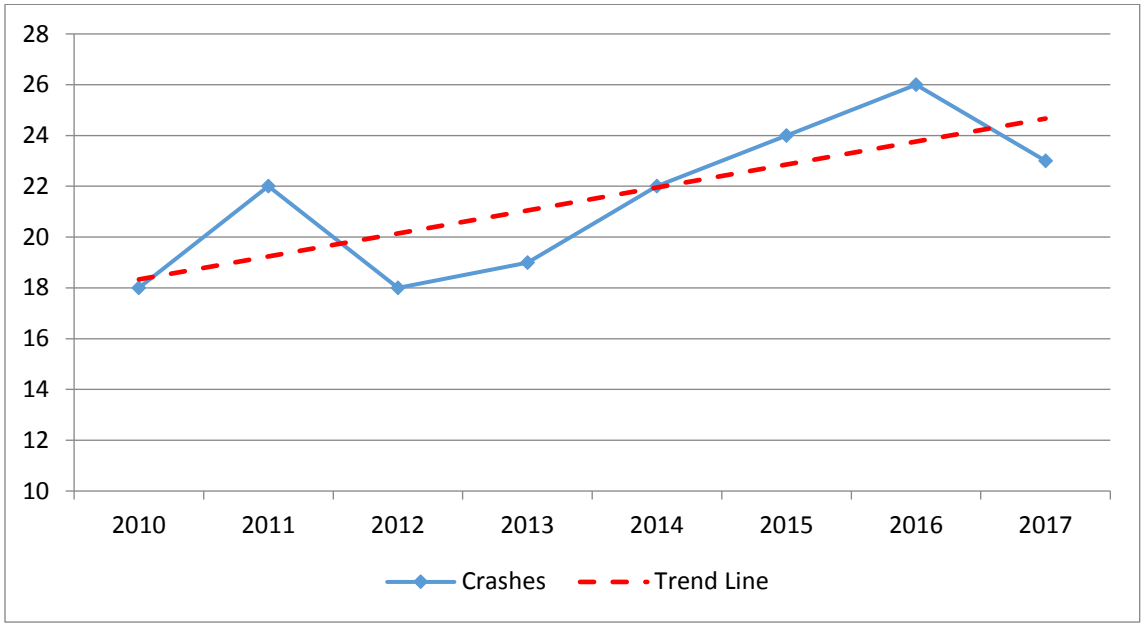
Overall, crashes involving bicycles and pedestrians have trended upwards for the period of 2010 to 2017, mirroring both national and statewide trends. Looking closer at the data, prior to 2015, pedestrian crashes were trending slightly downward. However, from 2015 onward, pedestrian crashes increased very significantly and continued the trend into 2017 (see Chart 6.6). Bicycle crashes, on the other hand, significantly increased between 2012 and 2016 but decreased slightly in 2017 (see Chart 6.7). Empirical research regarding these trends is unfortunately limited. The prevailing theory hypothesizes that bicycle and pedestrian activity has been increasing, but this is frequently occurring in areas with limited pedestrian and bicycle infrastructure (such as sidewalks and bike lanes).

Chart 6.6: Pedestrian-Involved Crash Trend (2010 to 2017)



Source: Texas Department of Transportation – Crash Records Information System

Chart 6.7: Bicycle-Involved Crash Trend (2010 to 2017)



Source: Texas Department of Transportation – Crash Records Information System

6.6 CRASH HOT SPOT ANALYSIS

MPO staff conducted a hot spot analysis to better understand where bicycle- and pedestrian-involved crashes are occurring and identify observable deficiencies in bicycle and pedestrian infrastructure at these locations. The intent is to utilize the information gleaned from the hot spot analysis to help prioritize

safety improvements within the recommendation section of this ATP, as well as the upcoming 2045 update of the MTP. Maps 6.1 and 6.2 show the locations of bicycle- and pedestrian-involved crashes that occurred between 2010 and 2017.

To identify bicycle-involved crash hotspots, MPO staff reviewed the 8-year data set for notable patterns and concentrations (see Table 6.3). Downtown Waco and Baylor University were identified as sub-areas with a noticeable concentration of bicycle-involved crashes; this is also where a large percentage of bicycle travel occurs. MPO staff also compared the number of bicycle-involved crashes in the Downtown Waco and Baylor University sub-areas to the total number of bicycle-involved crashes that occurred within the Waco Metropolitan Area. Together, these two sub-areas represent about 17% of all bicycle-involved crashes that occurred in the Waco Metropolitan Area.

MPO staff also took a broader look at how crashes compared between different context zones (Urban Core, Suburban, and Rural). As shown in Table 6.3, the majority of bicycle-involved crashes (80.8%) occurred within the Urban Core. Within the Urban Core, over two-thirds (67.6%) of crashes resulted in a serious injury or fatality. As the land use context becomes less urban and more rural, the number of bicycle-involved crashes decreased substantially, and the crash severity increased slightly from 67.6% to 72.7%. It's notable that no matter the land use context, at least two-thirds of all bicycle-involved crashes resulted in a serious injury or fatality. Of the 117 bicycle-involved crashes that resulted in a serious injury or fatality, 80.3% occurred within the Urban Core, and 6.8% occurred within the rural context. Results of the bicycle-involved crash analysis show a prioritized need for additional bicycle accommodation and safety improvements within the Urban Core, as this is where the highest number and most severe bicycle-involved crashes were observed.

Table 6.3: Bicycle-Involved Crashes by Sub-Area (2010 to 2017)

Sub-Area	Bike Crashes in Specific Area	Percent of All Bike Crashes in Waco Metro Area	Fatal/ Serious Injury Bike Crashes	Percent of Bike Crashes in Sub-Area	Percent of All Fatal & Serious Injury Bike Crashes in Waco Metro Area
Downtown Waco	16	9.3%	12	75.0%	10.2%
Baylor University	13	7.6%	9	69.3%	7.7%
Urban Core	139	80.8%	94	67.6%	80.3%
Suburban	22	12.8%	15	68.2%	12.8%
Rural	11	6.4%	8	72.7%	6.8%
Waco Metro Area	172	100.0%	117	68.0%	100.0%

Source: Texas Department of Transportation – Crash Records Information System

Similar to the analysis of bicycle-involved crashes, MPO staff reviewed the universe of pedestrian crashes to identify any notable trends (see Table 6.4). Since more pedestrian crashes occurred overall (as compared to bicycle-involved crashes) there are additional sub-areas of concentration, including Bellmead and East Waco. Similar to bicycle travel behavior, the majority of pedestrian travel occurs within the Urban Core, and pedestrian activity generally decreases as the land use context and roadway

network becomes more rural. The crash concentration patterns mirror this travel behavior, with most pedestrian-involved crashes occurring within the Urban Core (76.9%). Pedestrian-involved crashes have a very high rate of serious injuries and fatalities, higher than even the bicycle-involved crashes. Part of this difference can be attributed to the fact that unlike bicyclists, nearly all pedestrians do not wear safety equipment, such as helmets. When comparing context zones, within the Urban Core, the rate of serious injury or fatality was considerably less than the suburban areas; 71.7% versus 90.7%. An important distinction here is that vehicular speed, as well as posted speed limits, are generally much higher in Suburban areas that the Urban Core. As a result, the likelihood of a more serious injury or fatality increase significantly with the speed of the motor vehicle.

In terms of sub-areas, Bellmead was singled out as having an extreme rate of serious injury or fatality: 85.7% of all bicycle & pedestrian crashes as compared to a regional average of 74.0%. When reviewing crash circumstances in more detail, the following factors appear to be an issue within the Bellmead area.

- A relatively high demand for pedestrian mobility exists within Bellmead when factoring in income, land-use activity, and trip attraction (several large public schools and large retail centers).
- Existing pedestrian infrastructure is sparse and much of what exists is in poor condition.
- Most of the significant trip attractors are physically separated from residential areas by roadways that create a barrier to pedestrians. Two such situations are IH-35 for Wal-Mart or Loop 340 for LaVega High School.
- Nearly all arterial roadways in Bellmead have posted speed limits in excess of 45 miles per hour.

Table 6.4: Pedestrian-Involved Crashes by Sub-Area (2010 to 2017)

Sub-Area	Ped Crashes in Specific Area	Percent of All Ped Crashes in Waco Metro Area	Fatal/ Serious Injury Ped Crashes	Percent of Ped Crashes in Sub-Area	Percent of All Fatal & Serious Injury Ped Crashes in Waco Metro Area
Downtown Waco	27	7.1%	16	59.3%	5.7%
Baylor University	19	5.0%	14	73.7%	5.0%
Bellmead Core	28	7.3%	24	85.7%	8.5%
East Waco Estella Maxey	16	4.2%	11	68.8%	3.9%
Urban Core	293	76.9%	210	71.7%	74.5%
Suburban	43	11.3%	39	90.7%	13.8%
Rural	36	9.4%	27	75.0%	9.6%
Private Property	9	2.4%	6	66.7%	2.1%
Waco Metro Area	381	100.0%	282	74.0%	100.0%

Source: Texas Department of Transportation – Crash Records Information System

Map 6.1
Bicyclist Involved Crashes by Severity
2010 to 2017

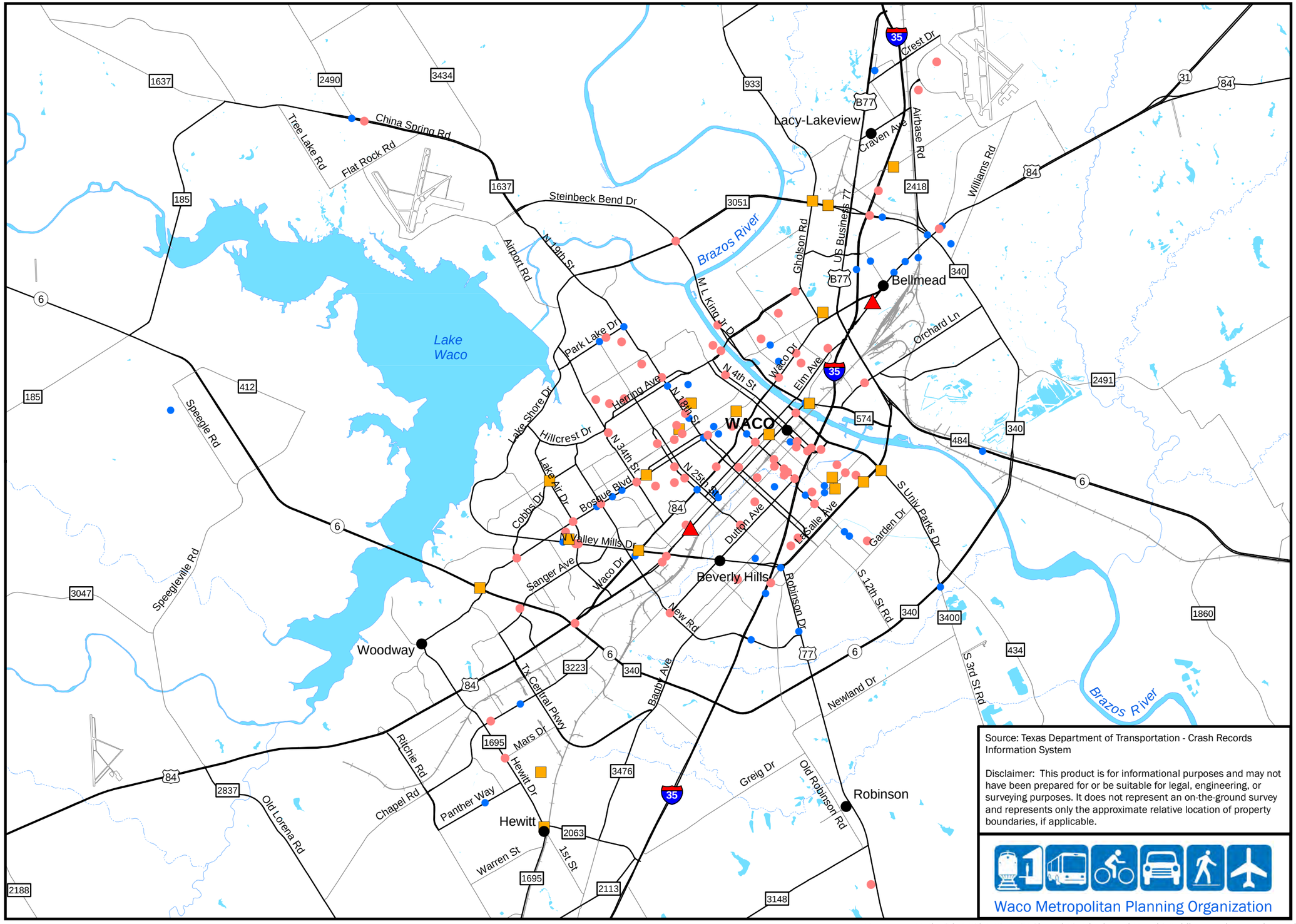
Injury Severity

- Fatal
- Incapacitating Injury
- Non-Incapacitating
- Minor or Non Injury

0 0.5 1 2

Miles

March 2019



Source: Texas Department of Transportation - Crash Records Information System

Disclaimer: This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries, if applicable.

Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\10. Final ATP\Maps\6.1_bike_crash_severity.mxd

Map 6.2
Pedestrian Involved Crashes by Severity
2010 to 2017

Injury Severity

- Fatal
- Incapacitating Injury
- Non-Incapacitating
- Minor or Non Injury

0 0.5 1 2

Miles

March 2019

Source: Texas Department of Transportation - Crash Records Information System

Disclaimer: This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries, if applicable.

Waco Metropolitan Planning Organization

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7 RECOMMENDATIONS

This section of the ATP provides recommendations for expanding and improving the active transportation network in McLennan County. This includes recommended projects, policies and best management practices (BMPs), outreach and education programs, and recommendations for future studies. The final list of recommendations are based on: 1) an evaluation of the existing bicycle and pedestrian network, crash data analysis, and local priorities described in other long-range plans; 2) public comment and feedback, including the ATP survey, online GIS mapping exercise, stakeholder interviews, and work sessions with the MPO's ad-hoc bicycle and pedestrian committee; and 3) research on best practices (from transportation, recreation, and public health fields), and other adopted active transportation plans.

The ATP recommendations are framed in the context of the Six E's. The League of American Bicyclists has identified the essential elements of a bicycle friendly community as the "five E's"– Engineering, Education, Encouragement, Enforcement, and Evaluation and Planning[50]. The Safe Routes to School National Partnership takes this framework a step further and adds a sixth E for Equity[51]. According to the Partnership, "each E needs to include equity in its analysis and action items. But equity also needs to be considered separately to ensure that the overall effects of individual considerations are adding up to a meaningful and sufficient investment in the safety and health of low-income students, students of color, and others."[52]

For the purpose of this Active Transportation Plan the six E's are defined as follows[53]:

Engineering includes constructing and maintaining safe and convenient bicycle and pedestrian infrastructure that makes walking, rolling, and bicycling safer, more comfortable, and more convenient for people of all ages and abilities. This can include a diverse, connected network of bikeways; a connected network of ADA-compliant sidewalks; bike/e-scooter parking; enhanced crosswalks or overcrossings; wayfinding signage; convenient public transit connections; and also road diets and other physical alterations to existing roadways.

Education includes providing people of all ages and abilities with the knowledge, skills, and confidence to walk, roll, and bike safely to-and-from their desired destinations; educating them about the benefits of walking, rolling, and biking; and teaching them about the broad range of transportation choices. Education also includes bicycle- and pedestrian-safety trainings and workshops, and Share the Road campaigns that help remind motorists and bicyclists of their rights and responsibilities on the road.

Encouragement includes creating a strong active transportation culture that welcomes and celebrates walking, rolling, and biking. This includes generating enthusiasm and support for active transportation through events, activities, programs, and partnerships with businesses, universities, and advocacy groups. Examples include National Bike Month, Bike to Work Day, National Walk to Work Day, commuter challenges, and community walks and bike rides. Public shared mobility/micro-mobility programs also encourage active transportation culture by providing easy ways to make short trips via active transportation modes.

Enforcement includes ensuring safe roads for all users by deterring unsafe traffic behaviors and encouraging safe habits. This can be accomplished through regulations, laws, and traffic

[50] League of American Bicyclists. The Essential Elements of a Bicycle Friendly America. https://www.bikeleague.org/content/5-es
[51] Safe Routes to School National Partnership. The 6 E's of Safe Routes to School. https://www.saferoutespartnership.org/safe-routes-school/101/6-Es
[52] Safe Routes to School National Partnership. The 6 E's of Safe Routes to Schools: Embracing Equity. https://www.saferoutespartnership.org/blog/6-es-safe-routes-school-embracing-equity
[53] Modified from the Safe Routes to School National Partnership and League of American Bicyclists.

enforcement. Enforcement goes hand-in-hand with education, to make sure that motorists, pedestrians, bicyclists, and law enforcement officers are familiar with the rules of the road and how they're enforced.

Evaluation and Planning includes planning for walking, rolling, and bicycling as safe and viable transportation options. It includes establishing community goals and objectives, assessing effectiveness of projects and initiatives, measuring outcomes, and adapting as necessary. This can take the form of a formally adopted plan (such as this Active Transportation Plan), ongoing work group planning meetings, and dedicated staff time to planning and implementing active transportation priorities.

Equity includes ensuring active transportation projects and initiatives benefit all demographic groups, with particular attention to ensuring safe, healthy, and fair outcomes for low-income and minority populations, and elderly and disabled populations. Equity addresses the power imbalances and the lived differences that all too often generate disparate health, educational, and career outcomes for different people – effects that often emerge along lines of race, ethnicity, class, gender, sexual orientation, and disability. For this ATP, equity is not separated out as its own subset of recommendations. Rather, all recommendations are viewed through an equity and environmental justice lens.

The Six E's framework will help guide development of McLennan County's active transportation network and mark progress toward becoming a bicycle and pedestrian friendly community.

7.1 Recommended Projects

This plan includes an extensive list of over 200 recommended bicycle and pedestrian projects throughout McLennan County, representing the "universe of need" to build a connected and comprehensive active transportation network. These projects are shown on Maps 7.1 and 7.2 and described in Appendix D. In total the "universe of need" represents approximately $370 million of improvements, which would realistically take approximately 100 years to implement at the rate of current investment[54]. By way of comparison, the construction phase of IH-35 widening and reconstruction from North Loop 340 to South 12th Street had a low bid cost of $341 million. In addition, the total project cost for widening FM 1637 (China Spring Road), was approximately $75 million.

Table 7.1 highlights the estimated cost for several major categories of improvements (this is not an exhaustive accounting of the $370 million universe of need). The first set of improvements are of benefit to bicyclists and pedestrians (sidewalks, shared use paths/overpasses, route signage). However, the second set of improvements will benefit all roadway users, including motorists. This is because clear signage and striping, safer intersections, better roadway lighting, and upgraded traffic signals all improve the overall operation and safety of a roadway.

Table 7.1: Cost Estimate for Selected Roadway Improvements

Improvement Type	Estimated Cost
Roadway Improvements Benefitting Bicyclists and Pedestrians	
Sidewalks	$76 million
Shared Use Paths/Overpasses	$85 million
Route Signage	$5 million

[54] Certain types of projects were not included in the cost estimate. This includes regional bike routes, which connect rural areas to each other, and to the urbanized area; these types of bike routes vary greatly in scope depending on the quality and condition of the specific roadway, and will require further study. Additionally, some of the priority transit projects were not included in the cost estimate, because further study is needed to understand the scope of work that is needed at each location.

Improvement Type	Estimated Cost
Roadway Improvements Benefitting All Roadway Users	
New Pavement Markings	$6 million
Expanded Pavement	$37 million
New and Upgraded Signals	$25 million
New Street Lighting	$9 million

The recommended bikeway projects provide north-south and east-west connectivity across the Urbanized Area. The ATP also recommends regional bicycle routes (utilizing either shared lanes or paved shoulders) to connect different cities within McLennan County. The bikeway recommendations are intended to accomplish the following: 1) reduce traffic stress for bicyclists by providing separated bikeways along direct routes as much as possible; 2) provide bike routes along low-stress roadways to connect neighborhoods to the larger bikeway network; and 3) appeal to the novice cyclist identified in the ATP survey and an "interested but concerned" target design user[55]. The recommended pedestrian projects are focused in the Urbanized Area and within individual cities, with the goal of connecting residential areas to existing walkable destinations such as parks, schools, and commercial hubs, and future development areas identified in planning documents and the Walking Propensity Index.

Maps 7.1 and 7.2 and Appendix D identify specific project types. For example, a bike lane vs. an off-street shared-use path, or a sidewalk on one side of the street vs. both sides. In making these determinations, MPO staff started with the most separation or accommodation (such as sidewalks on either side or a separated bikeway). Then, existing roadway constraints were considered, such as available public right-of-way, development density vs. vacant/agricultural land, type of surrounding land uses, vehicle traffic volume and speed, and anticipated users. The recommended projects reflect these constraints. Because the ATP is a conceptual planning-level document, more refined assessment and design will be required. There will be occasions when the project characteristics (type of bikeway, project limits, sidewalk design) or roadway will change. Additionally, other types of bikeways or safety improvements such as bicycle boulevards, traffic calming measures, and advisory bike lanes, could also be considered. The MPO encourages individual cities to review design guidance such as the FHWA's Bikeway Selection Guide (2019) during project engineering and design.

This ATP also recommends a complete street treatment for corridors such as 17th-18th-19th streets in Waco and US Business 77/La Salle Ave. In these cases, a comprehensive corridor study is required (or has already been completed) to better understand how to develop a multi-modal corridor that will complement existing and desired land uses.

In addition to linear projects, the recommended project list also include localized projects at intersections or bridges (displayed as pink stars on Maps 7.1 and 7.2). Examples include intersection and bridge improvements for safe crossings of high-speed and high-traffic roadways, as well as projects to improve accessibility to public transit.

7.1.1. Priority Recommended Projects (*Engineering*)

The list of recommended projects is extensive; it will realistically take several decades to build out the active transportation network for McLennan County, assuming funding is available. The Metropolitan Pedestrian and Bicycle Planning Handbook provides some guidance on project prioritization, and suggests that MPOs begin by "identifying corridors and connections of strategic importance [that] may

[55] FHWA. 2019. Bikeway Selection Guide.

include a combination of on-road and off-road transportation facilities."[56] Feedback received from the ATP online survey, stakeholder interviews, and the MPO's ad-hoc bicycle and pedestrian committee, have indicated that regional and cross-town connectivity through the Urbanized Area (for bicycles) and within cities (for pedestrians), that connect people to parks, schools, and commercial areas (amenities and basic services) are desired the most.

Waco MPO staff have developed a prioritized list of recommended projects that are divided into two groups (see Tables 7.2 and 7.3 and Map 7.3). The first group includes Regional Priority active transportation corridors that have strategic importance to the Waco MPO planning area. These projects create multi-modal connections across municipal boundaries, with the goal of providing continuous corridors within the Urbanized Area. These Regional Priority projects require coordination between multiple jurisdictions and may require state or federal funding in addition to local dollars. The second group includes Local Priority projects and corridors, which will build upon the investments made in the first group, and expand the active transportation network at the local (neighborhood, intra-city) level. Individual cities may choose to initially invest in Local Priority projects, and then connect these local investments to the regional active transportation corridor/Regional Priority projects. Together, these priority projects represent about one-third of the universe of need.

Table 7.2: Recommended ATP Projects: Regional Priority Corridors

Project Number	Location	Bicycle or Pedestrian Project	Project Description
B-002A, B-002B, B-002C, B-016, B-017, B-018, P-005	Tree Lake Dr, Flat Rock Rd, Skeet Eason Dr, MacArthur Dr, N 36th St, N 34th St	Bicycle and Pedestrian	Provide bikeway and continuous sidewalk (and/or off-street shared-use path) to connect China Spring neighborhoods to Lake Waco Dam Trail and central Waco. China Spring improvements will likely need to occur as part of a larger roadway improvement project, because additional pavement (roadway width) will be required. An interim treatment could be utilized in lieu of roadway widening, such as a bike route with sharrows. Provide bikeway and continuous sidewalk between Lakeshore Dr and Waco Dr. Install a safe crossing to allow bikes and pedestrians to cross Lake Shore Dr to connect to the Lake Waco Dam Trail.
B-003A, B-003B, B-003C, B-003D, B-003E, B-003F, B-003G, B-003H	Sanger Ave and N 29th St	Bicycle and Pedestrian	Provide bikeway and continuous sidewalk, including across the Hwy 6 overpass, to connect Woodway to North Waco and Uptown Waco. On Sanger between N 29th St and N 15th St, repair and replace existing sidewalk as needed.
B-072, B-074, B-116	Clifton St, Elm Ave, La Salle Ave, Business 77, and E Waco Dr	Bicycle and Pedestrian	Implement recommendations of US Business 77 Corridor Study and initiate a new corridor study for La Salle Ave to improve bicycle and pedestrian mobility along the corridor and at high-

[56] USDOT and FHWA. 2017. Metropolitan Pedestrian and Bicycle Planning Handbook, pg 22.

Project Number	Location	Bicycle or Pedestrian Project	Project Description
			priority intersections (e.g., S 3rd St, University Parks Dr). Connect to local bikeway corridors via a bikeway and sidewalk along Clifton St/Elm Ave.
B-103A, B-103B, B-109A, B-109B	Santa Fe Dr and Texas Central Parkway	Bicycle and Pedestrian	Provide a bikeway along Santa Fe Dr and Texas Central Pkwy from Bosque Blvd to Bagby Ave, connecting Woodway, Hewitt, and Waco neighborhoods. Provide continuous sidewalk in Woodway from Bosque Blvd to Old McGregor Rd.
B-005A, B-005B, B-115A, B-115B, P-009, P-021	Estates Dr and Hewitt Dr	Bicycle and Pedestrian	Provide bikeway along Estates Dr and Hewitt Dr from Woodway Park to Chapel Rd and along Panther Way to Hewitt Dr. Provide continuous sidewalk along the entire corridor from Woodway Park in Woodway to Warren Dr in Hewitt. Provide pedestrian and bicycle accommodation along Panther Way and Hewitt Dr to provide safe route to Midway ISD schools, and to connect to existing bike and pedestrian facilities along Panther Way.
B-045A, B-045B, B-045C-1, B-045C-2, B-045C-3, P-054	Old Temple Rd, Bagby Ave	Bicycle and Pedestrian	Provide bikeway along Old Temple Rd and Bagby Ave from Hewitt Dr in Hewitt to S 26th St in Waco. Provide pedestrian accommodation along Bagby between Central Texas Marketplace and S 26th St. Improve intersection of Valley Mills Dr and Bagby Ave to accommodate ADA pedestrian needs and bicyclists.
B-053A, B-053B, B-044A, B-044B	Old Robinson Rd, Primrose Dr, Irving Lee St	Bicycle and Pedestrian	Provide an off-street shared-use path along Old Robinson Rd from Moonlight Dr in Robinson to Kenwood Dr in Waco. Provide bikeway and continuous sidewalk along Old Robinson Rd from Kenwood Dr to Primrose Dr, and along Primrose Dr/Irving Lee St.
B-013A, B-013B, B-013C, B-013D, B-104	E 3rd St, former Cottonbelt rail corridor, Harris Creek Rd, Hannah Hill Rd, Hwy 84 Frontage Rd, Ritchie Rd, Old Ritchie Rd	Bicycle and Pedestrian	Provide an off-street shared-use path to extend the existing Cottonbelt Trail to the east and West, connecting to McGregor, existing Cottonbelt Trail, and neighborhoods in Woodway, west Waco, and Hewitt.
B-009A, B-009B, B-083A, B-083B	Speegleville Rd, Old Lorena Rd, N Houston St, Center St	Bicycle and Pedestrian	Provide an off-street shared-use path along Speegleville Rd from River Valley Intermediate School to Church Rd, connecting to the existing Cottonbelt Trail. Provide a bike route along Old Lorena Rd from Church Rd in Waco to the IH-35

Project Number	Location	Bicycle or Pedestrian Project	Project Description
			south bound frontage lane in Lorena. Provide continuous sidewalk within Lorena city limits.
B-007	Former MKT rail corridor	Bicycle and Pedestrian	Provide an off-street shared-use path along the former MKT rail corridor to connect Lacy Lakeview, Bellmead, and Waco neighborhoods

Table 7.3: Recommended ATP Projects: Local Priority Corridors

Project Number	Location	Bicycle or Pedestrian Project	Project Description
B-033, B-034, B-038A, B-038B, B-041, P-071	S 3rd St, Dutton Ave, N 4th and N 5th Streets in Waco	Bicycle and Pedestrian	Provide bikeway and continuous sidewalk from Garden Dr to Herring Ave first along S 3rd St, transitioning to 4th St and 5th St.
B-027A, B-027B	Washington Ave in Waco	Bicycle and Pedestrian	Provide bikeway along Washington Ave from 29th St to 18th St to connect to the Sanger Ave bikeway and Washington Ave protected bike lanes. Provide continuous sidewalk from N 29th St to N 25th St (as needed). Repair and replace sidewalk as needed between N 25th St and N18th St.
B-050	Clay Ave in Waco	Bicycle and Pedestrian	Provide bikeway and continuous sidewalk along Clay Ave from Valley Mills Dr to University Parks Dr
B-035, B-036A, B-036B	N 15A, N 15th St in Waco	Bicycle and Pedestrian	Provide bikeway between Alexander Ave and Washington Ave. Provide continuous sidewalk between Herring Ave and Washington Ave.
B-063	Colcord Ave in Waco	Bicycle and Pedestrian	Provide bikeway and continuous sidewalk along Colcord Ave from N 42nd St to University Parks Dr.
B-112A, B-112B	17th, 18th, and 19th Streets in Waco	Bicycle and Pedestrian	Implement recommendations from 17-18-19 Corridor Study for complete streets with bicycle and pedestrian accommodations throughout the corridor
B-032A, B-032B, B-032C	S 26th St in Waco	Bicycle and Pedestrian	Provide bikeway along S 26th St between Mary Ave and Dutton Ave, to connect to proposed bike lanes. Provide continuous sidewalk along S 26th St between Mary Ave and Bagby Ave.
B-021, B-022, B-023A, B-023B	Hillcrest Dr, Lyle Ave, Herring Ave in Waco	Bicycle and Pedestrian	Provide bikeway along Hillcrest Dr/Herring Ave/Lyle Ave from Lake Shore Dr to the Brazos Riverwalk. Provide continuous sidewalk along Hillcrest Dr from Lake Shore Dr to N 32nd St. Repair or replace existing sidewalk along Herring Ave and Lyle Ave as needed.
B-020, B-054A	Cobbs Dr, N 41st St, and New Rd in Waco	Bicycle and Pedestrian	Provide bikeway and continuous sidewalk along Cobbs Dr and N 41st St from Fish Pond Rd to Hillcrest Dr and along New Rd from Cobbs Dr to Colcord Ave.
B-044C	Primrose Dr	Bicycle and Pedestrian	Provide bikeway and continuous sidewalk along Primrose Dr to connect regional bikeway along

Project Number	Location	Bicycle or Pedestrian Project	Project Description
			Old Robinson Rd and proposed bikeway along S 12th St
B-028B, B-028C	Chapel Rd and Imperial Dr in Waco	Bicycle and Pedestrian	Provide bikeway and pedestrian accommodations along Chapel Rd and Imperial Dr from Ritchie Rd to Texas Central Pkwy. This will likely need to occur as part of a roadway widening project, because additional pavement will be required. An interim treatment may also be considered for Chapel Dr.
B-068, B-069, B-070A, B-070B, B-073	Dallas St, Garrison St/Forrest St, Faulkner Ln, JJ Flewellen Rd in Waco	Bicycle and Pedestrian	Provide bikeways and continuous sidewalk within East Waco along Dallas St, Garrison St/Forrest St, Faulkner Ln, and JJ Flewellen Rd. This will connect to the Elm Ave corridor, existing bike lanes along Orchard Ln, and MKT Trail.
B-141A, B-141B, B-141C	Craven Ave in Lacy-Lakeview	Bicycle and Pedestrian	Provide bikeway and continuous sidewalk along Craven Ave from US Business 77 to Campus Dr on the Texas State Technical College (TSTC) campus. This will connect the Lacy-Lakeview neighborhood to the active transportation corridor along US Business 77. Provide a pedestrian/bicycle cut-through near Langley Dr and Air Base Rd.
B-008, B-024, P-058, P-064, P-001	Behrens Circle and Bellmead Dr in Bellmead	Bicycle and Pedestrian	Provide bikeway from MKT Trail to Bellmead Dr, and along the commercialized portion of Bellmead Dr. Provide continuous sidewalk along the same portion of Bellmead Dr and on Behrens Circle from the MKT Trail to Wheler Ave. Connect to proposed improvements along Business 77. Construct pedestrian overpass and connecting sidewalks along the IH-35 frontage road in the vicinity of Walmart.
B-114B, B-114C	Spring Valley Road in Hewitt	Bicycle and Pedestrian	Provide bikeway along Spring Valley Rd from Old Lorena Rd to Sun Valley Rd. Provide continuous sidewalk within Hewitt city limits from Hewitt Dr to Sun Valley Rd.
B-055, B-075, B-076, B-085, B-143	1st St, Warren Rd, Ritchie Rd, Devonshire Rd, Longwood Circle in Hewitt	Bicycle and Pedestrian	Provide bikeway along 1st St, Warren Rd, Ritchie Rd (off-street shared-use path), Devonshire Rd, and Longwood Circle. Provide continuous sidewalk along Warren Rd and 1st St.
B-083C, P-060	N Houston St, Williams Rd, Old	Bicycle and Pedestrian	Provide continuous sidewalk along Williams Rd, Leopard Ln, and a portion of Old Lorena Rd (to post office and primary school). Provide bikeway

Project Number	Location	Bicycle or Pedestrian Project	Project Description
	Lorena Rd, Center St in Lorena		with sharrows along Williams Rd and Leopard Ln in vicinity of Lorena ISD schools.
P-014, P-032, P-033A, P-033B, P-036, P-037, P-038, B-118	Hwy 317 (Main St), Hwy 84, Bluebonnet Pkwy, E 3rd St, Old-McGregor Crawford Rd in McGregor	Bicycle and Pedestrian	Provide bike route along Old McGregor/Crawford Rd and Hwy 317 (Main St) from approximately Navajo Trail to E 7th St (with connection to Cottonbelt Trail via E 3rd St). Provide continuous sidewalks along Hwy 317 (Main St), Hwy 84, and Bluebonnet Pkwy in vicinity of central McGregor neighborhoods and McGregor ISD schools.
B-026, B-029, B-145, P-007, P-025, P-078, P-079, P-080	Tate Ave, Lyndale Ave, Stegall Dr, Shamrock Dr, Peplow Dr/Chaddo Ln, Moonlight Dr, US-77 (Robinson Rd) in Robinson	Bicycle and Pedestrian	Provide off-street shared-use path in vicinity of Robinson ISD schools along Peplow Dr/Chaddo Ln, and W Tate Ave. Provide sidewalk and bike route along Lyndale St, and provide continuous sidewalk along Shamrock Dr, Stegall Dr, Tate Ave, Moonlight Dr, and Robinson Rd (US-77).
P-081	State Hwy 6 and Eagle Way in Valley Mills	Bicycle and Pedestrian	Provide off-street shared-use path along State Hwy 6 and Eagle Way to connect residences to Valley Mills middle/high school campus

As priority projects are funded and constructed, the MPO will backfill the priority lists with additional projects from the universe of need. Individual cities may also choose to identify their own priority projects from the universe of need. The following questions will be used to guide future discussions on setting project priority, and for establishing scoring criteria, if needed.

- Will the project connect to and expand the existing active transportation network and/or close a gap in the network?
- Will the project connect people to parks, schools, or commercial/employment centers?
- Will the project address existing, projected, or desired travel behavior?
- How many people will the project serve? What is the density of residents, employment and/or attractors?
- Will the project connect to a transit line or transit stop?
- Will the project benefit people of all ages and abilities and the “interested but concerned” bicyclist?
- Will the project benefit populations with demonstrated need for pedestrian and bicycle facilities (for example, low rate of car ownership)?
- Will the project improve bicycle and pedestrian safety (based on crash data or known problems)?
- What will the project cost? Does the project scope quality for a grant opportunity?

As the bicycle network develops, it will become increasingly important to design and implement a cohesive wayfinding (e.g., signage) program, especially for bikeways that cross municipal boundaries. Wayfinding and branding should be consistent with the latest design standards, such as the Federal Highway Association's (FHWA's) Manual on Uniform Traffic Control Devices (MUTCD), the American Association of State Highway and Transportation Official's (AASHTO's) Guide for the Development of Bicycle Facilities, and the National Association of City Transportation Officials (NACTO's) Urban Bikeway Design Guide. Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes. Pavement markings can be installed to help reinforce routes and directional signage and to provide bicyclist positioning and route branding benefits. Pavement markings may be especially useful where signs are difficult to see (due to vegetation or parked cars).

7.1.2. Priority Recommended Projects and Environmental Justice Protected Zones

A primary goal of the Waco MPO is to ensure that the transportation needs of all area citizens are met. The benefits and burdens of transportation facilities should be balanced and not result in disproportionate impacts to a particular community or population group. Executive Order (EO) 12898 requires recipients of federal funding to identify and address disproportionate health or environmental effects on minority and low-income populations. This requirement is also referred to as environmental justice (EJ) policy.

To assess the distribution of benefits and burdens of the ATP recommended priority projects, MPO staff identified the census tracts within McLennan County with Black or African American, Hispanic, and/or low-income[57] populations greater than the county average. Out of the 50 census tracts within McLennan County, 28 qualify as an EJ-protected zone. Map 7.4 overlays the ATP recommended priority corridors (regional and local), with the EJ-protected zones within the Urbanized Area. 56% of local and regional priority projects are located within an EJ-protected zone. Of the local priority projects, 60% are located within an EJ-protected zone. Projects located within an EJ-protected zone should have priority for inclusion in the Metropolitan Transportation Plan.

7.1.3. Barriers to Active Transportation Connectivity

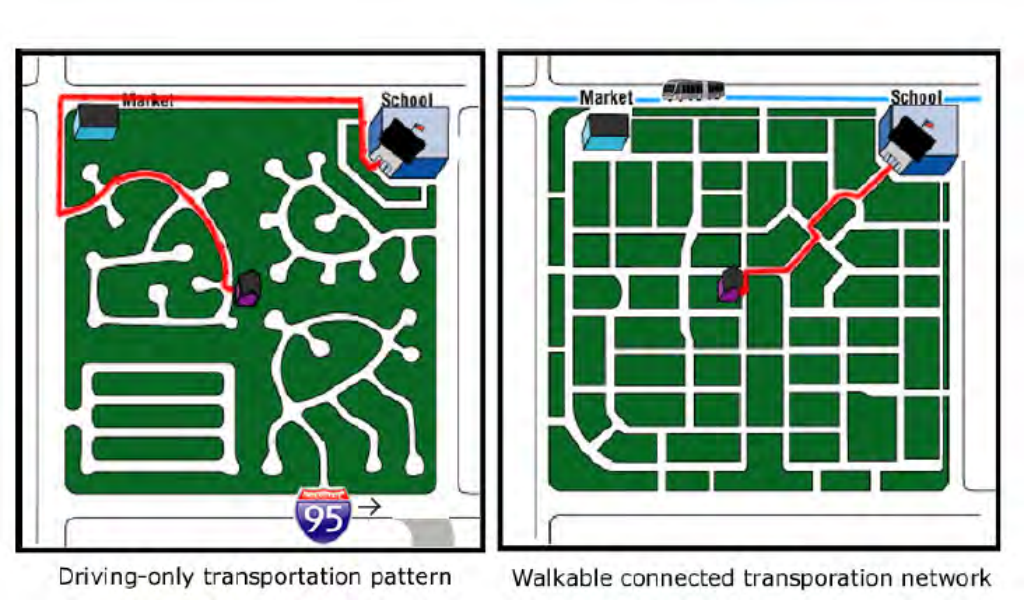
Travel by walking and biking must feel sufficiently safe and convenient. Safety concerns, particularly the fear of riding in traffic, are often a primary obstacle for those who are "willing but wary" (especially women, youth, and older adults). Convenience requires that the trip must not take too long[58]. Some streets act as barriers to a safe and convenient active transportation network. These streets are often characterized by high traffic volumes, high vehicle speeds, wide right-of-ways, and limited signalized intersections. These roads are designed to move many cars (and sometimes freight traffic) as quickly as possible, and can be inhospitable to bicycle and pedestrians attempting to travel along the road, or even just trying to cross the street. Barrier streets are shown on maps 7.1 and 7.2 in red-black lines.

In some cases, there may be opportunities to provide safe active transportation infrastructure on or along these barrier streets. For example, a road diet and/or conversion from one-way to two-way operation may be desirable, because the average daily traffic (and projected future average daily traffic) does not warrant the current street configuration. In these instances, unused pavement or right-of-way can be repurposed for bike and pedestrian infrastructure. Other times, there may be enough vacant land along the corridor to widen the public right-of-way to accommodate an off-street shared-use path, or a sidewalk and on-street protected bike lane.

[57] Below the federal poverty threshold.
[58] ChangeLab Solutions. 2013. Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities.

However, within the Urbanized Area, the roadway corridor is frequently built out and there isn't a simple way to add safe bicycle and pedestrian infrastructure without significant in-depth study and right-of-way acquisition. Right-of-way acquisition could impact adjacent businesses (by affecting driveways, parking spaces, signage, and landscaping) which may be incompatible with current zoning requirements and operation of the business. Examples include portions of Bosque Blvd and Homan Ave, Lake Air Dr, Wooded Acres Dr, and New Rd. It's very possible that some of these roadway segments may never be suitable to recommend as a bikeway, even though they might be the most convenient and direct (and sometimes the only) connecting route.

Non-grid suburban street design can also serve as a barrier, or hindrance, to safe and convenient biking, walking, and rolling. Cul-de-sacs and other disconnects (such as non-aligned intersections) make it less efficient to walk, roll, and bike, while simultaneously concentrating vehicular traffic on a smaller number of streets (such as neighborhood collectors and arterials), making it even less desirable for bicycle and pedestrian travel.[59] As shown in the first image below, if a pedestrian or bicyclist wants to travel from their home to school, they would be forced to use a higher-traffic-volume roadway that is circuitous to their destination. In the second image, the same person could use local streets (with less vehicle volume and slower speeds), and also take a more direct route to their destination.



Source: Congress for New Urbanism

Waterways such as the Brazos and Bosque Rivers and Lake Waco; active rail lines; and interstates and highways, also hinder connectivity due to the limited number of crossings and the associated expense of retrofitting existing, or constructing new crossings to accommodate bicyclists and pedestrians. The best opportunity for these situations is to implement a process that ensures that bicycle and pedestrian modes are thoroughly considered when existing bridges are retrofitted or reconstructed, and when new crossings are under development and design.

7.2 Education and Outreach Programs (*Education and Encouragement*)

Encouragement and outreach programs help to create a strong active transportation culture. There are several tried-and-true programs designed to highlight, educate, and encourage active transportation in a

[59] USDOT and FHWA. 2017. Metropolitan Pedestrian and Bicycle Planning Handbook.

community. Education and training programs can help people obtain the skills needed to bike, walk, and roll safely and confidently. Public information campaigns help everyone interpret regulations, signage, and infrastructure, such as pavement markings and sharrows, green bike boxes, signage, and specialty pedestrian crossing signals. Many of the education and outreach ideas listed below are from the League of American Bicyclists and America Walks, which are organizations with demonstrated success in helping to build active transportation culture in various communities.

7.2.1. National Bike Month

Bike Month is celebrated nationally during the month of May. The following items are ways to promote bike month in local communities:

- Proclamation of May as National Bike Month: Proclaim May as National Bike Month in each city.
- National Bike to School Day: In partnership with the League of American Bicyclists, the National Center for Safe Routes to School organizes an annual Bike to School Day during the first week of Bike Month. Bike pools or bike trains can be organized by parents or school leadership. Participating schools can register at www.walkbiketoschool.org
- National Bike to Work Day: Bike to Work Day is a day in May when people are encouraged to bike to work. Supporting activities include providing energizer stations with free food and beverages, bike repair, and entertainment. Employers are encouraged to incentivize Bike to Work Day by providing additional perks. Participation by community leaders can also help to broaden participation in the event.
- Ride of Silence: A ride of silence honors and remembers those who have been injured or killed while cycling on public roadways in a community, and advocates for enhanced awareness of issues related to bike safety.
- Ride with Community Leaders: Getting local elected officials involved in Bike Month or Bike to Work Day is an excellent way to show community support for biking. Other community leaders from local non-profit or advocacy groups and public health organization can be encouraged to participate as well.

7.2.2. National Pedestrian Events

Nationally, walking and rolling events are often held during the months of April and October. For example, the American Heart Association promotes physical activity during the month of April as part of their "Move More/Live More" campaign, and celebrates National Walking Day on the first Wednesday in April. National Walk to School Day is held during the month of October. It's Time Texas has previously held a "Texas Walks" event during October. The Texas A&M Agrilife Extension Program hosts an 8-week Walk Across Texas campaign from March to April.

The Waco MPO recommends scheduling walking and rolling events during the month of October to correspond with the national Walk to School Day.

- Walk to School Day: International Walk to School Day is a global event that involves communities from more than 40 countries walking to school on the same day.[60] Ideas for Walk to School Day include walking school buses, which are groups of children who walk designated routes to school

[60] Walk and Bike to School. About Walk to School Day. http://www.walkbiketoschool.org/learn-more/about-the-events/about-walk-to-school-day/

under adult supervision, picking up kids along the way just like a bus. Participating schools can register their participation at www.walkbiketoschool.org

- Walk to Work Day: Historically, Walk to Work Day has been held on the first Friday in April, although a community can choose to celebrate the event whenever they choose. Walk to Work Day is a promotional event where people are encouraged to walk to work instead of driving; walk for a portion of their typical commute (for example, park a few blocks away from the office); or walk on their lunch break. Supporting activities include providing energizer stations with free food and beverages, promotional gifts, and entertainment. Employers are encouraged to incentivize Walk to Work Day by providing additional perks. Participation by community leaders can also help to broaden participation in the event.
- Jane's Walks: A Jane Jacobs walk is a neighborhood walking and rolling tour that helps participants learn and respond to the complexities of their city through personal and shared observation. The event takes place annually during the first weekend of May. Walks can be registered at www.janejacobswalk.org

7.2.3. Other Education and Outreach Activities

In addition to annual bike and pedestrian events, there are other education and outreach activities that will promote walking, rolling, and biking in the community.

- Community Rides and Walks: Community rides and walks are a great way to get people more comfortable walking, biking, and building awareness of safe bicycle and pedestrian routes. Examples include the Critical Mass bike ride, which is held on the last Friday of each month, and the neighborhood walks hosted by Waco Walks. Community walks and rides can have different themes, destinations, or target participants (such as a kid-friendly bike ride). Community bike rides can partner with a shared mobility/micro-mobility program or local bike shop for bicycle rentals. Rides and walks can include giveaways and promotions to incentivize participation, and include stops at local businesses. Partnering with local police departments can help to make a bike ride feel safer and more approachable. A great example of a successful, ongoing, community bike ride program is the Harlingen Social Bike Ride, which is held once a month.[61]
- Bicycle and Pedestrian Audits: An audit is an unbiased examination/evaluation of the walking, rolling, and biking environment. During an audit, issues related to bicycle and pedestrian safety, access, comfort, and convenience are documented. Audits can also be performed before, during, or after the construction of a project. Informal audits can be performed by community advocacy groups or focus on specific user groups, such as evaluating safe routes to school.
- Shared Mobility/Micro-Mobility Programs: Shared mobility/micro-mobility programs[62] complement active modes of travel. Ideas include expanding the pilot shared mobility program in Waco, either by making the program permanent, or expanding the geographic system area and fleet size. Expansion of the program will make it easier for people to use small transportation devices such as bikes or e-scooters as a sole mode of transportation for shorter trips, or a last-mile-solution for longer trips. The city should work with the program operator(s) to provide reduced rates for low-income persons, bilingual signage and/or customer service, and accommodations for renting a device without a smart phone. Special care should be taken to minimize or avoid creating

[61] Healthy Harlingen. Social Bike Rides 2019. http://healthyharlingen.com/2018/03/07/ride-and-run-of-silence/
[62] Micro-mobility refers to small transportation devices, such as a bike, e-bike, or e-scooter that are often deployed as part of a shared mobility program, with the devices available to rent for short durations of time via a smartphone app or similar means. Shared mobility is an umbrella term that can include a variety of transportation modes including carsharing, bikesharing, mico-mobility, ridesharing, mobility-as-a-service (Maas), etc.

obstructions to pedestrian travel (especially pedestrians who are sight impaired or use a wheelchair).

- Mobile Apps, Maps, and Websites: Mobile apps and websites can make it easier and more fun to walk, roll, and bike or use public transportation. For example, the Waco Transit System provides GPS tracking of their Waco Transit fixed route buses at ridewaco.com and their Baylor University shuttles at bushuttle.com. The Waco MPO has produced Bicycle Suitability Maps for the Greater Waco Area and McLennan County, which are available on the MPO's website and the Waco Bike Club's website. The Waco Convention and Visitors Bureau has produced a Cycling Map (brochure and online) that includes existing bikeways, suggested bike routes, and points of interest such as grocery stores, schools, libraries, parks, and lodging. This map will be made available at local bike shops, the Waco Visitor Information Center, and other locations.

  Fitness trackers and apps such as FitBit, Strava, Apple Watch, Runkeeper and many others, can record physical activity and track popular routes to walk, roll, and bike. Companies such as Strava Metro offer valuable data sets to city planning and transportation groups consisting of aggregated and de-identified user data on popular or avoided routes, peak commute times, intersection wait times, origin/destination zones.[63]

- Bicycle or Pedestrian Challenges: Bicycle and pedestrian challenges are fun ways to encourage employees, group members, or a community to walk and bike more. Examples include the National Bike Challenge (www.nationalbikechallenge.org), which allows riders to track their miles, and provides community support, monthly prizes and ranking. Walk Across Texas is a free 8-week program designed to help people establish a habit of regular physical activity. To participate in Walk Across Texas, teams of up to 8 people work together to reach a goal of walking 832 miles within an 8-week time frame. Teams can register at: http://walkacrosstexas.tamu.edu/

- Smart Cycling Class or Group Riding Clinic: Local bike clubs or bike shops are key sources of knowledge, and cities can partner with these organizations to offer bike safety classes or group riding clinics for various audiences. Example classes include Commuters, Novice Riders, Traffic Skills and more. Offering safety classes and group rides on well-used bikeways will make bike riding less intimidating for those who are interested, but don't know where to start.

- Share the Road Campaign and Other Safety PSAs: Cities can take advantage of existing, free public safety announcements (PSA) and other marketing material to promote safe biking, walking, and rolling in the community. Videos can be linked on the Waco MPO and advocacy group websites and shown on local TV stations, such as Waco City Cable Channel. Printed PSAs can be included in community newsletters such as the Waco City Limits newsletter, which is provided to citizens through their water bill. The National Highway Traffic Safety Administration (NHTSA) offers free videos on bicycle safety at: https://www.nhtsa.gov/road-safety/bicycle-safety. The FHWA offers pedestrian safety campaign materials including TV announcements, brochures, posters, and other PSAs: https://safety.fhwa.dot.gov/local_rural/pedcampaign/ . Pedbikeinfo.org has extensive resources for promoting pedestrian and bicycle safety, including pedestrian safety videos geared toward youth ages 5 to 18. http://www.pedbikeinfo.org/pedsaferjourney/

- Expand Drivers Education and Training: Mobility education expands upon driver's education to teach multi-modal and trip-planning skills in addition to driving skills. According to America Walks, mobility education can inform students how to: ride a bike, judge the walkability of streets and neighborhoods from a pedestrian's perspective, plan transit trips, understand the cost of car ownership, compare health impacts of transportation behaviors, and consider alternatives such

[63] Strava Metro. 2019. https://metro.strava.com/

as car share, bike share, and even remote work options.[64] Bicycle safety training can also be incorporated into training for professional drivers such as taxi drivers, bus drivers, and truck drivers. Agencies that employ or regulate professional drivers, such as school districts and transit agencies, can require ongoing bicycle and pedestrian safety training.[65]

- Bike Rodeo: Bike rodeos teach kids bicycle handling and safety skills, while also sharing the rules of the road in a safe environment. A bike rodeo can be combined with other events such as Bike to School Day or Open Streets/Cyclavia or can be incorporated into official bike education curriculum for students.
- Open Streets Event ("Cyclavia"): Temporarily close a street (or streets) to vehicle traffic, and open it up to people to walk, bike, or use other modes of active transportation. Open Streets or Ciclavia events are a great way to create a community event around healthy mobility options. The street closure can be complemented by other healthy activities such as group workout classes, healthy cooking demonstrations, bike safety classes, bike repair, history or art walks and more.
- Bicycle Friendly Communities (BFC) Recognition: The Waco MPO should support the city of Waco's efforts to be recognized as a Bicycle Friendly Community by providing technical assistance as requested, and also encourage other cities to apply for recognition. Communities that apply for BFC recognition are provided with a Report Card with a list of Key Steps to achieve one of five levels of recognition (Bronze through Diamond). The Report Card is an invaluable resource that can help a community prioritize projects and actions that will have the most meaningful impact in becoming a more bicycle friendly community.
- Walk Friendly Communities (WFC) Recognition: The Waco MPO should also support local efforts to apply for recognition as a Walk Friendly Community. Similar to the BFC program, this application process enables cities to apply for recognition as a walkable community by highlighting current programs related to community information, data, and evaluation; planning and policy; education and encouragement; engineering and design; and law enforcement. Applicants receive detailed feedback, which provides a third-party perspective on areas of strength and areas that need improvement.[66]
- Pop-Up Demonstration/Tactical Urbanism Project: As popularized by the Better Block Project, communities can install temporary placemaking demonstration projects to showcase pedestrian-oriented or bicycle-oriented improvements that help to activate street life. Examples include temporary parklets, pedestrian plazas, bike lanes, separated bike lanes, temporary use of a vacant lot or building, and more. Park(ing) Day, celebrated on the third Friday in September (and popularized by Rebar Design Group), utilizes a curbside parking spot (legally) and reinvents the space for pedestrian purposes.
- Support for Local Advocacy Groups: The Waco MPO should support local advocacy groups such as Waco Walks and the Waco Bicycle Club by providing technical assistance and participating in their events. Examples include providing updates on active transportation projects and planning at general membership meetings, and participating in events such as community walks and community rides.

[64] America Walks. 2019. https://americawalks.org/expand-drivers-education-into-mobility-education/
[65] ChangeLab Solutions. 2013. Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities.
[66] Walk Friendly Communities. 2019. Benefits. http://walkfriendly.org/benefits/

7.3 Policies and Best Management Practices (*Enforcement, Evaluation and Planning*)

Laws and regulations help ensure the safety of all roadway users, and equitable consideration of bicyclists and pedestrians in the transportation system. Comprehensive planning efforts (such as this Active Transportation Plan) are strengthened by continuous engagement with stakeholders, dedicated staffing and funding, and evaluation of outcomes. The following are recommended policies and best management practices intended to improve and strengthen enforcement, evaluation, and planning for an active transportation network.

- Adopt Waco MPO Active Transportation Plan: The Waco MPO should encourage local jurisdictions to formally adopt by resolution the Waco MPO Active Transportation Plan. This will formalize the recommendations made in the ATP, and make it easier for cities to consult the list 6.2of recommended priority projects as part of the local transportation planning process.

- Adopt Thoroughfare Plan Design Guidelines: The Waco MPO should continue to encourage local jurisdictions to formally adopt (by ordinance) the Waco MPO's Thoroughfare Plan Design Guidelines. This will help to ensure new or reconstructed roadways are designed in accordance with the plan, appropriate to thoroughfare type, area type, and context zone.

- Adopt Bikeway Design Guidelines: Cities should consider adoption (by ordinance) of the AASHTO Guide for the Development of Bicycle Facilities as the minimum standard, and the NACTO Urban Bikeway Design Guide as the preferred standard, for all new and retrofitted bikeways and bike infrastructure. The Waco MPO should endorse the use of both design guidelines. Cities should also utilize the All Ages & Abilities standard for all bicycle facility design and network implementation; lesser accommodation should require additional justification. NACTO's report, designing for All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities (2017) is a useful resource.

- Adopt Vulnerable Road User Ordinances: A vulnerable road user ordinance establishes regulations for the safe passing and dangerous over taking (right-hook turn) of vulnerable users (bicycle or other human-powered vehicle) by motor vehicles. It can also include a pedestrian, runner, physically disabled person, child, skater, construction and maintenance worker, tow truck operator, stranded motorist, equestrian, and person operating a bicycle, motorcycle, or unprotected farm equipment. Adopting a vulnerable road user ordinance provides clear expectations for how to safely share the road. The city of Waco adopted a vulnerable user ordinance in 2016.

- Adopt Sidewalk and Streetscape Standards: Cities should review their zoning ordinances for sidewalk and streetscape requirements to determine if existing ordinances promote pedestrian-friendly design. For commercial or downtown districts, cities should consider developing a streetscape manual that provides specific guidance on sidewalk width, acceptable sidewalk treatments, tree planting standards, pedestrian through zone, street furniture, wayfinding signage, pedestrian-oriented lighting, an approved plant list, bicycle parking, transit stops, and other considerations for creating a pedestrian-friendly street.

- Adopt Routine Accommodation or Complete Street Policies. To incorporate safe and convenient pedestrian and bicycle infrastructure, the Waco MPO and local municipalities should adopt routine accommodation policies for all types of transportation projects, including roads, bridges, transit, and other types of transportation projects. This should include new construction, reconstruction, and widening projects. A routine accommodation policy should set a standard distance (along a corridor or across travel lanes) for when an ADA-compliant pedestrian and bicycle crossing is required (e.g., marked crosswalk with pedestrian refuge, overpass/underpass,

etc). This policy should include minimum criteria and documented justification for proposals to omit bicycle or pedestrian accommodations.

A complete street policy goes beyond a routine accommodation policy, and focuses on designing and operating the entire roadway system to enable safe access for all users, regardless of age, ability, or mode of transportation. It means that all transportation projects will improve safety and convenience for drivers, transit users, pedestrians, and bicyclists.[67] In addition to developing a policy, there should be a process to ensure that the policy is adhered to during project selection and design. At the MPO level, a checklist will be utilized to ensure that every project submitted for federal funds has explicitly considered multi-modal travel needs at the earliest stage in the project development process.

- Adopt Minimum Bicycle Parking Requirements: Cities should review local zoning and traffic ordinances for opportunities to add minimum bicycle parking requirements. This can be required in certain zoning districts or special overlay districts, for certain uses (public building, institutional, large-scale commercial, etc), and for new construction and substantial renovations. Acceptable bike racks and construction details should be included in city standard specifications. If bicycle parking requirements are implemented, cities should consider requiring showers and lockers for office and commercial developments.
- Review and Strengthen Bicycle and Pedestrian Safety Regulations: Cities should review local ordinances for bicycle and pedestrian safety. This can include a review of helmet requirements; safety lights for bicycles; minimum street lighting requirements; anti-harassment of bicyclists; anti-dooring of bicyclists; operation of bicycles (or micro-mobility devices) on sidewalks; pedestrian crossings at un-signalized intersections; obstruction of bicycle lanes; and safe passing on roadways (see vulnerable road user ordinance).
- Review and Strengthen Sidewalk Maintenance Requirements: Cities should review local ordinances to determine which party is responsible for maintaining a public sidewalk (for example, the city or the adjacent property owner). If the property owner is responsible for maintaining the sidewalk, consider implementing a cost sharing program to assist property owners with sidewalk maintenance and repairs.
- Review and Strengthen Subdivision Ordinances: Cities should review local subdivision ordinances for opportunities to strengthen sidewalk and bikeway requirements. Examples include requiring inclusion of continuous sidewalk on all streets, regardless of classification, and requiring installation of bikeways on new roadways classified as collector or higher, especially if in proximity to a park, school, basic services, or public transit route. Developers should be required to install all sidewalk and bikeways when the roadway is constructed, and not when the land is developed. Cities should consider: developing a minimum connectivity ratio for new roadways to make it more efficient to travel by an active transportation mode; establishing a block-length limit with a requirement for mid-block pedestrian/bicycle access (via easement or ROW cut through); and establishing a maximum crossing distance (width) across a roadway. Subdivision ordinances should provide a suite of acceptable traffic calming design measures that will make it safer for bicyclists and pedestrians (e.g., chicanes, roundabouts, diverters). Other ways to improve pedestrian and bicycle connectivity include retaining a public access easement along a drainage channel or along an abandoned railroad corridor.
- Prioritize Pedestrian and Bicycle Focused Traffic Enforcement: Cities can implement a focused enforcement program geared toward improving safety for bicyclists and pedestrians, such as

[67] USDOT and FHWA. 2017. Metropolitan Pedestrian and Bicycle Planning Handbook.

promoting awareness of the rules of the road, right-of-way/yield laws, and safe passing laws for vulnerable users. Additionally, communities can train pedestrian-traffic managers (or crossing guards) to help direct pedestrians across congested intersections. Pedestrian-traffic managers can be especially helpful for special events such as Baylor game days, festivals and concerts, and Magnolia Silos events.

- Prioritize Pedestrian and Bicycle Safety in Law-Enforcement Training: Provide an education course on pedestrian and bicycle safety geared toward and taught to law-enforcement officers to help them create safer walking and bicycling communities. The training curriculum typically covers state and local laws and statutes relating to pedestrian and bicycle safety, the causes of common crashes involving pedestrians and bicyclists, how to investigate and report those crashes, and sample enforcement guidelines.
- Continuously Engage with MPO Bicycle and Pedestrian Work Group: The MPO regularly meets with a pedestrian and bicycle work group (formerly an ad-hoc committee) to provide feedback on plan and project development and assessment; provide updates on capital improvement and other public projects; develop special projects; discuss grant opportunities; plan for special education and outreach events; and provide a forum for discussing ideas and concerns that are important to the active transportation community. It is important to continue to engage this work group on a regular basis to ensure two-way communication and meaningful stakeholder engagement. The work group should strive to include pedestrian and bicycle stakeholders, as well as representatives from planning, public works, parks and recreation, and public health agencies throughout the region.
- Coordinate with TxDOT: It is important for the Waco MPO to coordinate with statewide plans and policies affecting active transportation. The Waco MPO can share local planning, projects, and active transportation data to inform TxDOT statewide planning efforts, as well as inform regional projects on TxDOT-owned facilities. The Waco MPO will also coordinate with TxDOT to provide technical assistance to local cities for grant opportunities such as the Transportation Alternative Program (TAP) and Safe Routes to Schools (SRTS). Facilitate partnerships between member jurisdictions and TxDOT's traffic safety program, to identify and address traffic safety problem areas in the Waco region, and implement programs to reduce the number and severity of crashes, injuries, and fatalities.
- Coordinate with Waco Transit: It is also important for the Waco MPO to coordinate with Waco Transit because public transportation, walking/rolling, and biking are all important components of a functional active transportation system. Transit users generally walk to (and sometimes bike) from transit, and transit increases the distance pedestrians and bicyclists can travel. Transit stops should be within 1/4 to 1/2 mile of destinations and residences, which is especially important for older adults and low-income families, who are less likely to own cars.[68] Examples of coordination could include route planning and ridership trends; planning bikeways and pedestrian corridors so that they provide convenient access to transit routes, rapid transit stops, and high-priority pick up/drop off locations; bicycle racks on buses; and bicycle parking. The Waco MPO should encourage implementation of recommendations in the Waco Rapid Transit Corridor Feasibility Study (2018) and the McLennan County Transit Need Study (2018).

[68] ChangeLab Solutions. Adequate Access to Transit. http://changelabsolutions.org/childhood-obesity/adequate-access-transit

Map 7.1
Recommended ATP Projects,
Universe of Need - McLennan County

N

0 1 2 4
Miles

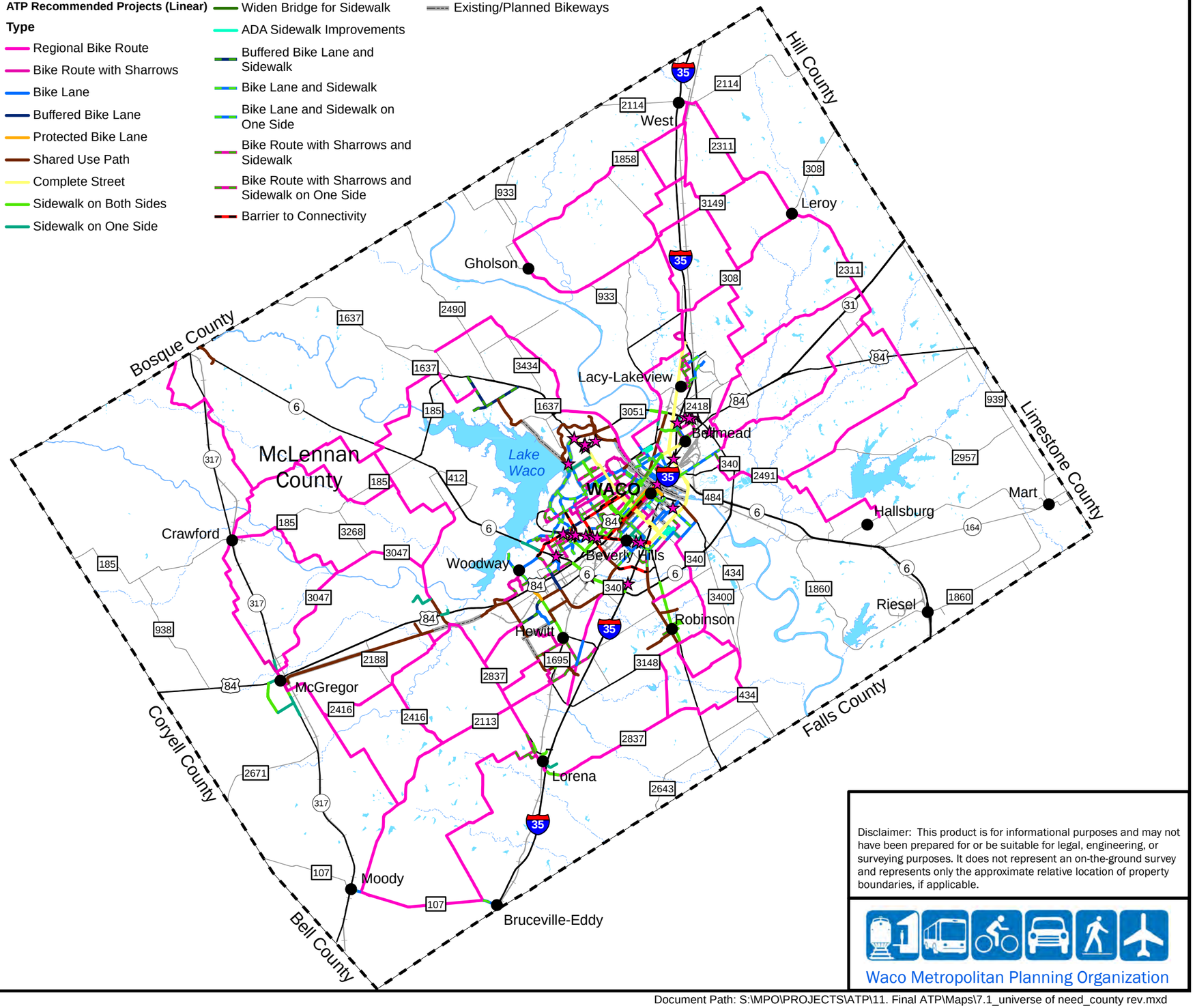
July 2019

Recommended Bridge/Intersection Projects

ATP Recommended Projects (Linear)

Type

- Regional Bike Route
- Bike Route with Sharrows
- Bike Lane
- Buffered Bike Lane
- Protected Bike Lane
- Shared Use Path
- Complete Street
- Sidewalk on Both Sides
- Sidewalk on One Side
- Widen Bridge for Sidewalk
- ADA Sidewalk Improvements
- Buffered Bike Lane and Sidewalk
- Bike Lane and Sidewalk
- Bike Lane and Sidewalk on One Side
- Bike Route with Sharrows and Sidewalk
- Bike Route with Sharrows and Sidewalk on One Side
- Barrier to Connectivity
- Existing/Planned Bikeways



Disclaimer: This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries, if applicable.

Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\11. Final ATP\Maps\7.1_universe of need_county rev.mxd

Map 7.2
ATP Recommended Projects
Universe of Need - Urbanized Area

0 0.5 1 2

Miles

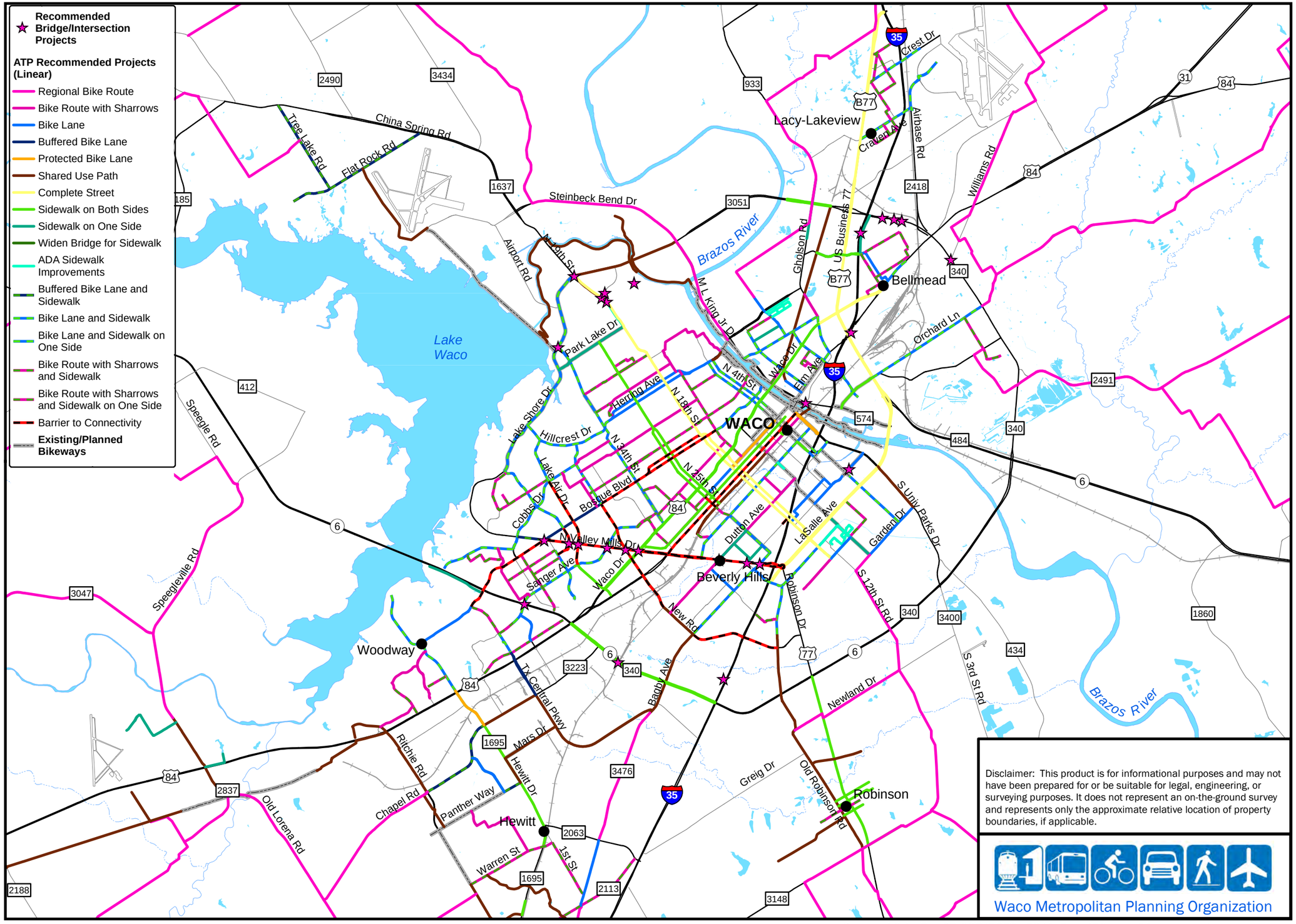
July 2019

Recommended Bridge/Intersection Projects

ATP Recommended Projects (Linear)

- Regional Bike Route
- Bike Route with Sharrows
- Bike Lane
- Buffered Bike Lane
- Protected Bike Lane
- Shared Use Path
- Complete Street
- Sidewalk on Both Sides
- Sidewalk on One Side
- Widen Bridge for Sidewalk
- ADA Sidewalk Improvements
- Buffered Bike Lane and Sidewalk
- Bike Lane and Sidewalk
- Bike Lane and Sidewalk on One Side
- Bike Route with Sharrows and Sidewalk
- Bike Route with Sharrows and Sidewalk on One Side
- Barrier to Connectivity

Existing/Planned Bikeways



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Regional Priority Corridors

Regional Priority Project (Bridge or Intersection)

Local Priority Corridors

Local Priority Project (Bridge or Intersection)

Existing/Planned Bike and Ped Facilities

Shared Use Path

Bike Lane

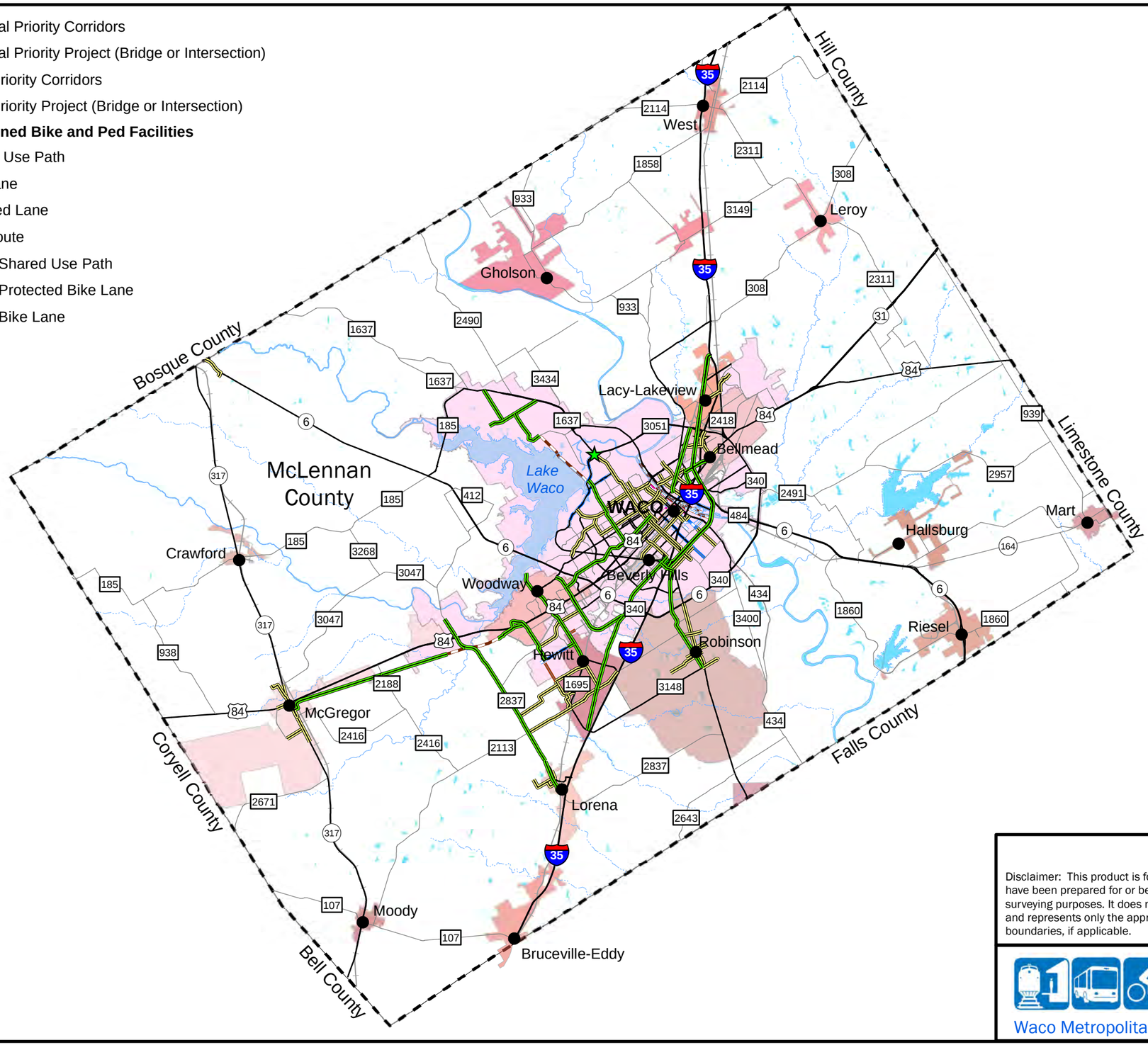
Bike Ped Lane

Bike Route

Future Shared Use Path

Future Protected Bike Lane

Future Bike Lane



0 1 2 4

Miles

July 2019

Map 7.3
ATP Recommended Projects,
Regional and Local Priority Corridors

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Waco Metropolitan Planning Organization

Document Path: S:\MPO\PROJECTS\ATP\11. Final ATP\Maps\7.3_recommended_priority_corridors rev.mxd

Map7.4
ATP Priority Corridors in Relation to Environmental Justice Protected Zones

July 2019

0 0.5 1 2

Miles

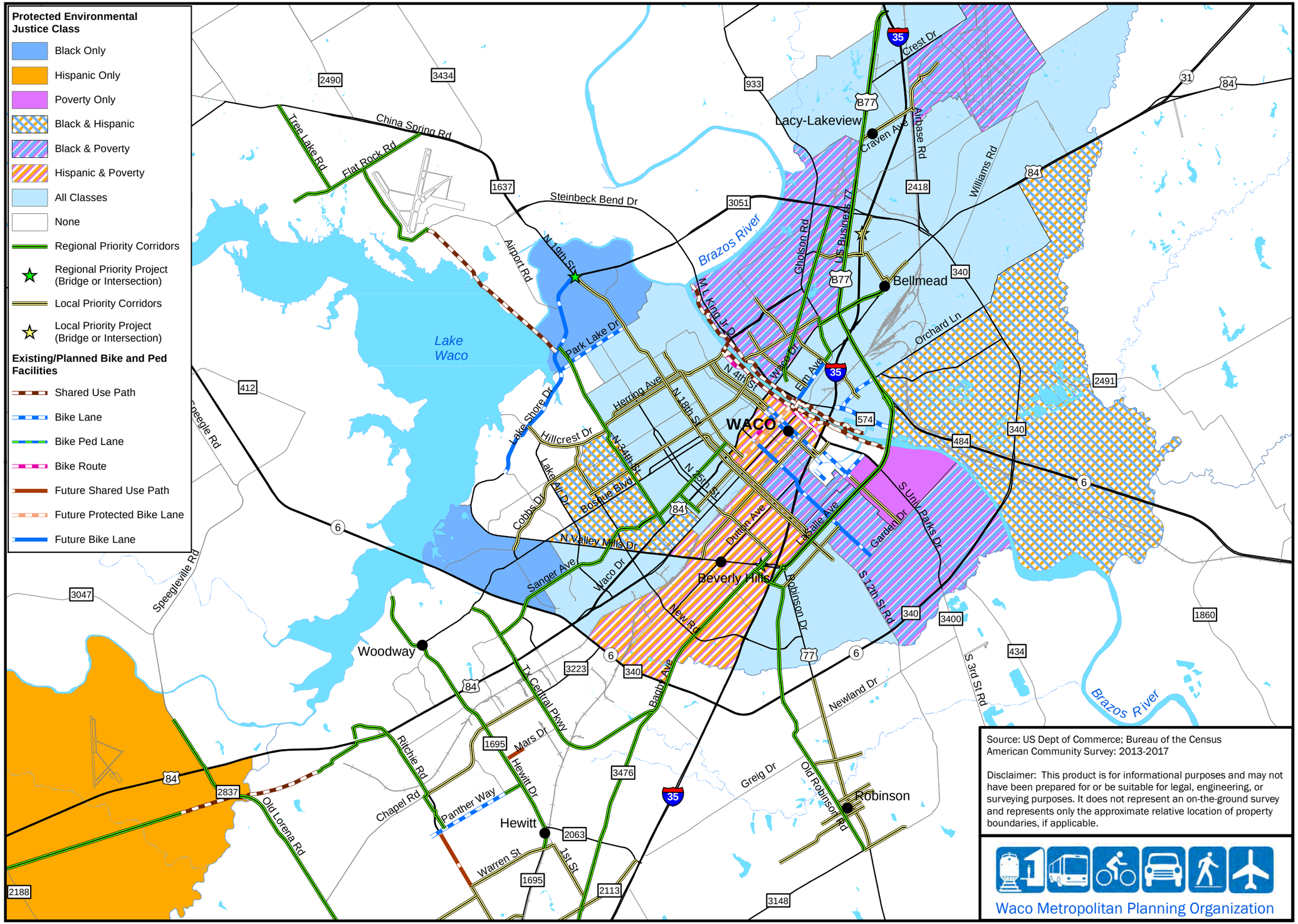
Protected Environmental Justice Class

- Black Only
- Hispanic Only
- Poverty Only
- Black & Hispanic
- Black & Poverty
- Hispanic & Poverty
- All Classes
- None

- Regional Priority Corridors
- Regional Priority Project (Bridge or Intersection)
- Local Priority Corridors
- Local Priority Project (Bridge or Intersection)

Existing/Planned Bike and Ped Facilities

- Shared Use Path
- Bike Lane
- Bike Ped Lane
- Bike Route
- Future Shared Use Path
- Future Protected Bike Lane
- Future Bike Lane



Source: US Dept of Commerce; Bureau of the Census
American Community Survey: 2013-2017

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Waco Metropolitan Planning Organization

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8 IMPLEMENTATION

8.1 Waco MPO's Metropolitan Transportation Plan and Transportation Improvement Program

The Waco MPO's Metropolitan Transportation Plan (MTP) is a 25-year plan that outlines the mobility needs of the Waco Metropolitan Area. The plan is fiscally constrained based on the projected level of federal funding that will be available within this timeframe. The MTP includes all projects that utilize federal highway or transit dollars as well as all other regionally significant transportation projects (regardless of funding).

The recommended regional- and local-priority corridor projects identified in this ATP will be evaluated for inclusion in the next iteration of the MTP (which will be the 2045 MTP, scheduled for adoption in January 2020) based on fiscal constraint. The following factors will be considered when selecting ATP projects for inclusion in the MTP: 1) FAST Act safety performance measures and TXDOT safety targets for non-motorized fatalities and serious injuries; 2) MTP Guiding Principles and Objectives; 3) project cost; 4) potential for leveraging other funding sources; 5) project constructability and readiness; 6) environmental justice policy; and 7) public and stakeholder comments.

Once identified within the MTP, a project is then eligible for federal highway or transit dollars for study, design, right-of-way acquisition or construction activities. Before proceeding to construction or implementation, however, the project must first be included in the Transportation Improvement Program (TIP). The TIP identifies those projects that the MPO agrees should either be implemented or constructed within the next 4 fiscal years. Similar to the MTP, the TIP must also be constrained against realistic estimates of funding.

8.2 Implementing Entities

The Waco MPO coordinates transportation planning in the region, but does not design or construct infrastructure (engineering) projects[69]. Design, construction or implementation of transportation projects are the responsibility of those who own or operate various portions of the transportation network; such as TxDOT, McLennan County, Waco Transit or local municipalities. These agencies set design standards for roadways, subdivisions, and land use projects; enforce safety and traffic laws; and provide community programming such as special events and education/public safety campaigns.

The Waco MPO encourages all of these entities to review the list of recommended projects; particularly the recommended local- and regional- priority corridor projects. Regional priority projects will need the support of, and coordination between, multiple jurisdictions to ensure connectivity and consistency in design treatments. Local cities can adopt this ATP by resolution, reference the ATP by ordinance, incorporate recommendations into their own long-range planning efforts (such as thoroughfare plans and comprehensive plans), and include specific projects in their capital improvement programs (CIPs).

Implementing agencies will need to undertake more refined assessment and design prior to selection of a bikeway type, sidewalk design, and corridor. This process should consider the target user; roadway context (rural, suburban, or urban); constraints (available right-of-way); overall project scope (resurfacing, reconstruction, new construction); traffic volumes and speed; potential conflict zones (driveways, parking, intersection); and other considerations that are important to a particular community. The Bikeway Selection Guide (2019) by the USDOT and FHWA provides guidance on identifying corridors, selecting bikeways, and how to work through design challenges when the ideal bikeway type is not feasible.

[69] The Waco MPO can assist cities and advocacy groups with forwarding the planning, education, and outreach recommendations included in this plan.

8.3 Potential Funding Sources

The projects recommended in this ATP will require significant commitment of federal, state, and local dollars. In many instances, bicycle/pedestrian projects have to compete with other transportation projects for the same funding. Local municipalities have traditionally relied on limited general fund dollars to pay for bicycle and pedestrian improvement projects. Revenue generated from Public Improvement Districts and Tax Increment Financing Zones; Community Development Block Grants; municipal bonds; and impact fees, are additional ways that cities can fund public improvements (such as bikeways, sidewalks, and intersection improvements). Grants are another way to leverage local dollars. Federal and state agencies such as the Federal Highway Administration, National Park Service, the Texas Parks and Wildlife Department, and TxDOT, all offer competitive grants for which bicycle and pedestrian improvement projects are eligible. Examples include the Federal Land Access Program (FLAP), the Transportation Alternative Set Aside (TASA) program[70], the Highway Safety Improvement Program (HSIP), and the Safe Routes to School (SRTS) program. Almost always, cities must contribute a local match (such as 10% or 20% of the project cost). Organizations such as America Walks and People for Bikes also offer small grant opportunities for community-led projects. Coordination and collaboration between different disciplines (such as planning, transportation/traffic, engineering, parks and recreation, public health, and local advocacy groups) is the best way to take advantage of the various funding opportunities that are available.

8.4 Tracking and Evaluating Progress

The Waco MPO will evaluate progress toward meeting the objectives and implementing the recommendations outlined in this plan. This will include tracking the construction of new and improved bicycle and pedestrian infrastructure within McLennan County (especially priority projects), as well as the other categories of recommendations described in the plan.

The following indicators may be used to measure progress:

- Non-motorized access to destinations and employment centers, including percent of EJ-protected communities served by active transportation and transit travel modes
- Sidewalk and bikeway inventory, including gap analysis
- Percent completion of regional- and local-priority projects
- Crash data for bicycle- and pedestrian-involved accidents
- Bicycle and pedestrian counts

8.5 Plan Updates

This Active Transportation Plan should be updated regularly to ensure that it accurately reflects the current needs of the community and is consistent with other long-range regional transportation planning efforts. Active transportation modes should integrate with public transit, micro-mobility, shared mobility, connected and automated vehicles, and mobility-as-a-service transportation options. These technologies are rapidly evolving and have the potential to greatly impact bicyclists and pedestrians.

For future iterations of this plan it will be helpful to collect additional data. This can include aggregate data from shared mobility/micro-mobility programs; bicycle and pedestrian counts (manual or automated); trip data from activity tracker apps and wearable devices; and pedestrian and bicycle audits and inventories.

[70] MPOs that are not designated as Transportation Management Areas (TMAs) do not receive transportation alternative programs set aside funds (Category 9) from TxDOT. Instead, cities within the Waco MPO region need to submit applications to TxDOT as part of a competitive call-for-projects.

Additional data will better quantify the extent and condition of the existing active transportation network and user demand, and help to more accurately track progress, measure impacts, and evaluate success.

Appendix A: 2017 Bicycle and Pedestrian Survey Analysis Report

Waco MPO Active Transportation Plan
2017 Bicycle and Pedestrian Survey Analysis Report

Survey Purpose

During the spring of 2017, Waco MPO staff conducted an online survey of residents of McLennan County, Texas. The purpose of the survey was to learn about the bicycle and pedestrian experience in Waco and McLennan County, and to ask respondents about their top concerns and priorities for future investments in active transportation modes. The survey results were used by the MPO as form of public input for the Active Transportation Plan process, and for informing recommendations to improve bicycle/pedestrian connectivity in McLennan County.

Methodology

The survey instrument contained a total of 25 questions: 6 general transportation questions, 8 questions specific to the bicycle mode, 5 questions specific to the pedestrian mode (walking, or rolling such as using a wheelchair or stroller), and 6 questions identifying the socio-economic characteristics of the respondent. 23 of the questions were either multiple choice or yes/no format, while 2 were open-ended format: 1 for each mode being discussed. None of the questions were mandatory. Survey questions are attached to the end of this summary report. The survey also asked respondents to provide their contact information at the end. This information was kept separate from their responses in order to maintain the confidentiality of individuals.

The survey was conducted via Survey Monkey between April 13, 2017 and May 4, 2017. Links to the survey were emailed to interested stakeholders, the Waco MPO email list, and featured on the Waco MPO and City of Waco websites (www.waco-texas.com). In addition to the online survey, paper surveys were also distributed as requested. Advertising of the survey included the following outlets:

- Waco MPO email to interested stakeholders
- Act Locally Waco website and weekly newsletter
- City of Waco facebook page
- Media Release on March 22, 2017
- Active Transportation Plan Public Gathering on March 23, 2017 (public meeting)
- Presentation and distribution of surveys at the North East Riverside Neighborhood Association Meeting on April 13, 2017
- Presentation at the Live Well Waco Coalition Meeting on April 27, 2017

The survey was not a scientific opinion survey. Because it was online and available to everyone, the respondents were self-selected and primarily represent individuals who have a specific interest in bicycle and pedestrian modes. This survey instrument was used to supplement the efforts of the Waco MPO to solicit public input into the development of the Active Transportation Plan. As such, this survey instrument does not represent a scientific sample of the population of McLennan County.

The survey was intended for McLennan County residents, however, due to the open nature of online surveys, MPO staff could not prohibit non-residents from participating in the survey. Question 23 asked respondents to self-identify their zip code of residence to address this issue. While no individuals identified a zip code outside of McLennan County, 45 individuals (19.9%) did not identify any zip code and therefore could represent responses from outside of the county.

Response Overview

A total of 226 persons responded to the survey. Certain questions permitted multiple responses, therefore the total number of responses varied per question. Questions 20 through 25 requested socio-

economic information from the respondents in order to compare the similarity of survey respondents to the population of McLennan County as a whole. Non-response to the socio-economic questions ranged from a low of 19.9% for zip code of residence to a high of 24.8% for total family income. These percentages are within a normal range for similar surveys conducted for other metropolitan areas. This report is a summary of the survey findings, and it does not provide analysis of each survey question.

Characteristics of Respondents

The online survey was intended as a vehicle for interested parties to provide input into the ATP planning process. While the survey was not an official public opinion poll, it is still important to understand the general characteristics of survey respondents, and compare this to overall McLennan County demographics. Generally there was a wide range of participation across all reported demographics.

The following sections compare survey responses to McLennan County demographic statistics for geography, family income, age, gender, and household income.

Geography

Three zip codes from North and Central Waco (76707, 76708, 76710) dominated survey responses with 59.7% of those who answered. Respondents from zip code 76712 (representing West Waco and Woodway) composed 12.2% of those who answered. All other zip codes combined were only 23.2% of persons answering the questions. Several rural zip codes, such as 76691 (West), 76664 (Mart) or 76638 (Crawford), had no responses. Note that 19.9% of respondents did not provide a residential zip code. Table 1 compares the response rate for the most frequently reported zip codes to the percent of county population.

Table 1 – Zip Code Response Compared to Census Population

Zip Code	Percent of Responses	Percent of County Population[1]
76707	16.6%	6.8%
76708	21.5%	10.8%
76710	21.5%	9.6%
76712	12.2%	10.6%
All other zip codes	23.2%	62.2%

[1]2011-2015 American Community Survey – US Department of Commerce; Bureau of the Census

Family Income

58.2% of survey respondents reported a family income of $70,000 per year or greater. By comparison, the US Census reports that the same income groups composed 38.3% of McLennan County families. 18.2% of survey respondents reported a family income of less than $40,000 per year, as compared to 37.3% of McLennan County families. Table 2 compares survey responses on family income to the US Census rates for McLennan County. It's notable that family income had the highest non-response rate of all socio-economic questions (24.8% of total responses).

Table 2 –Annual Family Income Compared to US Census

Income	Percent of Survey Responses	Percent of McLennan County Families[1]
Less than $20,000	5.3%	14.6%
$20,000 to $39,999	12.9%	22.7%
$40,000 to $69,999	23.5%	24.5%
$70,000 to $99,999	21.8%	17.0%
$100,000 or greater	36.5%	21.3%

[1]2011-2015 American Community Survey – US Department of Commerce; Bureau of the Census

Age

The survey did not solicit responses from county residents under the age of 18, and no responses were received from this demographic. Table 3 compares survey responses on age to the US Census rates for McLennan County. In general, respondents 18-24 and 65 or older were under represented compared to county rates, and respondents 25 to 39 were over represented. There was a 21.7% non-response rate for this question.

Table 3 – Age of Respondents Compared to US Census[1]

Age	Percent of Responses	Percent of County[2]
18 to 24	7.3%	19.9%
25 to 39	44.6%	24.9%
40 to 54	24.9%	23.0%
55 to 64	18.1%	14.8%
65 or older	5.1%	17.4%

[1]Population Universe = Persons 18 years of age or older
[2]2011-2015 American Community Survey – US Department of Commerce; Bureau of the Census

Gender

48.2% of survey respondents were female, as compared to 51.3% of McLennan County. 29.2% were male, as compared to 48.7% of the county. There was a 22.6% non-response rate for this question.

Table 4 – Gender of Respondents Compared to US Census

Gender	Percent of Responses	Percent of County[1]
Male	29.2%	48.7%
Female	48.2%	51.3%

[1] 2011-2015 American Community Survey – US Department of Commerce; Bureau of the Census

Household Size

Survey respondents reported a wide range of household size, with approximately 72.8% reporting a 2-4 person household size (compared to 63.3% of McLennan County residents). There was a 21.7% non-response rate for this question. 1 person and 5 person households were underrepresented as compared to county rates.

Table 5 – Survey Reported Household Size Compared to US Census

Size of Household	Percent of Responses	Percent of County Households[1]
1 person	14.1%	26.5%
2 people	35.0%	33.9%
3 people	16.9%	15.9%
4 people	20.9%	13.5%
5 people	9.6%	6.0%
6 or more people	3.4%	4.3%

[1]2011-2015 American Community Survey – US Department of Commerce; Bureau of the Census

General Transportation Characteristics

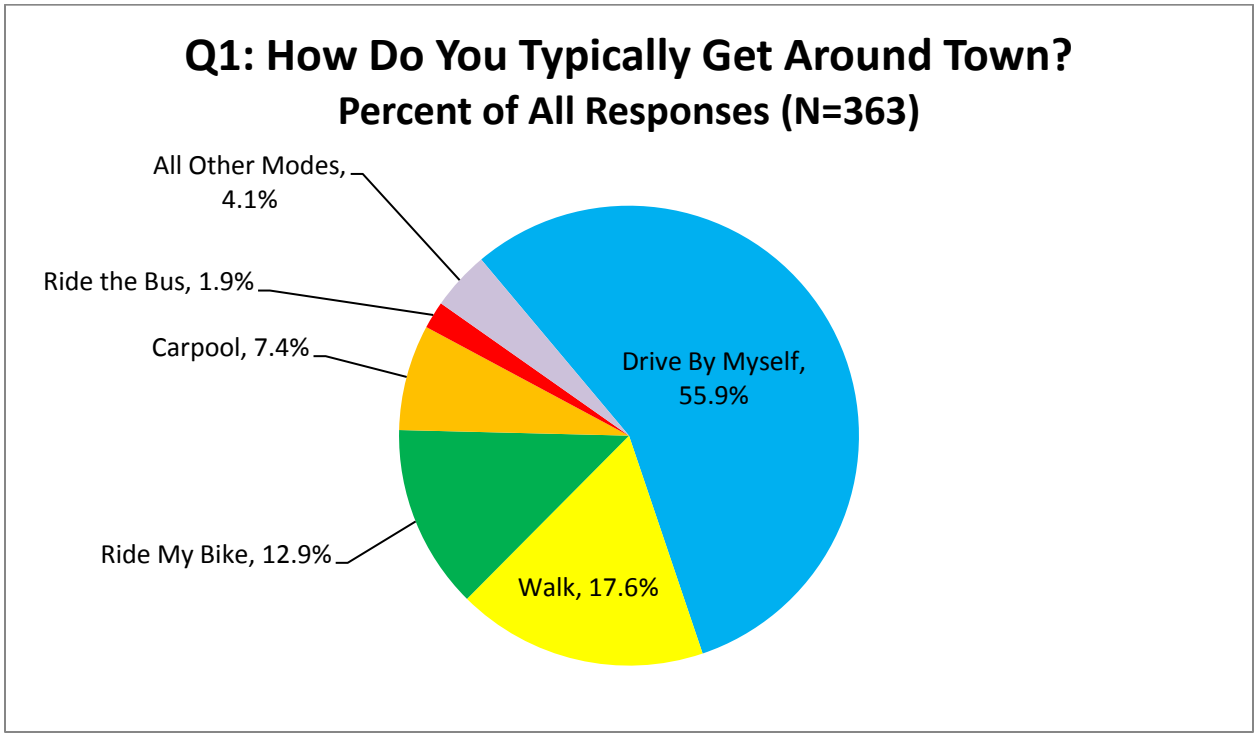
Current Mode Choice

Survey respondents were asked to select the transportation mode(s) typically utilized for transportation purposes. Since mode choice can vary by type of trip (e.g., work, school, running errands), respondents were able to make multiple selections. Consistent with earlier surveys, driving alone was the most common transportation mode with nearly 90% of all persons selecting this mode.

Because this survey is focused on active transportation modes (biking, walking, and rolling), it's not surprising that walking/rolling and riding a bike were selected as the mode of choice by 28.3% and 20.8% of individuals, respectively. In comparison, the US Census reports that 1.8% of individuals in McLennan County commute by walking, and 0.3% commute by bicycle (2011-2015 American Community Survey; US Dept. of Commerce, Bureau of the Census).

It's important to note that the US Census is specifically asking individuals to report their means of transportation to work, while this survey asked respondents to consider all types of trips. In addition to commuting to work, bicycling and walking/rolling could be the transportation mode of choice for shorter trips, such as from home to the park, or from office to restaurant. However, even with the increased representation of individuals that regularly bike and walk/roll for transportation, driving alone still significantly outnumbers other mode choices, as summarized in Chart 1 below.

Chart 1: Current Mode Choice



Preferred Mode Choice

In contrast to Question 1, which asks respondents to report their typical transportation mode, Question 2 asked respondents to select their *preferred* mode (multiple selections were permitted). Comparing results from Question 1 and 2, Drive By Myself decreased from 56% to 27%, suggesting that some respondents would like to leave their car at home and use other means of transportation. Drive By Myself, Walk, and Ride My Bike were fairly evenly distributed and comprise over 75% of all responses.

Ride the Bus also increased from 1.9% in Question 1 to 8.9% in Question 2. Although this was a notable percentage increase, the total number of persons selecting Ride the Bus was small (7 persons compared to 38 persons). Question 2 was not able to capture mode-split (for example, walk to a transit stop, ride transit, walk to destination); however, it can be inferred that some of the respondents that selected Ride the Bus for Question 2 would also prefer to walk/roll or ride their bike on either end of their transit trip.

The fairly even split between Walk, Ride My Bike and Drive By Myself also suggests that even though walking/rolling and biking are preferred modes of transportation in some situations, driving solo is still necessary and desired in other situations. Therefore it's important to provide adequate infrastructure and services for walking/rolling, biking, public transportation, and driving, so people have the option to choose between modes depending on their specific travel needs.

See Charts 2 for results of Question 2 and Chart 3 for the percent change between Questions 1 and 2.

Chart 2: Preferred Mode Choice

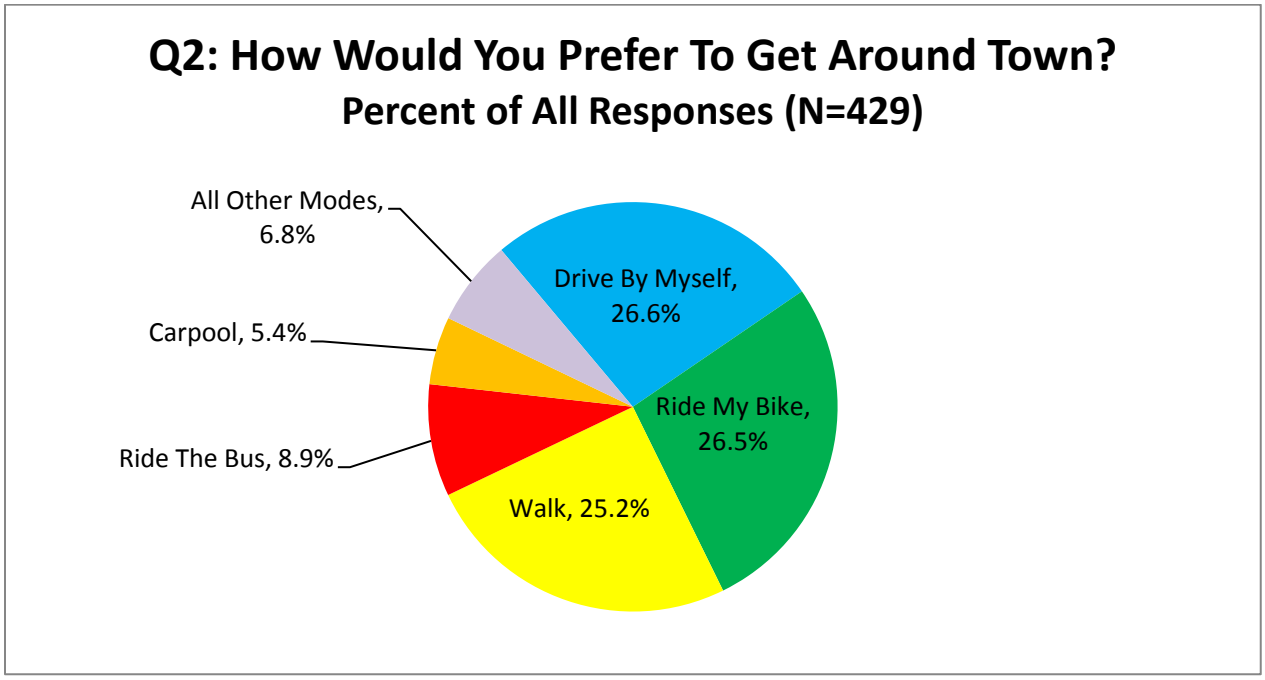
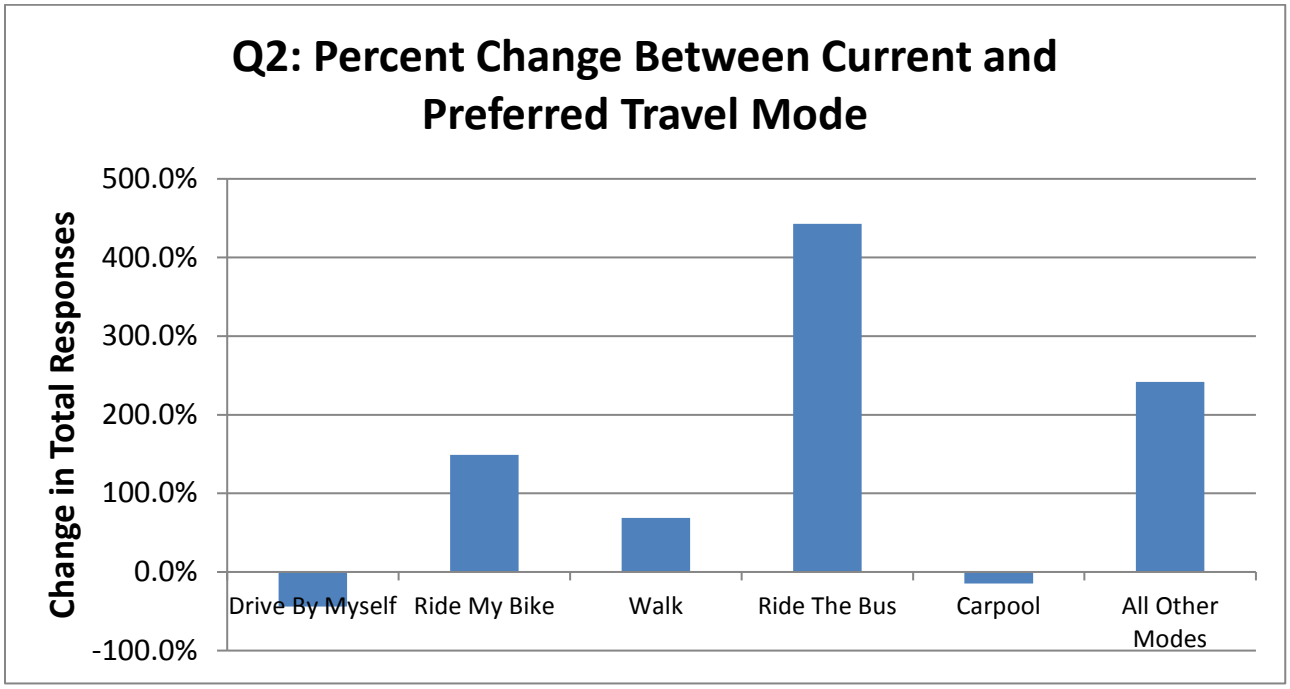


Chart 3: Percent Change between Current and Preferred Travel Mode



Bicycle Usage

Questions 7 through 14 asked survey respondents to describe their experience and preferences for bicycling in McLennan County.

Bike Riding Frequency and Experience Level

Question 7 asked how often you ride a bike. Over half of respondents (61.1%) selected Less than 12 times per year, Never, or skipped the question (no response). Approximately 30% of respondents selected At least once per week, or 1 to 4 times per month, and 10% of respondents indicated they ride daily. See Chart 4 for Question 7 results.

Question 7 results are generally consistent with the responses for Question 8. In Question 8, approximately 39% of respondents described themselves as recreational riders, mountain bikers, or competitive cyclists; approximately 8% as casual riders; approximately 7% as commuters; and the rest (42.5%) as someone who rarely rides, "Other" or no response. Approximately 26% of respondents skipped this question. See Chart 5 for Question 8 results.

For the purposes of this survey, the different types of cyclists mentioned above, were grouped by assumed experience levels. Experienced riders include commuters, mountain bikers, and competitive cyclists and comprise approximately 12% of respondents. Moderately Experienced cyclists are recreational riders and comprise approximately 33%. The majority of respondents (approximately 55%) can be classified as Novice cyclists, which include casual riders, those who rarely ride, or those who did not respond to the question. See Chart 6.

Chart 4: Biking Frequency

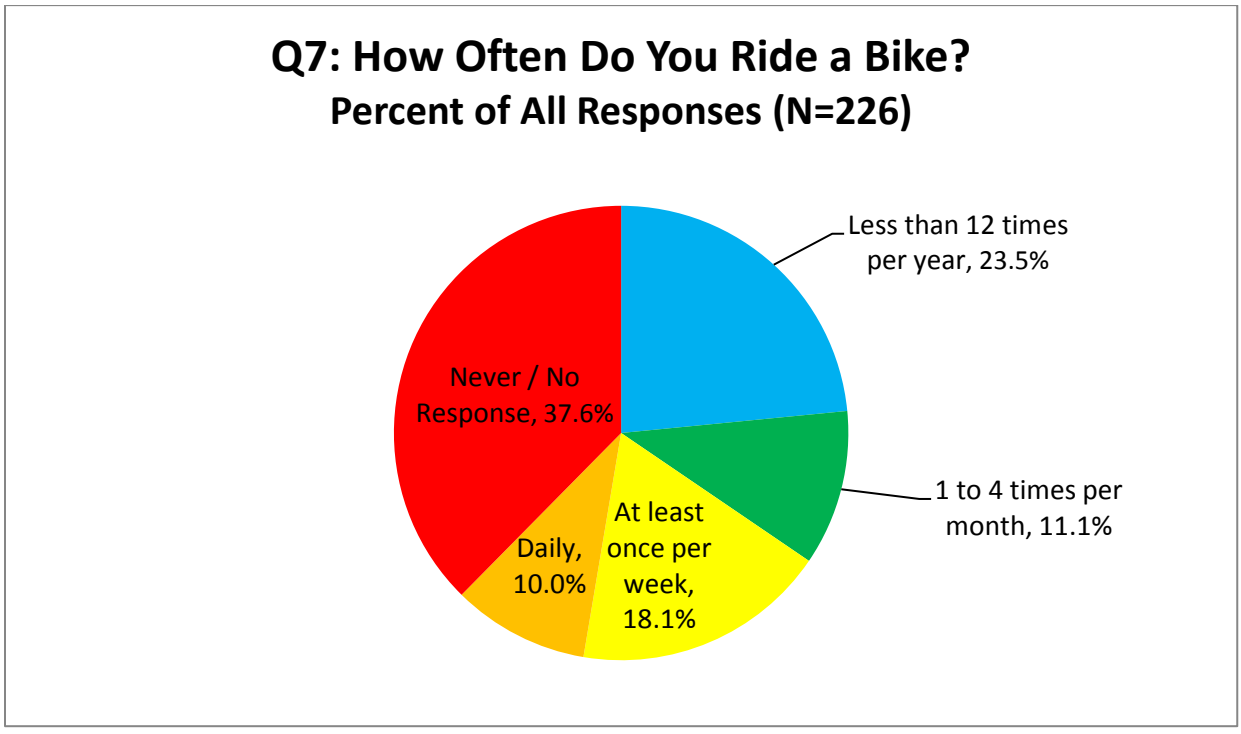


Chart 5: Bicyclist Characteristics

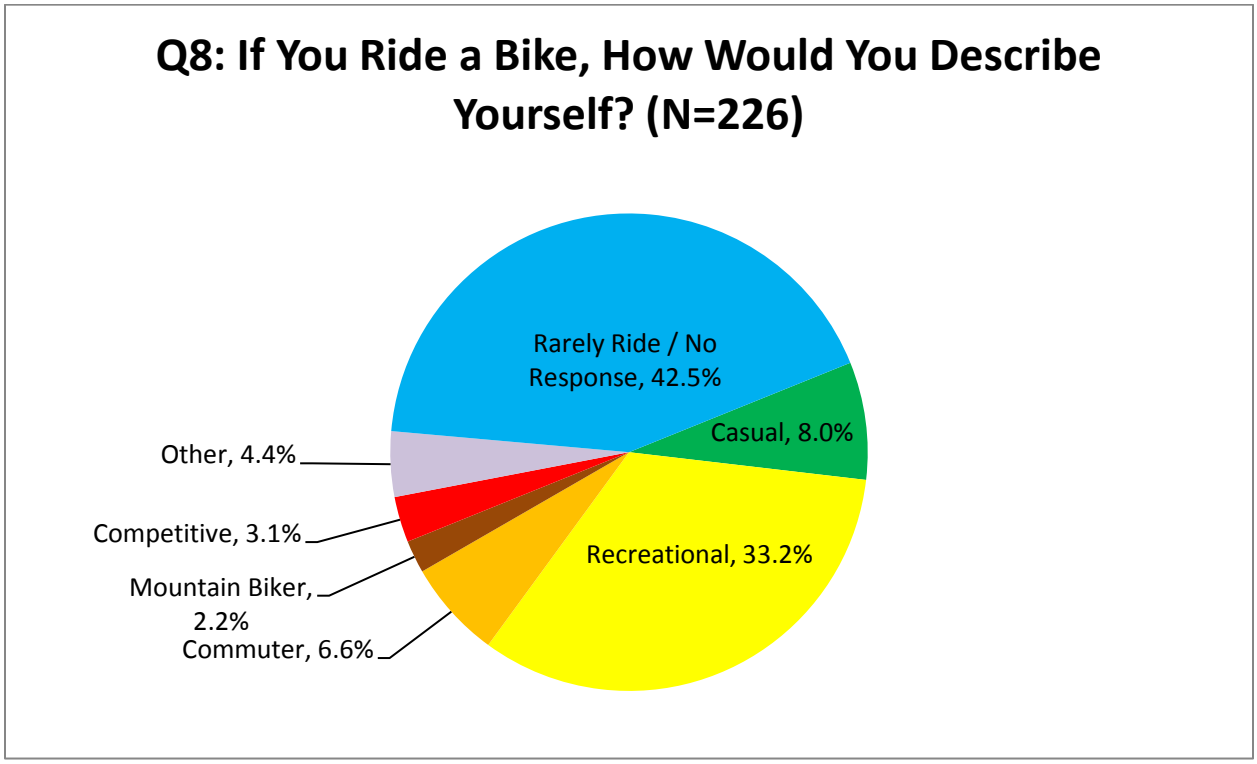


Chart 6: Bicyclist Experience Level

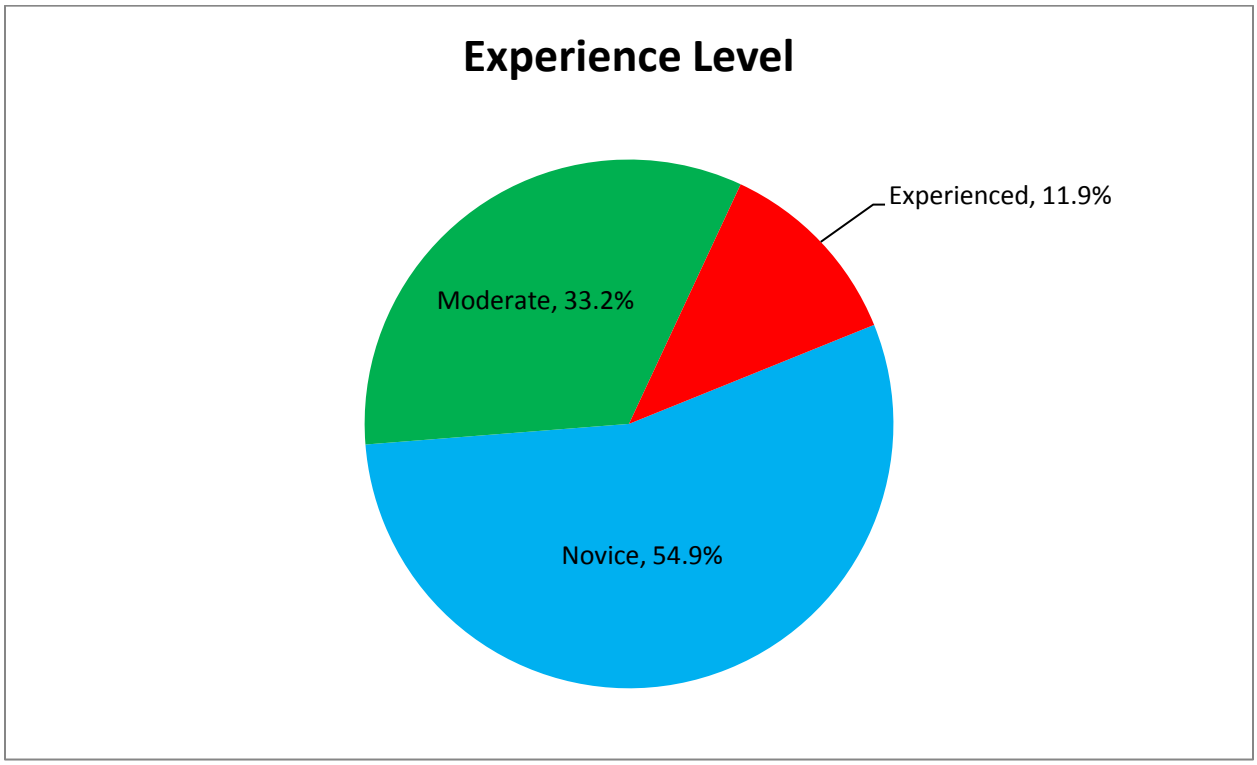
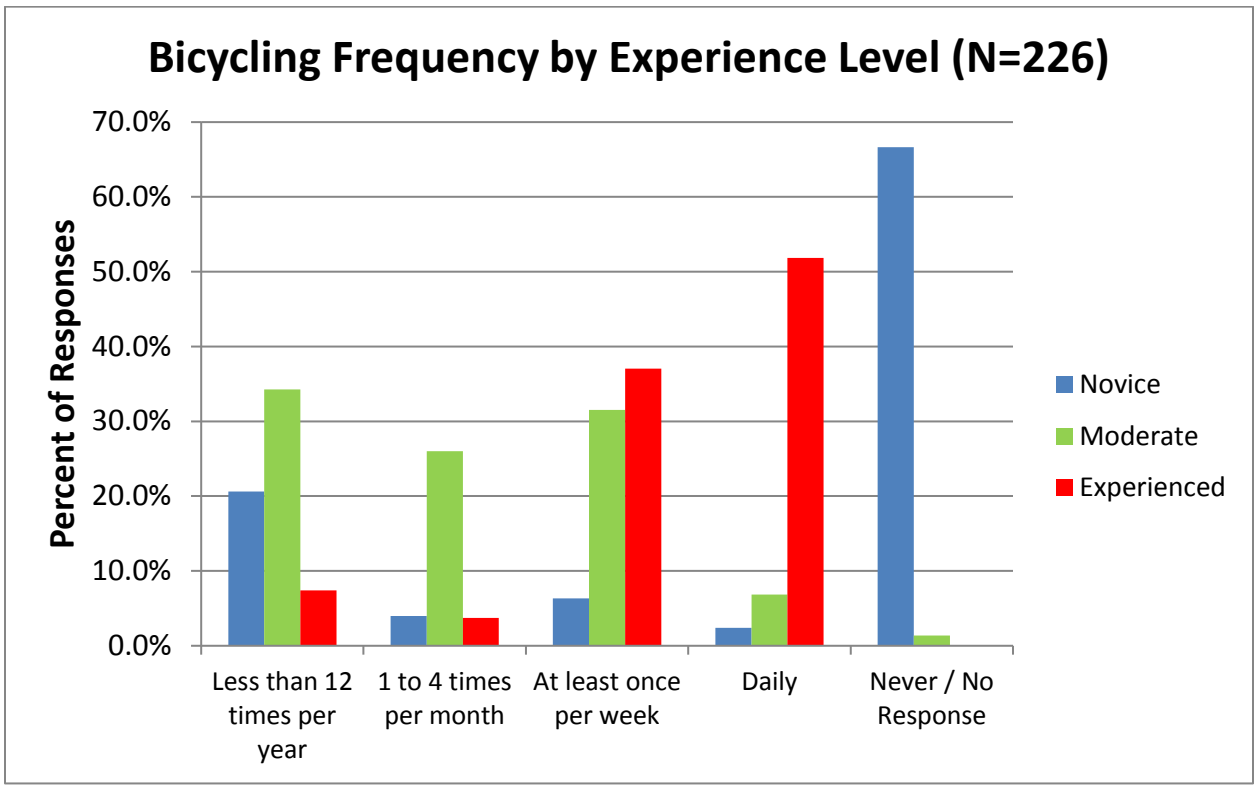


Chart 7 compares bicycling frequency and experience level. There is a clear relationship between experience level and riding frequency. Novice riders are significantly more likely to never ride or rarely ride. Experienced cyclists are significantly more likely to ride daily or once a week, and moderate riders are more likely to ride a few times a month or occasionally throughout the year.

Chart 7: Bicycling Frequency by Experience Level



Bicycling Preferences

Questions 10 through 12 sought to understand comfort level and preferences for different bicycle facilities (i.e., infrastructure), as well as the circumstances that prevent people from riding more often (see Charts 8 and 9). In Question 10, respondents were asked to identify biking challenges by choosing from a list of 13 responses and "Other" (fill in the blank). Multiple selections were permitted for Question 10. The top four responses included: no bike lanes or bike paths; high traffic volume or speed; poor pavement or lighting; and aggressive drivers. These responses point to a lack of infrastructure to support bicycling, and lack of driver awareness for bicyclists and how to share the road. The "Other" category was the fifth most selected reason for not riding a bike more often. Responses were varied but include: being afraid to bike (interaction with cars, not enough separation between cars and bikes, drivers throwing objects, inattentive drivers); loose aggressive dogs; climate (too hot); bike lanes/facilities not safe enough to ride with children; age; and bicycling not being a practical choice for where people want to go.

Question 12 asked respondents to select the top three factors that would make them feel more comfortable riding a bike. The top four responses mirrored those of Question 12: presence of bike lanes or bike paths; low traffic volume or speed; good pavement or lighting; and respectful drivers. The "Other" category was again the fifth most selected of factors that would make someone more comfortable to bike. "Other" responses were generally focused on knowing safe routes to ride (vehicle speed, driver behavior, safe neighborhoods).

Amenities (including bike racks) did not make the top five responses for either Question 10 or 12. It's likely that this is because the most pressing need is to expand the bicycle network, and improve bike culture and driver awareness. Once these needs are addressed, end-of-trip amenities may become a higher priority.

Chart 8: Factors that Prevent Bike Riding

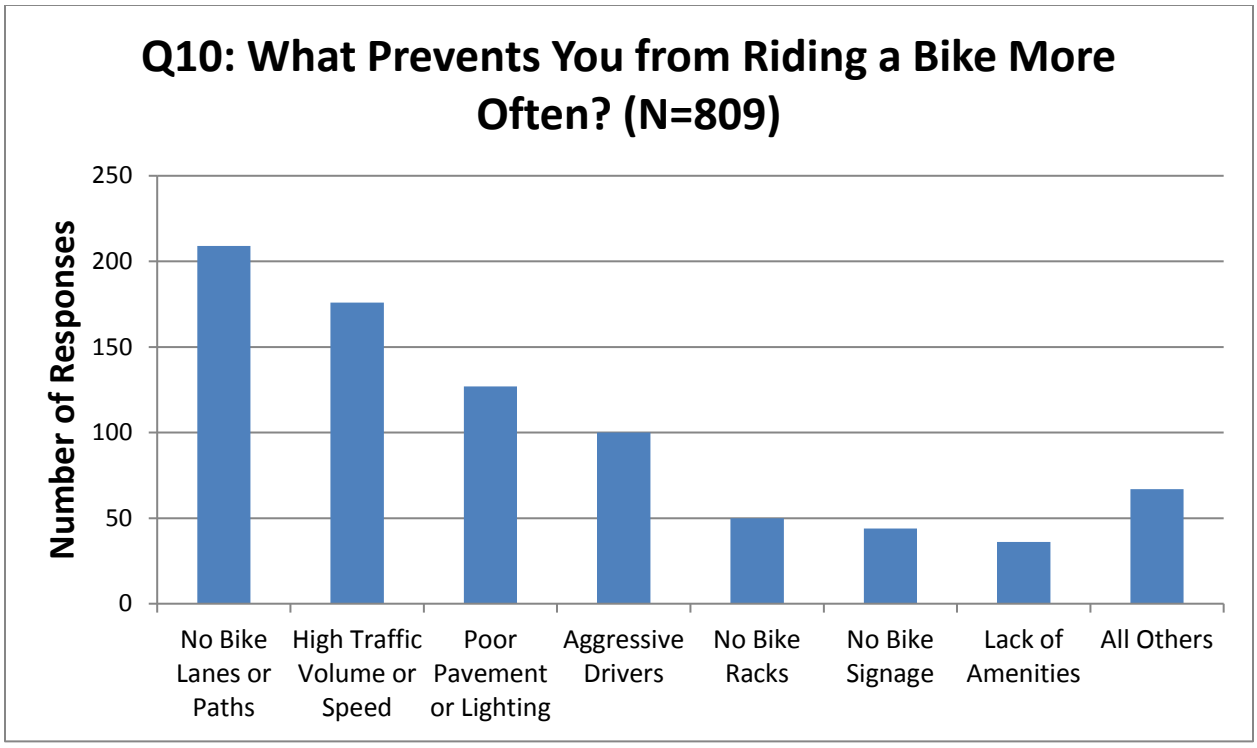
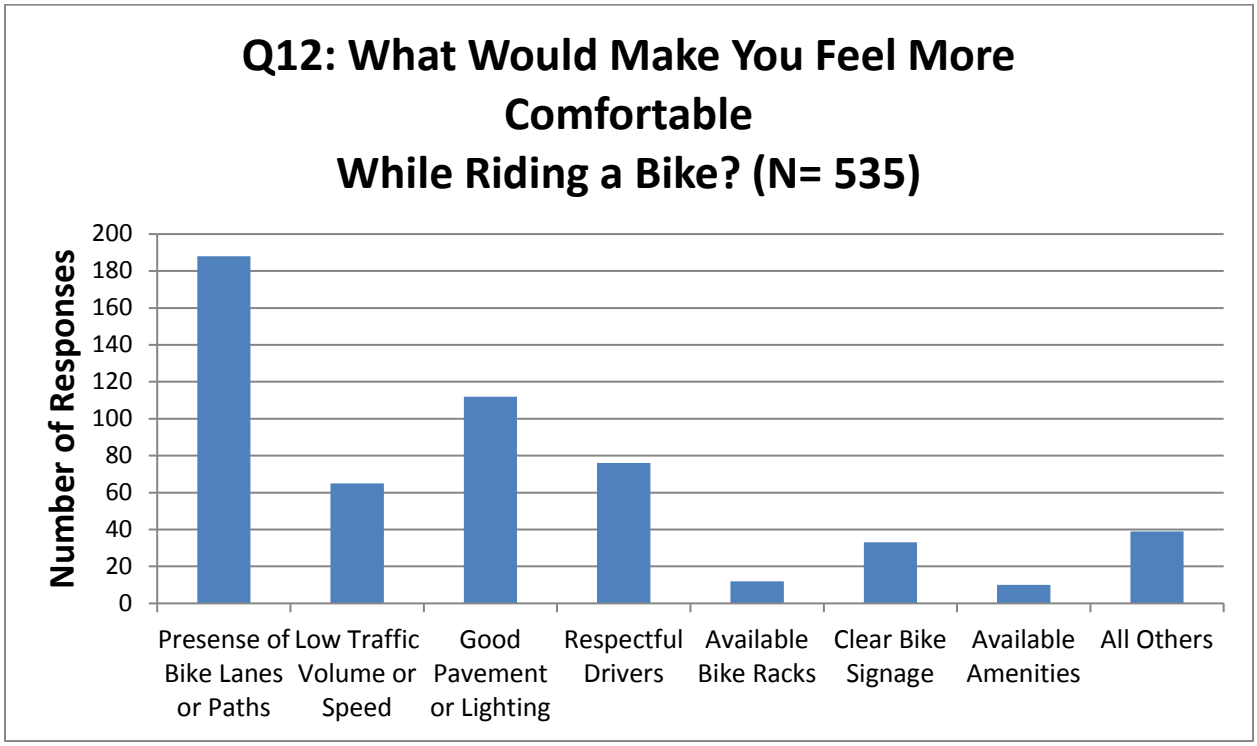


Chart 9: How to Improve Comfort Level for Bike Riding



Question 11 provided photos of different bike facility types and asked respondents to select all facilities that they would feel comfortable using (see Attachment A-1 for photos). Chart 10 shows the results from Question 11. Bicycle Path (which offers complete separation from vehicles) was selected most frequently (n=154), and Shared Lane (which offers no separation from vehicles) was selected the least frequently (n=55). Generally this trend holds true for all bicycle facility types – the more separation from vehicles, the more frequently it was selected. However, there is one exception. Bicycle Boulevard was selected more frequently than Conventional Bike Lane (n=97 and n=76, respectively). A bike lane usually consists of a 5 ft. to 6 ft. lane separated from motor vehicle traffic by a painted lane marking. Bike lanes can be located on different classifications of roadway (local, collector), and motor vehicle speed and traffic volume can vary. Bike boulevards do not separate bikes from motor vehicle traffic, but are usually located on streets with low motor vehicle traffic volumes and speeds, and are designed to give bicycle travel the priority.

Chart 11 compares bike facility preferences to rider experience level. The responses indicate that novice and moderate riders desire more physical separation from motor vehicle traffic. Experienced riders will accept any facility type, although there is a slight preference for bike lanes, which allow experienced cyclists to travel near the speed of motor vehicle traffic, as compared to an off-street bike path that is shared with pedestrians and limits bike speeds.

The responses to Question 11 indicate that the most important factors for most bicycle riders are separation from vehicular traffic; lower vehicle volume/speed; and roadways that are designed with bikes in mind, or that give bike the priority. When considering projects for McLennan County, projects that accommodate novice riders may be a higher priority (initially) due to the larger number of novice riders, and a facility designed for the novice rider will likely appeal to, and be used by, moderate and experienced riders as well. In contrast, more experienced riders are generally comfortable with all facility types, and can benefit indirectly from an increase in novice riders in the community. An overall increase in bike ridership will help to promote bike culture and increase driver awareness.

Chart 10: Comfort Level for Different Bike Facility Types

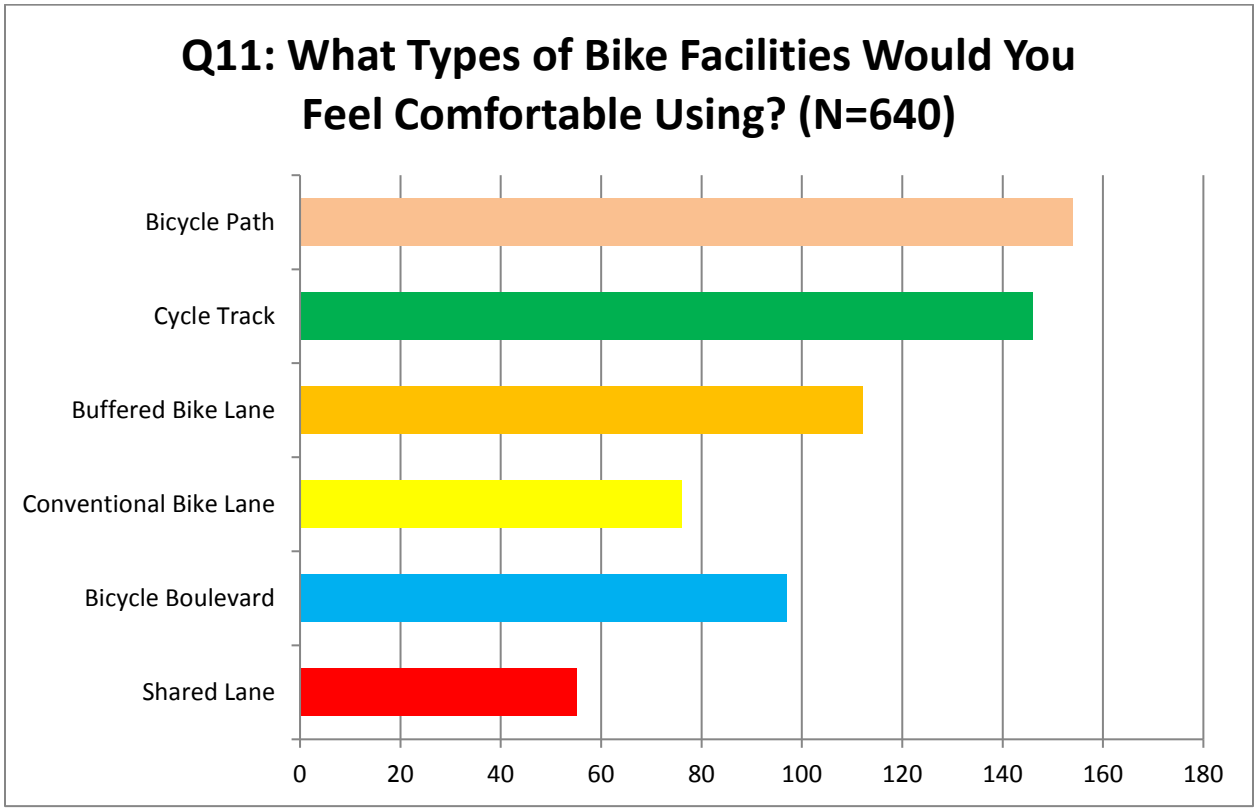
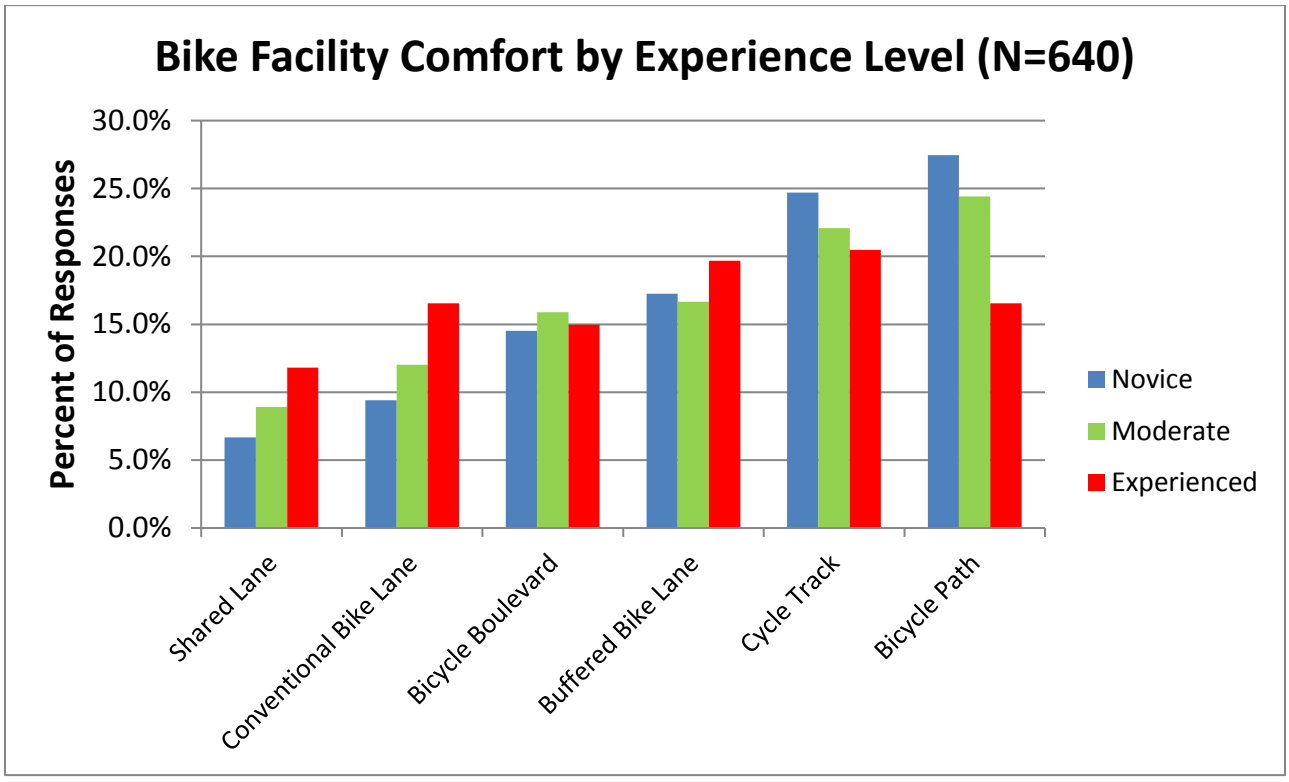


Chart 11: Comfort Level for Different Bike Facility Types



Pedestrian Activity

Questions 15 through 19 asked respondents to describe their experience as a pedestrian in Waco. Pedestrian experience includes walking and rolling (using a wheelchair or stroller or other non-bicycle wheeled device that would typically travel on a sidewalk). For the purpose of this survey, respondents were asked to focus on situations when they used walking/rolling as their travel mode to get to destinations around town (instead of driving, bicycling, or taking the bus).

Question 15 sought to understand how frequently walking/rolling was used as a means of transportation (and not merely for exercise or recreation). See Chart 12. Approximately 13% responded Daily, 20% Once per week, and 46% Never/no response. Respondents who answered Daily may include students who walk to school from home or people that live within walking distance of their job. It may also represent short trips, such as walking from a workplace to a lunch destination. The high number of Never/no response may be related to the lack of pedestrian facilities (sidewalks, crosswalks) or poor condition of pedestrian connections between where people live or work and their desired destination.

Chart 12: Walking/Rolling Frequency

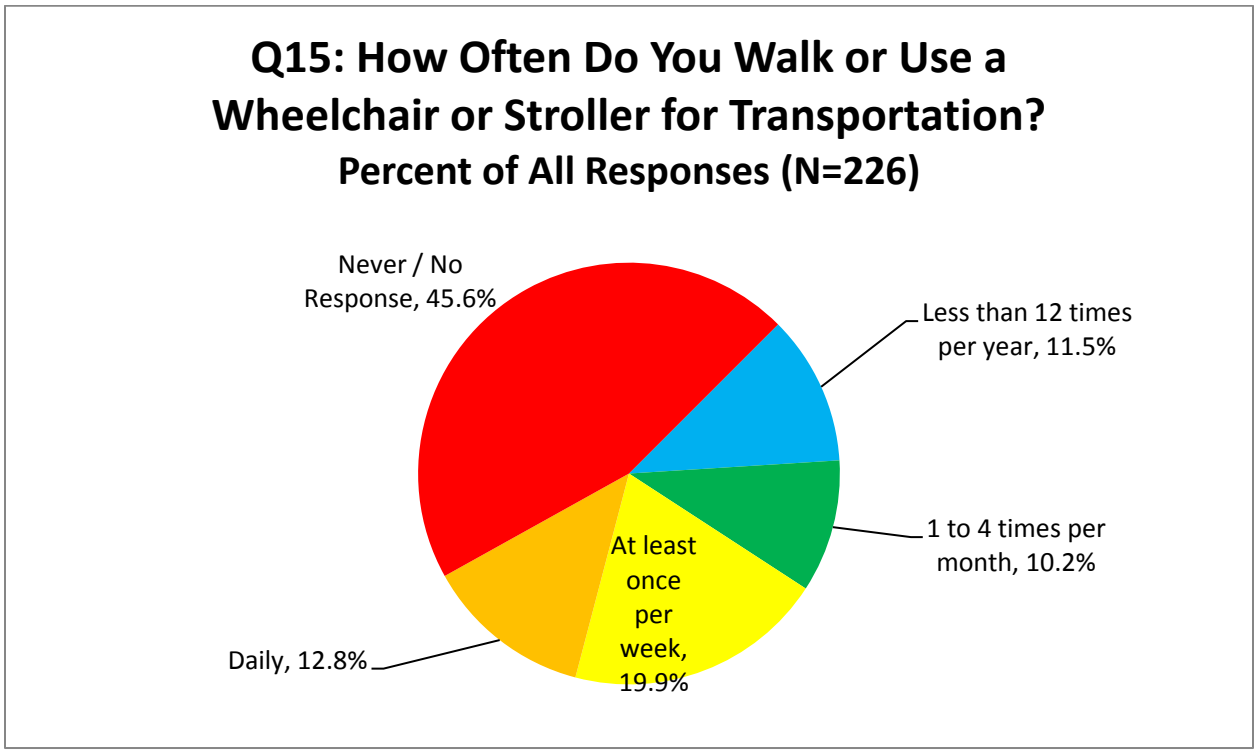
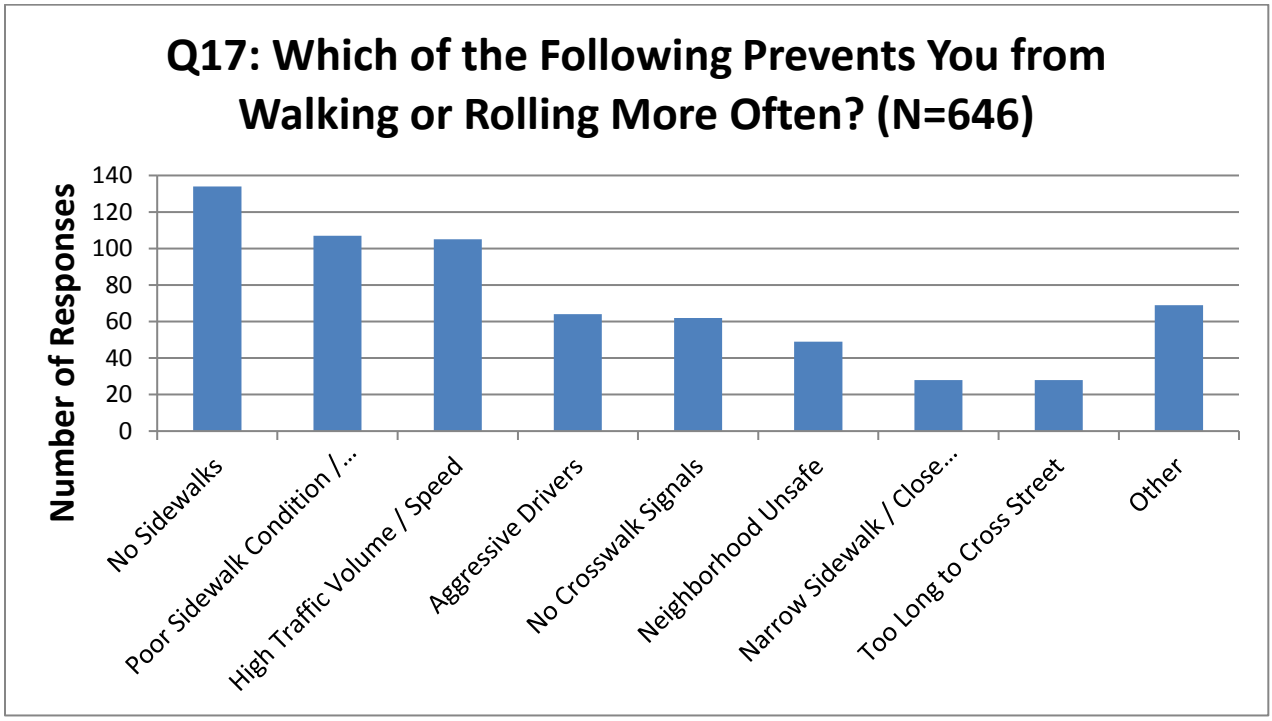


Chart 13: Factors that Prevent Walking/Rolling

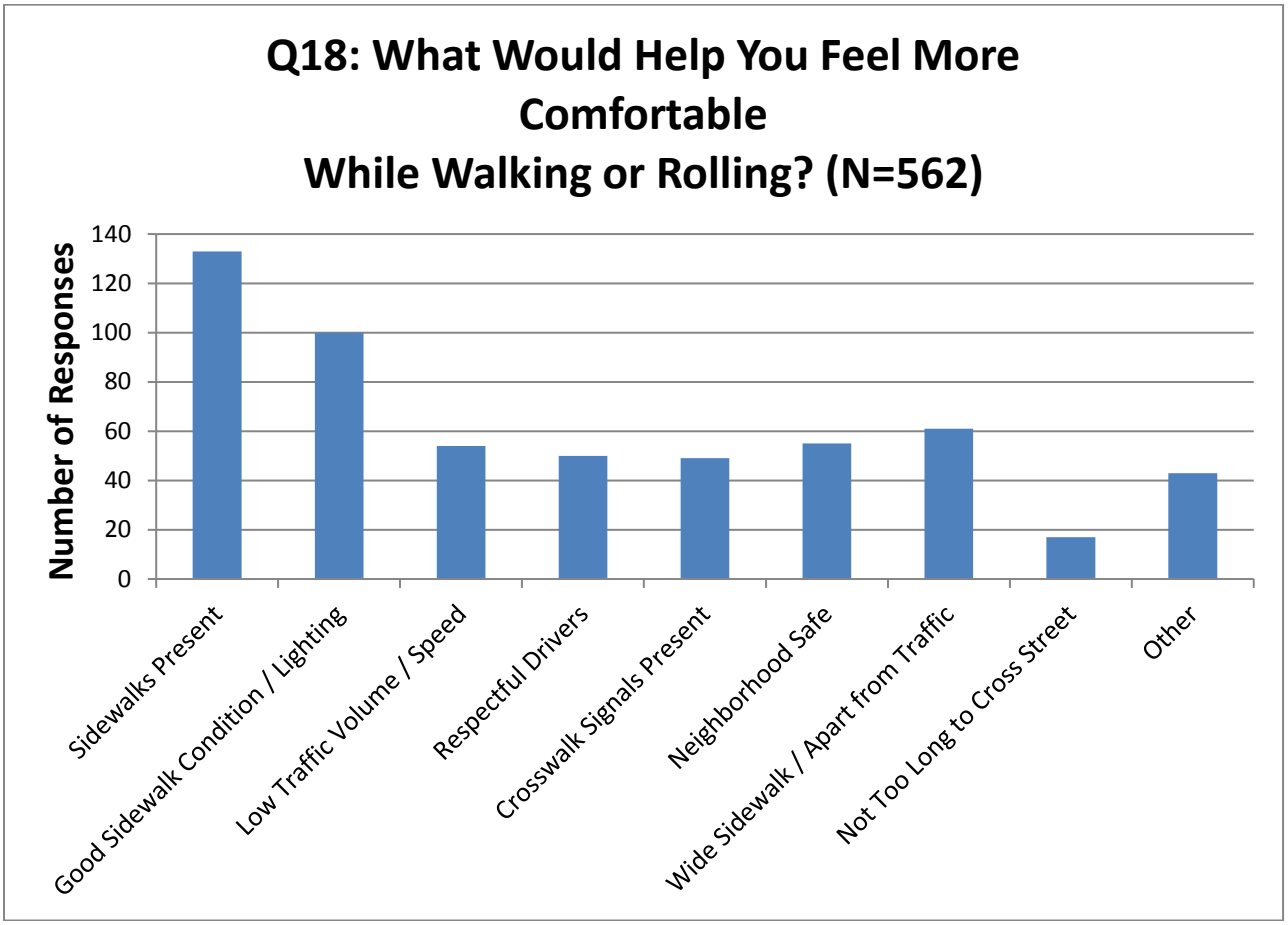


Questions 17 and 18 sought to understand the circumstances that prevent people from walking/rolling more often, and what would make them more comfortable walking/rolling (see Charts 13 and 14). In Question 17, respondents were asked to identify challenges for walking/rolling by choosing from a list of 13 responses and "Other" (fill in the blank). Respondents were allowed multiple selections. The four most frequently selected answers included No Sidewalks, Poor Sidewalk Condition/Poor Lighting, High Traffic Volume/Speed, and Other. Those who answered "Other" frequently indicated that potential destinations are too far away from their home to make it practical for walking. The presence of loose and aggressive dogs was also a common answer.

Question 18 flipped the question, and asked respondents to tell us what would make them feel more comfortable walking/rolling. Respondents were asked to limit their selection to their top three choices. The top three selected answers mirrored the responses to Question 17: Presence of Sidewalks, Good Sidewalk Condition/Lighting, and Low Traffic Volume/Speed. The fourth most selected answer was presence of a wide sidewalk that is separated from traffic. The "Other" responses frequently mentioned safety concerns, such as more police patrols and better animal control.

Similar to the bicycling responses, the top walking/rolling concerns are the basic lack of pedestrian infrastructure. If more sidewalks were provided, and the sidewalks were maintained in good condition, people would feel more comfortable walking/rolling.

Chart 14: How to Improve Comfort Level for Walking/Rolling

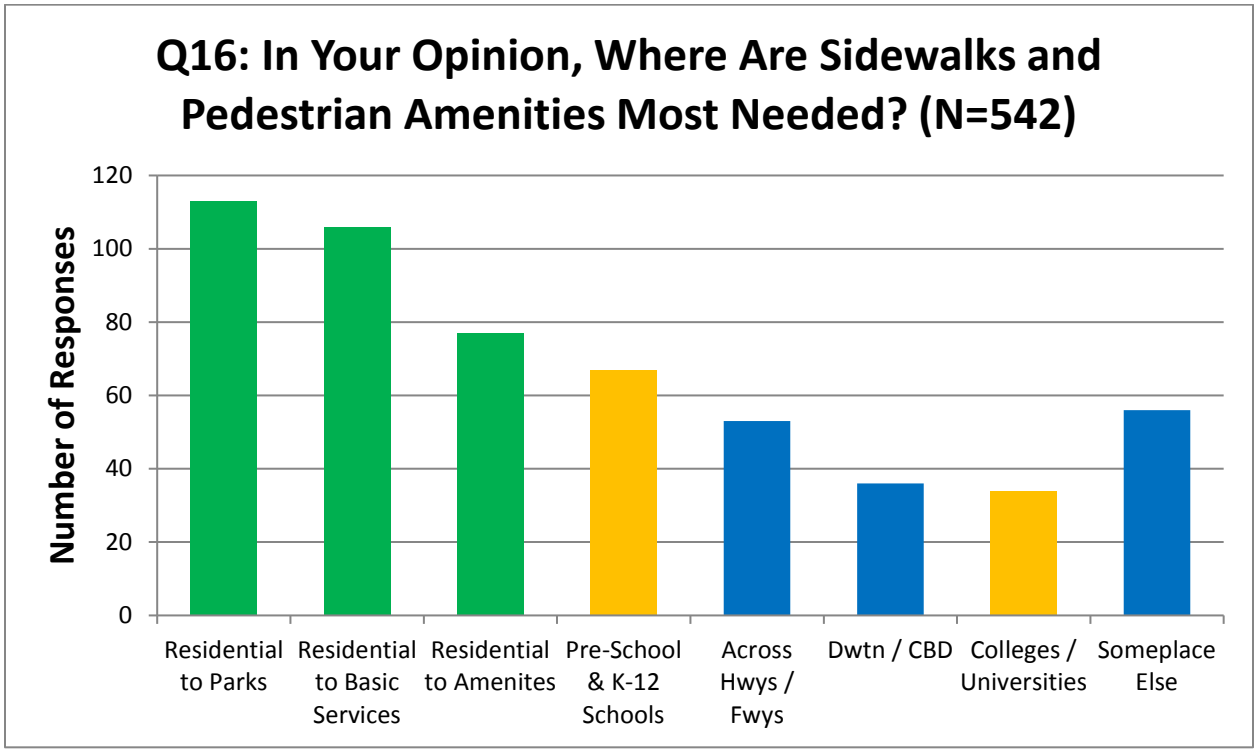


Question 16 asked respondents where they think sidewalks and pedestrian amenities are most needed (up to three selections were permitted). 10 choices were provided, including Other (fill in the blank). The range of choices can be grouped into three categories: connections to/from residential areas; connections to/from schools; and connectivity in downtown areas or in high traffic volume areas (beneath/across freeways and highways; along frontage roads; connecting to bus routes).

The top three selections were all residential connections – to parks, basic services (grocery store, post office, drug store), and amenities (restaurants, shopping, entertainment). See Chart 15. This result suggests that McLennan County and Waco are in line with a national trend of people desiring more walkable neighborhoods. While people still see the value in having a walkable downtown and safe routes to school, they also value pedestrian connections to and from their home.

Improving pedestrian connections in existing, built-out neighborhoods can be challenging. Potential strategies could include: encouraging some commercial uses along arterial corridors (or development nodes) that are within walking distance to neighborhoods; retrofitting existing neighborhood streets to include new sidewalks, repair existing sidewalks, close sidewalk gaps, and/or to improve ADA accommodations at intersections and driveways; updating sidewalk and subdivision ordinances to strengthen requirements for sidewalks in new developments; developing a connectivity index and incorporating this into city ordinances.

Chart 15: Sidewalk Priorities



Conclusion

The ATP survey sought to understand the characteristics of residents interested in active transportation modes, their experience as a bicyclist and pedestrian in McLennan County, and their priorities for future bicycle and pedestrian improvements. Input from survey questions were used to guide the formulation of recommended policies and projects in the Active Transportation Plan.

Generally, responses indicated that while not many people ride bikes or walk/roll as their means of transportation, they are interested in driving less and biking or walking/rolling more. However, the lack of basic bicycle and pedestrian infrastructure and connectivity makes it challenging. New bicycle infrastructure should, at least at first, focus on the novice rider. Pedestrian improvements should, at least at first, focus on connecting residential areas to potential destinations such as parks, basic services, and amenities.

Waco MPO Active Transportation Study

GENERAL TRANSPORTATION QUESTIONS

Your answers should reflect your transportation experience in the Waco Region (McLennan County).

1. How do you typically get around town? (select all that apply)

- [ ] Walk
- [ ] Ride my bike
- [ ] Ride the bus
- [ ] Drive my car/motorcycle by myself
- [ ] Carpool with others
- [ ] Ride my scooter
- [ ] Use ride/car sharing services (e.g., Uber, Lyft, Zipcar)
- [ ] Other (please specify)

2. How would you prefer to get around town? (select all that apply)

- [ ] Walk
- [ ] Ride my bike
- [ ] Ride the bus
- [ ] Drive my car/motorcycle by myself
- [ ] Carpool with others
- [ ] Ride my scooter
- [ ] Use ride/car sharing services (e.g., Uber, Lyft, Zipcar)
- [ ] Other (please specify)

3. Do you typically have a car available for your use? (select one)

- ◯ Yes, I own/lease a car
- ◯ Yes, I have access to someone else's car
- ◯ Yes, I use a car share service such as Zipcar
- ◯ I only have infrequent access to a car
- ◯ No, I do not have access to a car

4. If you do not own/lease a car, what are the reasons? (select all that apply)

- ☐ Not applicable
- ☐ Owning/leasing a car is too expensive
- ☐ Owning/leasing a car is inconvenient
- ☐ Biking, walking, and public transportation meet my transportation needs
- ☐ I'm concerned with the environmental impact
- ☐ Car-sharing and ride-sharing services (e.g., Uber, Lyft, Zipcar) meet my transportation needs
- ☐ Other (please specify)

5. Are you a student? (select one)

- ◯ No
- ◯ Yes, high school student
- ◯ Yes, part time college or graduate student
- ◯ Yes, full time college or graduate student
- ◯ Other (please specify)

6. If you are a parent, do you bike with your school-aged children? (select one)

- ◯ Yes
- ◯ No
- ◯ Not applicable

Waco MPO Active Transportation Study

BICYCLING QUESTIONS

Your answers should reflect your bicycling experience in the Waco Region (McLennan County)

7. How often do you ride a bike? (select one)

- ◯ Daily
- ◯ At least once per week
- ◯ 1-4 times per month
- ◯ Less than a dozen times per year
- ◯ I do not ride a bike

8. If you ride a bike, how would you describe yourself? (select one)

- ◯ Recreational Rider (I mostly bike for fun and/or exercise)
- ◯ Casual Rider (I mostly bike to a limited number of destinations in my neighborhood)
- ◯ Commuter (I mostly bike to places like work or school)
- ◯ Competitive Cyclist (I mostly bike for training in competitions)
- ◯ Mountain Biker (I mostly ride on mountain bike trails)
- ◯ I rarely ride a bike
- ◯ Other (please specify)

9. How often do you ride your bike for transportation (instead of driving, taking the bus, or walking)? This can be for any trip purpose, not just commuting to work/school. (select one)

- ◯ Daily
- ◯ At least once per week
- ◯ 1-4 times per month
- ◯ Less than a dozen times per year
- ◯ I do not ever use my bike for transportation

10. What prevents you from riding a bike more often? (select all that apply)

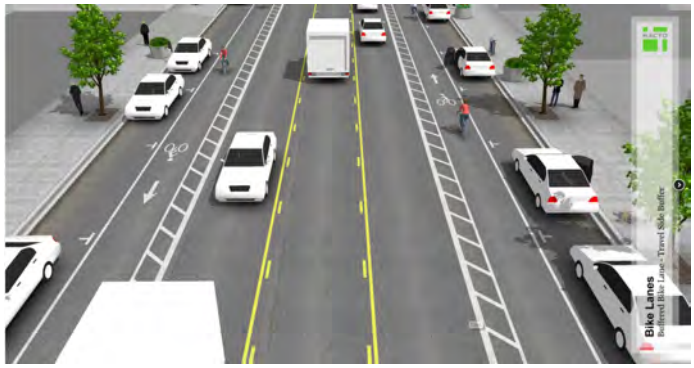
- ☐ Absence of bike lanes along the streets on which I'd like to ride
- ☐ Absence of off-street bike paths that connect me to my destination
- ☐ No bike signage/unsure of best route to take
- ☐ Poor pavement condition
- ☐ Poor lighting/visibility
- ☐ High traffic volume
- ☐ High traffic speeds
- ☐ Local drivers are too aggressive / do not pay attention to bicyclists
- ☐ No other bicyclists in the area
- ☐ I'm afraid I will hit another person or cars
- ☐ Lack of bike racks at destination
- ☐ Lack of amenities at destination (e.g., showers, place to change)
- ☐ Other (please specify)

11. Which types of bike facilities would you feel comfortable using? (select all that apply)

Shared Lane: Shared lanes are typically wide travel lanes shared by bicyclists and vehicles. They are commonly marked with sharrows (pavement markings) and signs. Typically speed limits are 30 MPH or less.

Bicycle Boulevard: Bicycle boulevards are streets with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority. Bicycle Boulevards use signs and pavement markings to reinforce traffic calming and other operational changes made to the roadway.

Conventional Bicycle Lane: Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is located adjacent to motor vehicle travel lanes and flows in the same direction as motor vehicle traffic.



Buffered Bicycle Lane: Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.

Cycle Track: A cycle track is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A cycle track is physically separated from motor traffic and distinct from the sidewalk.

Bicycle Path: Bicycle paths are off-street paved bikeways. They are separated from vehicle traffic, but are almost always shared with pedestrians.

12. What would make you feel more comfortable while riding a bike? Please select your top three choices.

- [ ] Presence of bike lanes along the streets on which I'd like to ride
- [ ] Presence of off-street bike paths that connect me to my destination
- [ ] Clear bike signage and understanding of best routes to take
- [ ] Good condition of bike lanes or routes
- [ ] Good pavement condition
- [ ] Good lighting/visibility
- [ ] Low Traffic Volume
- [ ] Low Traffic Speed
- [ ] Local drivers are aware and respectful of bicyclists
- [ ] Presence of other bicyclists
- [ ] Not afraid of hitting people or cars
- [ ] Available bike racks at destination
- [ ] Available amenities at destination (e.g., showers, place to change)
- [ ] Other (please specify)

13. Do you ever take your bike on the bus (in the Waco Region)?

- ( ) Yes
- ( ) No

14. In your opinion, what would encourage more people to bike as a form of transportation? In addition to infrastructure, think about programs, policies, laws, marketing campaigns, etc. (optional)

Waco MPO Active Transportation Study

PEDESTRIAN QUESTIONS

Your answers should reflect your pedestrian experience in the Waco Region (McLennan County). We use the term "roll" to include the use of wheelchairs, strollers, and other non-bicycle wheeled devices that would typically travel on a sidewalk.

15. How often do you walk or use a wheelchair or stroller ("roll") for transportation (instead of driving, bicycling, or taking the bus)? This can be for any trip purpose, not just commuting to work/school. (select one)

- ◯ Daily
- ◯ At least once per week
- ◯ 1-4 times per month
- ◯ Less than a dozen times per year
- ◯ I do not ever walk as my primary mode of transportation

16. In your opinion, where are sidewalks and pedestrian amenities most needed? (select three)

- [ ] Adjacent to and near preschools and K-12 schools
- [ ] Adjacent to and near colleges and universities
- [ ] Connecting residential areas and neighborhood parks
- [ ] Connecting residential areas and basic services (e.g., grocery store, post office, drug store)
- [ ] Connecting residential areas and amenities (e.g., restaurants, shopping, entertainment venues)
- [ ] Within downtown Waco and/or other downtown areas in McLennan County cities
- [ ] Connections across/beneath highways and freeways
- [ ] Frontage roads
- [ ] Connections to/from bus routes
- [ ] Other (please specify)

17. Which of the following prevents you from walking/rolling more often? (select all that apply)

- [ ] My health / physical limitations
- [ ] Absence of sidewalks
- [ ] Sidewalk is in poor condition
- [ ] Sidewalk is too narrow or close to traffic
- [ ] Sidewalk/intersection is not compliant with the Americans with Disabilities Act and it's difficult to navigate wheelchairs or strollers
- [ ] Neighborhood feels unsafe
- [ ] Poor lighting/visibility
- [ ] It takes too long to cross the street (distance is too long)
- [ ] High traffic volume
- [ ] High traffic speeds
- [ ] Local drivers do not pay attention and do not yield to pedestrians
- [ ] Lack of marked crosswalk, countdown timer, waiting area, and/or crossing signal
- [ ] No other pedestrians in the area
- [ ] Other (please specify)

18. What would help you feel more comfortable while walking/rolling? Please select your top three choices.

- [ ] Presence of sidewalks
- [ ] Sidewalk is in good condition
- [ ] Sidewalk is wide and separated from traffic
- [ ] Sidewalk/intersection is compliant with the Americans with Disabilities Act and it's easy to navigate wheelchairs or strollers
- [ ] Neighborhood feels safe
- [ ] Adequate lighting/visibility
- [ ] It doesn't take very long to cross the street (distance is manageable)
- [ ] Low traffic volume
- [ ] Low traffic speeds
- [ ] Local drivers pay attention and yield to pedestrians
- [ ] Presence of marked crosswalk, countdown timer, waiting area, and/or crossing signal
- [ ] Presence of other pedestrians in the area
- [ ] Other (please specify)

19. In your opinion, what would encourage more people to walk/roll as a form of transportation? In addition to infrastructure, think about programs, policies, laws, marketing campaigns, etc. (optional)

Waco MPO Active Transportation Study

TELL US ABOUT YOURSELF

This section helps us understand who you are and if you'd like to stay in touch with the MPO.

20. What is your total family income? (optional)

- ◯ Below $20,000
- ◯ $20,000 - $39,000
- ◯ $40,000 - $69,000
- ◯ $70,000 - $99,000
- ◯ Above $100,000

21. How old are you? (optional)

- ◯ Under 18
- ◯ 18-24
- ◯ 25-39
- ◯ 40-54
- ◯ 55-64
- ◯ 65+

22. What is your gender? (optional)

- ◯ Male
- ◯ Female

23. What is your zip code?

24. How many people live in your household? (optional)

- ◯ 1 person
- ◯ 2 people
- ◯ 3 people
- ◯ 4 people
- ◯ 5 people
- ◯ 6 people or more

25. How would you prefer to learn about opportunities to provide input on bike, pedestrian, and other transportation issues? (optional; select all that apply)

- ☐ Email
- ☐ Online newspaper/newsletter
- ☐ Printed newspaper
- ☐ TV
- ☐ Radio
- ☐ Facebook
- ☐ Twitter
- ☐ Instagram
- ☐ On the bus
- ☐ Other groups in which I already participate (please specify in comment box below)
- ☐ Comments

26. Please include your email address if you'd like results of the survey. Email addresses will not be shared with others or included in the analysis. All data will be aggregated. (optional)

Appendix B: Summary of ATP Public Comments

APPENDIX B: SUMMARY OF ATP PUBLIC COMMENTS

Name/Organization	**Comments**
Janet Jones/Waco-McLennan County Public Health District	• Increase number of sidewalks around Waco, and actually connect all bike lanes • Enhance and add sidewalks to most vulnerable or lowest income populations/neighborhoods FIRST (East Waco, South Waco, 76704/76707). These communities are most at risk, and having sidewalks would allow for environmental change that would allow these populations to walk more to get exercise, and to get to where they need to go. • Sidewalk improvements often start with nicer/more affluent communities, but it should be the most at-risk populations/neighborhoods that get sidewalks, bike lanes, etc first, before other neighborhoods.

Tom Ledbetter	Protected Bike Lanes
	• Find avenues where protected bike lanes can be created without interference of existing streets.
	• Raised bike lanes
	• Bike lanes with protected curbs
	• River bike lanes
	• Bridges strictly for bikers, walkers, runners, electric motorbikes and electric cars (?)
	• Bike Lane Barriers to protect riders
	  o This will make or break the project. Look at Boulder, Colorado's experience.
	• Converting one major road into biker, bus, non-motorized road. Must be a road that takes people great distances with little traffic problems and bi-sects the city.
	  o Examples: Baylor Campus to Downtown Waco; Valley Mills area down to Indian Springs.
	• Bike lanes on all bridges
	Bike Carriers and Parking Stations
	• Better bus bike carriers
	• Protected places to park bikes
	• Create bike share system
	• Incentives to businesses to create bike storage, education of bikers and commuter bike usage
	Bike Roads
	• Convert non-used railway tracks into bike paths.
	Intersections – How to Travel Through Safely

Name/Organization	**Comments**
	• This is a show stopper also. How to get motorists to yield and recognize bikers and other means of transportation. Do the Research • Find where the bike trails will be used more often • Find out how population can utilize from outside city to downtown • Use Elm Street to Downtown or Baylor to Downtown (river bike paths really bumped up) as beta test before you implement high amounts of money.
Andrew Lopez	I strongly feel that the sidewalks should be widened for pedestrians and bikes. The only street modifications would be for a bus stop. Even if we slow traffic down people will still go above the speed limit. 17-18-19 corridor is too dangerous to have bicycles and cars on the street.
Debbie King, Meals on Wheels	I would like to walk between 501 W Waco Drive and 225 W Waco Drive. The sidewalks only are only at the corners and then one is walking through weeds or mud. It would also be nice to walk from 501 W Waco Drive down 5th street to Austin Avenue to get lunch, but no sidewalks until you get to the court house. The sidewalks before the courthouse are intermittent or broken. We at Meals and Wheels are very concerned about lack of sidewalks in East Waco, Bellmead, Elm Mont, Lacy-Lakeview. It is often treacherous to deliver meals, I can't image our clients with canes and walkers being able to get out on their own.
Matthew Polk	• Prioritize connectivity to downtown from nearby neighborhoods (East Waco, North Waco, South Waco) in terms of bike lanes, sidewalks, pedestrian access. • Prioritize access to public transportation in lower income neighborhoods. • Bike lanes on busy stretches of arterial roads (e.g., N 30th between Bosque and Herring, which runs right past my house) would be heavily used and would increase quality of life and safety immediately. • Use Public Health District's CASPER study of East Waco; new bike lanes in East Waco (especially on Elm, Garrison, J J J Flewellen Rd, etc) would be very appreciated by the community. • For future major projects (e.g., downtown development), prioritize "complete streets" (protected bike lanes, etc) as part of street upgrades.
Dave Morrow	A few things that might help us understand bicycle crash data, and use it for education, is if we had an overlay for street/sidewalk conditions (some folks will

Name/Organization	**Comments**
	ride on the sidewalk if available). I guess I'm asking if there is a nexus between the crashes and infrastructure conditions. For pedestrian injuries, what are the sidewalk/street crossing conditions? I'm guessing that a lot of pedestrian injuries involve people crossing the street, but that is a guess. Perhaps a pattern may emerge. Finally, how can sidewalks be improved in the TIFF area using TIFF funds? Must applications be lot by lot, or could an organization, like a neighborhood association, apply for a larger area? Likewise, can TIFF funds be used for bicycle or multi-modal projects within the defined geographic area?
Susan Monismith	Need a bus on Sunday to get to stores and food and medication and to go to church. Would like better drivers.
Diana Rodriguez	Need buses on Sunday too to get around to church and to food store for our pills. Need bus drivers to treat us right with respect.
Heather Sparks	I wish the bus ran on Sundays and the monthly bus pass wasn't so high. $40 is too much for poor people, and $3 is too much if I can't ride until 12 AM. I wish the bus drivers were more friendly and helpful.
Garland White	In need of more light in East Waco, better sidewalk, and the bus should run later until at least 11 PM.
Waco Bicycle Club	Top Cycling Concerns in Waco *"RED ZONE" Areas to improve cyclist safety and amenity access in the Waco area* This list represents cyclists most pressing concerns in the Waco area. They will be a good start on earning the Bronze Level bicycle town designation from League of American Bicyclists. 1. Sharrows/lanes/signage on University Parks from Baylor to Cameron Park, to connect campus to Downtown, east Waco, and Cameron Park. 2. Bike lanes/sharrows/signage on one-way couplets to the extent possible. Guidance markings near I-35 under-crossing if possible. 3. Improve bicycle signage/sharrows in area near I-35 bike-ped bridge (i.e. near Common Grounds).

Name/Organization	**Comments**
	4. Extension of sidewalk from Brazos Park East to Mammoth site, including bridge for the non-motorized on MLK bridge over Brazos river, **to connect** downtown to the Mammoth site and Lake Waco (East Side). 5. Sharrows on 18th/19th from Summer Ave to Park Lake, **to connect** the Cameron Park community to Lake Waco (West Side). 6. Sharrows/lanes/signage on Lake Shore Drive from MacArthur to Gholson Road. This is a major east-west connector. 7. Sharrows/lanes/signage along Bosque from Martin Luther King to Woodway Park. This is a major east/west connector. 8. Speight Ave. from New Rd. into Baylor campus -Class II. Parking is only a concern during day time on weekdays – this is not a big residential parking area. 9. Identify and sign route parallel to E. Waco Drive connecting Bellmead to downtown. Candidates are Elm and Herring – Class II. 10. Sharrows/lanes/signage 26th/25 Park Lake to Bagby.

Appendix C: Review of Other Relevant Planning Documents

APPENDIX C: REVIEW OF OTHER RELEVANT PLANNING DOCUMENTS

The Waco MPO Active Transportation Plan builds upon numerous existing plans that guide the development, growth, and mobility needs of the various communities and corridors within McLennan County. Many existing plans and studies have already contemplated the needs and desires of their stakeholders as it relates to bicycle and pedestrian mobility, and have adopted recommended policies and projects to support these goals. As part of the development of this ATP, existing plans and studies were reviewed for relevancy to active transportation. Where appropriate, recommendations and projects were pulled from these plans and incorporated into the ATP.

Connections 2040: Waco MPO Metropolitan Transportation Plan (2015; As Amended, October 2018)

Connections 2040: The Waco Metropolitan Transportation Plan, also known as the MTP, is the 25-year plan that outlines the mobility needs for the Waco Metropolitan Area. The MTP serves as the blueprint from which future mobility projects are developed and reflect the policies and priorities of the Waco MPO Policy Board. The MTP is required by federal law to include all projects which intend to utilize federal highway or transit dollars during the 25-year planning period as well as all other regionally significant transportation projects, regardless of their source of funding. The MTP, however, must also be constrained against a realistic estimate of available resources. Only those projects that can be realistically funded during the 25-year planning period may be included in the MTP.

The following MTP objectives are relevant to active transportation:

- Objective 1-5: Reconstruct all sidewalks which cannot accommodate wheelchairs (p 5)
- Objective 2-4: Provide safe pedestrian connections between all elementary, intermediate and middle schools and residential neighborhoods within 1 mile (p 5)
- Objective 3-5: Retrofit all arterial and collector highways to provide appropriate pedestrian and bicycle facilities as identified within the Regional Thoroughfare Plan (p 5)
- Objective 5-3: Employers with more than 100 employees should have pedestrian infrastructure connecting their location with the Waco Transit fixed route system (p 5)

The table below summarizes MTP recommended projects that include bicycle or pedestrian components.

PRIORITY	PROJECT ID	FACILITY/SERVICE; EXTENT	SCOPE OF WORK/PURPOSE AND NEED
STRATEGY 1: STRATEGIC HIGHWAY EXPANSIONS TO ADDRESS INCREASES IN MOBILITY DEMAND			
Priority 9	S-004	FM 1695 (Hewitt Dr); US 84 (Woodway Dr) to FM 2063 (Sun Valley Dr)	Construct continuous sidewalks on both sides and enhanced pedestrian crosswalk in vicinity of Midway Middle School Address pedestrian safety concerns in vicinity of Midway Schools
Priority 11	S-011	FM 2113 (Spring Valley Dr); FM 2063 (Sun Valley Dr) to FM 1695 (Hewitt Dr)	Construct center turn lane and bicycle Lanes Construct continuous sidewalks on both sides and enhanced pedestrian crosswalk in vicinity of Spring Valley Elementary School Address pedestrian safety concerns in vicinity of Spring Valley Elementary School

STRATEGY 3: IMPROVE CONNECTIVITY TO ESSENTIAL SERVICES			
Priority 1	T-016	Bus Rapid Transit; Texas Central Industrial Park to Bellmead	Construct pedestrian sidewalks and crosswalks at appropriate locations to connect stops with significant destinations
Priority 2	T-017	Realignment of Waco Transit Fixed Routes; Waco Urbanized Area	Construct pedestrian sidewalks and crosswalks at appropriate locations to connect stops with significant destinations
PRIORITY 3	T-018	Commuter Bus Service; Downtown Waco to McGregor Industrial Park	Construct pedestrian sidewalks and crosswalks at appropriate locations to connect stops with significant destinations
STRATEGY 4: REDUCE TRANSPORTATION RELATED INJURIES AND FATALITIES			
Priority 2	L-038	Sanger Ave Valley Mills Dr to Harvey Dr	Resurface roadway and restripe as 2 lanes with center turn lane and bike lanes Sanger Ave has a large number of rear-end collisions to due turning traffic often stopping in the lane of travel. This corridor is also the most preferable corridor for bicycle access between Downtown Waco and Woodway across SH 6
Priority 3	L-016	N 18th St/ N 19th St; Live Oak Ave to College Dr	Resurface roadway and restripe as 2 lanes with center turn lane and bike lanes N 18th and N 19th Streets have a large number or rear-end collisions to due turning traffic often stopping in the lane of travel. This corridor is also the most direct corridor for bicycle access between Downtown Waco and McLennan Community College
STRATEGY 5: MAXIMIZE SYSTEM EFFICIENCY			
Priority 2	L-035	Franklin Ave; S 4th St to S 17th St	Convert to 2 lane street with 2-way operations, parallel parking and bicycle lanes Reduce speeds and improve corridor for bicycle and pedestrian modes. Additionally, a possible corridor for bus rapid transit
Priority 3	L-036	Washington Ave; S 5th St to S 18th St	Convert to 2 lane street with 2-way operations, parallel parking and bicycle lanes Reduce speeds and improve corridor for bicycle and pedestrian modes.
Priority 4	L-037	4th and 5th Streets; Herring Ave to IH-35	Convert to 2 lane street with 2-way operations, parallel parking and bicycle lanes Reduce speeds and improve corridor for bicycle and pedestrian modes.
STRATEGY 6: IMPROVE REGIONAL LIVABILITY			
Priority 1	BRW-4	Brazos Riverwalk; M L King Jr Park to IH-35	Construct multi-purpose bicycle and pedestrian trail adjacent to the Brazos River Provide pedestrian connection from McLane Stadium to Downtown Waco via M L King Jr Park and Waco Suspension Bridge
Priority 2	BP-001	Elm Ave; Brazos River to Forrest St/Garrison St	Construct continuous sidewalks, bike lanes and streetscape improvements Provide bicycle and pedestrian connection between Downtown Waco and East Waco
Priority 3	BP-002	South 11th Street / South 12th Street;	Construct continuous sidewalks and bike lanes

		Garden Dr to Columbus Ave	Provide bicycle and pedestrian connection between Downtown Waco, South Waco and southern portion of Baylor University campus
Priority 4	BP-003	Gurley Ln; South 10th St to South 27th St	Construct continuous sidewalks Provide pedestrian connection between Kennedy Circle Homes (Waco Housing Authority) and South Waco Elementary School
Priority 5	BRW-3	Brazos Riverwalk; Brazos Park East to Riverbend Park	1) Construct multi-purpose bicycle and pedestrian trail adjacent to the Brazos / Bosque Rivers; 2) Construct bicycle and pedestrian bridge across Brazos River either adjacent to or attached to the M L King Drive bridge Extend bicycle and pedestrian access via riverwalk to several recreational facilities and McLennan Community College

Waco Metropolitan Area Master Thoroughfare Plan Update (2012)

The Thoroughfare Plan establishes guiding principles and policies for the development of a countywide roadway network. The Thoroughfare Plan and its accompanying Design Guidelines provide a set of regional transportation planning and design resources to integrate current and future roadway design elements with desired land uses in ways that increase safety and improve travel experiences for all roadway users. The goal of the plan is to create a comprehensive, connected, multimodal network that advances local community development goals.

The Thoroughfare Plan provides a recommended future thoroughfare network, and identifies different thoroughfare types, such as expressway, arterial, or collector. It also defines four Area Types and seven Context Zones. Area Types provide overarching land use contexts that help to identify typical roadway functions. Context Zones provide a framework for roadway design elements that can support a variety of desired development settings. Using thoroughfare type, area type, and context zone together, it is possible to identify where and how pedestrian and bicycle facilities should be included in roadway design. The following table provides a summary of when pedestrian and bicycle design elements may be appropriate based on area type.

STRATEGIES	CITY CENTER	URBAN	SUBURBAN	RURAL
Adding sidewalks where none are present	D	D	A	M
Sidewalks on both sides of the street	D	D	D	M
Sidewalks wider than six feet	D	A	M	N
Setting back sidewalks from edge of pavement	D	D	D	D
Automatic pedestrian signals (non-actuated)	D	D	D	A
Countdown pedestrian signals	D	D	A	M
Median refuge areas	A	A	A	N
Reduced corner radius	D	A	M	N
Curb extensions	M	M	N	N
Right-turn channelized islands	N	N	M	M

Midblock crossings	M	M	A	M
Midblock pedestrian signals	M	M	N	N
Illuminated pedestrian crossings	M	M	N	N
Bicycle lanes	D	D	A	M
Paved shoulders	N	N	M	D
Expanded shared lanes	M	M	M	M
Signed bicycle routes	A	A	A	M
Independent shared use paths	N	M	A	A
Bicycle parking	D	D	M	M

D Desirable, **A** Appropriate, **M** May be appropriate, **N** Not appropriate

Additionally, the Thoroughfare Plan identified special projects with the potential to transform or improve communities and neighborhoods. The projects with active transportation components are listed below:

1. 4th Street and 5th Street at I-35 – Improve the multimodal connections between Baylor University and downtown.

2. Potential Redevelopment Area (Old Tire Site) around SR 6 and Business US 77 - Explore a public-private partnership with Baylor to plan and build multimodal local street networks that improve connectivity and accessibility throughout this subarea.

3. Business US 77 –Revitalize the urban community by converting the facility and the original freeway concepts to an at-grade, medium speed boulevard, and by connecting Lake Brazos Parkway with Marlin Highway.

4. University Parks Drive and Baylor Avenue – Improve pedestrian safety by enhancing crossing areas across University Parks Drive and completing sidewalk network on both sides of the street.

7. University Parks Drive from I-35 to State Loop 491 – Improve pedestrian safety and accessibility along this segment through the eastern portion of the Baylor Campus. Reduce conflicts between campus pedestrians and through vehicles by adding continuous sidewalks and enhanced crossing areas.

8. Area around intersection of Loop 340 and University Parks Drive/FM 3400 – Improve vehicle and pedestrian safety by reducing vehicle speeds on Loop in area of intersection (currently 60 mph).

9. US 77 from Loop 340 to Moonlight Drive – Implement Context Sensitive Solutions along US 77/Robinson Drive to complement the mixed-use neighborhoods and village areas in Robinson.

10. Intersection of South New Road and Old Robinson Road – Create sidewalks along Old Robinson Road and add other multimodal connections to the high school.

12. Traffic Circle at Valley Mills Road/State Loop 491 – Improve local access, traffic flow and operations, directional signage and multimodal facilities.

13. Waco Drive from New Road to New Dallas Highway – Generate economic development by making multimodal improvements, such as bicycle lanes, sidewalks, landscaping, and other design features that will increase the appeal of this area for both pedestrians and motorists.

18. Business 77 from US 84 to Loop 340 – Convert from minor arterial to a boulevard to improve mobility and foster economic development.

19. Intersection of Lake Shore Drive/FM 3051 and Steinbeck Bend Drive/Lake Brazos Parkway – Develop a concept for processing traffic through intersection in light of increased traffic volumes and surrounding development. The new Waco Water Park is located near this intersection, which will increase the amount of vehicles, pedestrians, and bicyclists entering and exiting the facility, as well as using the intersection.

20. Area bordered by Steinbeck Bend Drive, Lake Shore Drive, and 19th Street –Improve accessibility to the growing cluster of regional attractions & parks (Mammoth park, baseball fields, MCC, etc).

22. China Spring Road/from FM 3434 to Old China Road west of China Spring – Reclassify from rural arterial designation to minor arterial in order to suit the future Village or Low Density residential development pattern of the surrounding area. Consider opportunities to convert strip commercial development into walkable, bicycle friendly places by adding sidewalks, bicycle lanes, and local connector streets.

23. Area of China Spring Road and North River Crossing – Improve multimodal access to the high school, clinic and other local uses.

25. Area around Speegleville Elementary school / Speegleville Road – Improve connectivity, safety and access for all types of travelers throughout this area.

The City Plan: Waco Comprehensive Plan 2040 (2016)

The City Plan is a comprehensive plan prepared by the City of Waco to guide the future development of the city for the next 25 years. The City Plan describes current issues, goals, objectives, and makes policy and action recommendations to progress toward achieving those goals. The plan identifies potential locations for development nodes within Waco; development nodes are areas of the city that are characterized by a mix of commercial and medium density residential land uses that are compact in form; pedestrian and bicycle friendly; connected to surrounding land uses; and transit oriented. Areas identified as potential development nodes (shown in attached figure) are designed to provide a mix of land uses as a walkable scale that will support public transportation, bicycling, and walking as viable modes of transportation.

The City Plan includes several planning objectives and implementation strategies relevant to bicycle and pedestrian mobility, which are summarized below:

- Objective 3.07: Encourage non-automotive transportation options including, but not limited to sidewalks, bicycle lanes, pedestrian and bicycle paths/trails, public transit and water transportation (Goal 3, Transportation, p 3)
- Objective 6.08: Target residential developments with amenities to meet the needs of a diverse population such as community centers, senior centers, safe walking trails and sidewalks, playgrounds and community gardens (Goal 6, Community Livability, p 5)
- Implementation Strategies: Amend the land use plan and zoning ordinance to encourage more mixed use development as a means of revitalizing neighborhood commercial areas; providing a range of housing densities and affordability; and creating a more pedestrian, bicycle and transit friendly environment (Chapter 6, Transportation, p 60).
- Implementation Strategies: Convert the former MKT rail line through East Waco to a multipurpose bicycle/pedestrian trail (Chapter 7, Livability/Parks and Recreation, p 76).
- Implementation Strategies: Convert the Mary Avenue former Southern Pacific rail corridor to a multi-purpose bicycle/pedestrian trail from South 18th Street to South 32nd Street (Chapter 7, Livability/Parks and Recreation, p 76).

- Use creeks to connect neighborhoods and community activity centers to the Brazos River Corridor and other potential areas through a system of pedestrian and bicycle facilities. Reference existing plans for specific recommendations as to points of linkages including the following: *For All of Our Lifetimes: A Vision for the Brazos & Bosque Rivers Plan* and *Imagine Waco: A Plan for Greater Downtown* (Chapter 7, Livability/Urban Design-Connectivity, p 76).
- Implementation Strategies: Create a more walkable and bike friendly city with the addition of sidewalks and bike lanes, and connect these facilities to parks and other destinations, as a means of encouraging a healthier lifestyle (Chapter 7, Livability/Public Health, p 77).
- Implementation Strategies: Provide bicycle lockers and showers at city facilities for employees to commute via bicycle (Chapter 8, Air Quality/Environment, p 88).

Bruceville-Eddy Comprehensive Plan (2011)

The Bruceville-Eddy Comprehensive Plan takes into account the current conditions in the city, future growth, and seeks to achieve a balance between preserving the rural small town character prized by the community, and moving forward to capitalize fully on the opportunities for growth and development that exist, especially with the expansion of I-35. The plan's relevancy to bicycle and pedestrian mobility is provided below:

- Residents expressed in both planning visioning sessions the desire to have more sidewalks. As the community grows, city administrators should request if not require developers to construct sidewalks with all future developments. (p 23)
- Transportation Goal 1, Objective 1, Strategy 1: Create a road inventory consisting of pictures, maps, and an assessment form to document the conditions of existing, locally maintained roads and sidewalks (p 48)

Hewitt Comprehensive Plan 2022 (2003)

The Hewitt Comprehensive Plan is intended to establish a generalized pattern for development within Hewitt, which should reinforce the established vision of the City's future physical form (how the community should grow, develop and mature over time). Relevant policies and recommendations are summarized below:

- Safe and convenient pedestrian access (sidewalks or hike-and-bike trails) is important to a neighborhood park location. (Parks, Recreation, and Open Space, p 5-3)
- Both citizens and Committee members expressed a strong interest in and need for hike-and-bike trails within Hewitt (Parks, Recreation, and Open Space, p 5-7)
- Hike-bike trails should connect: Warren Park; Hewitt Park; Existing schools; Future school site (in the center of the City); and Recommended future neighborhood park areas. The City should adopt a policy that all new subdivisions should provide at least two points of access for every 75 lots to a designated trail segment (Parks, Recreation, and Open Space, Community-wide Trail System: Specific Considerations, p 5-9)
- Hike-and-Bike Trails: Concentrate on a City-wide system. Implement the system within existing developed areas first. Require future developments to provide access to the system (Parks, Recreation, and Open Space, Table 5-5 Recommended Priority Listing, p 5-14).
- Retrofitting pedestrian and bicycle facilities, like sidewalks, trails, benches, and bike lanes. Within the Parks, Recreation, & Open Space Plan, it was recommended that in implementing the trail system, priority should be given to incorporating the trails into existing neighborhoods. (Housing Strategies Plan, p 8-4)
- All developments should have sidewalks along at least one side of all streets. Subdivisions wherein all lots are at least ½-acre in size could be exempted from this requirement. (Housing Strategies Plan, Future Residential Development Guidelines, p 8-7)

The City of Lorena 2013 Comprehensive Plan (2013)

In order to appropriately plan for the future of the Lorena community, the citizens of Lorena envision a growing exurb community, with traditions of rural life that include: preserving and protecting the core community; attracting good jobs; developing responsible and attractive commercial investment; and providing fiscal-minded service to its stakeholders. Lorena Comprehensive Plan recommendations related to bicycle and pedestrian mobility are listed below:

- Improvements to McBrayer Park as well as encouraging the use of parkland dedication or parkland dedication funds for neighborhood parks linked by sidewalks are encouraged in Lorena. Old Town should be connected through sidewalks and signage (Park Improvement and Focus on Old Town, p 9)
- Goal 2 Livability, Objective 2.1: Provide opportunities for greater pedestrianism and bicycling throughout the City:
    - Examine sidewalk policy for the community. Implement internal neighborhood sidewalks where needed. Plan capital improvements for sidewalks connecting neighborhoods to commercial areas.
    - Examine the National Rails-to Trails program at improving the excess railroad ROW and incorporating it into the existing park area. (p 13)

Community Visions 2034: A Comprehensive Plan for the City of Robinson, Texas (2014, as amended 2018)

The City of Robinson's Comprehensive Plan contains a detailed vision created from direct input from its citizens. The plan identifies goals, objectives, and policies that will enhance the City's quality of life, respect its natural environs, and support complimentary economic growth and development.

The plan's vision for transportation is, in part, to "ensure that the transportation needs are maintained and enhanced to meet the community's present and future needs…and provide transportation and pedestrian connections from neighborhoods and commercial areas to recreation facilities." Urban design infrastructure and urban streetscapes (including sidewalks and walking trails) should be included in future design studies and any updates to the zoning ordinance.

The following is a list of relevant objectives from the comprehensive plan:

- Objective 1.3: Enhance the mass transit system to include bus routes throughout the city and connecting areas. (p 3-8)
- Objective 1.5: Ensure a pedestrian-friendly community through the provision of sidewalks, walkways, and bike paths. (p 3-8)

Business 77 Corridor Study (2016)

The Business 77 corridor study evaluated the feasibility of design alternatives that would: reduce the number of lanes and structures along the corridor thereby reducing future maintenance costs; provide multi-modal solutions for the corridor; and provide context sensitive solutions that would serve as a catalyst for economic development of the neighborhoods along the corridor. The limits of the study corridor extend from I-35 interchange near Elm Mott to the Brazos River. The study corridor is approximately 7 miles long and traverses through the cities of Waco, Bellmead and Lacy Lakeview.

In general, the corridor is imagined as a multi-modal boulevard that accommodates vehicles, bicyclists, and pedestrians. Several different roadway designs are proposed in order to complement the existing and future land use context of the various corridor segments.

Proposed pedestrian/bicycle improvements for various sections of the Business 77 corridor study area are summarized below:

- Behrens Circle to South of Parrish St: Sidewalks on both sides of the street and/or a hike and bike trail.
- South of Loop 340 to Behrens Circle: If space permits, extend hike and bike trail from Behrens Circle to Loop 340 along the east side of BUS 77.
- South of I-35 Interchange to Orchard Lane: Convert existing third outside lane along both directions of BUS 77 bridge over the UPRR tracks to a buffered bike lane.
- Sidewalks are proposed along the entire corridor from IH-35 to Parrish St.

Waco Rapid Transit Corridor Feasibility Study (2018)

The purpose of the Bus Rapid Transit Corridor feasibility study is to provide a high-level overview of the technology and design components required to implement bus rapid transit (BRT) in the City of Waco and the surrounding communities. The preferred alignment is approximately 13 miles long, stretching from the intersection of US 84 at Hewitt Dr. at its southern terminus to the intersection of TX Loop 340 at Business 77 at its northern terminus. There are 14 proposed station locations.

The following is a list of recommendations/considerations related to bicycle and pedestrian connections to a potential BRT program and proposed alignment:

- A key consideration at station locations is safety for all types of travelers, including people who drive, walk, bike, or take transit. Stations should be designed in a fashion that does not limit sight distance for people who drive, bus operators, and pedestrians. As the main access point for system users, stations should be accessible and comfortable. Station locations need to tie into the bicycle and pedestrian networks as most transit users reach boarding locations through those modes. A complete sidewalk network will help achieve better access to rapid transit services (Section 4.1, General Considerations, p 11).
- Bus stations are part of the overall transportation network, therefore pedestrian and bicycle accommodations should be a priority when siting and designing stations (Section 4.2, Siting Station Locations, p 13)
- Bicycle racks should be included at basic stations or enhanced stations. Some transit users choose to ride a bicycle to and from transit stations, and not all passengers will want or need to take their bicycles with them all the way to their final destination. Bicycle racks provide a secure storage method for such passengers (Overview of Station Types, p 18).
- All stations should comply with ADA laws for accessibility. The station should provide an accessible route to connect to sidewalks, paths, and streets (Section 4.3.1, Overview of Station Types).
- Bicycle Lanes: Special attention must be given to bike lanes when present on or aligned with bus lanes. Bike and bus lanes often share space and therefore need specific street markings and signage to delineate use and ensure safety and comfort (Section 5.1.1, Dedicated vs. Mixed Lanes, p 27).
- Improvements Required at Future Station Locations
    - US 84 Frontage at Hewitt Dr: Add sidewalks to accommodate access to the BRT stations (p 30)
    - US 84 at Lake Air Dr: Add sidewalks to accommodate access to the BRT stations (p 31).
    - Taylor Ave at Martin Luther King Jr. Blvd: Add sidewalks to accommodate access to the BRT stations (p34).
    - TX Loop 340 at Scroggins Dr: Add bike lanes and sidewalks to accommodate bus station accessibility (p 36).

McLennan County Transit Need Study (2018)

The overall goal of the McLennan County Transit Need Study is to improve the availability, quality, and efficiency of transportation services for seniors, individuals with disabilities, those with low income, and other population groups with limited transportation options. The study is intended to offer direction for transportation service coordination and explore alternatives supporting more effective pairing of available transportation resources to community needs.

The following is a list of relevant projects and proposed route improvements that include bicycle and/or pedestrian considerations:

- Project 19: Installation and Improvement of Passenger Amenities and Bus Pullouts for Urban Fixed-Route Services, Amenity Thresholds:
    - Table L-2 identifies 17 priority transit improvement areas, which are high performance stops that are lacking amenities, such as benches, shelters, trash receptacles, and sidewalk/ADA accommodations to nearby destinations.

TABLE L-2: PRIORITY TRANSIT IMPROVEMENT AREAS				
RANK	ROUTE	SEGMENT	RIDERSHIP	SEGMENT DESCRIPTION
1	7	.1179S	88	IH 35 Frontage (Bellmead): Wal-Mart
2	7	.1168S	61	Garrison: Doris Miller Family YMCA, JH Hines Elementary, GL Wiley Opportunity Center
3	1	1.22S	50	North MCC Highland Entrance
4	7	.1091S	50	Orchard Ln: McLane Stadium
5	7	.1100S	50	Bellmead Dr: TxDOT
6	9	9.1302S	50	Jack Kultgen Fwy: Central Texas Marketplace
7	8	8.1245S	39	W HWY 6/Owen Ln
8	9	9.1309S	38	Bagby Ave: Residences at Central Texas Marketplace
9	1	1.25S	37	South MCC Highland Entrance
10	3	3.782S	34	S New Rd: S of Walmart
11	5	5.929S	31	Bolling Dr: Air Base Rd, S TSTC Waco Campus
12	5	5.953S	31	E Lakeshore Dr: Brazos Village Apartments
13	2	2.717S	27	N 18th: Alexander Ave to Herring Ave
14	2	2.715S	24	N 18th: Wilson Ave to Rueter Ave
15	6	6.1074S	23	Bagby Ave: W Loop 340 to Marketplace Dr
16	6	6.995S	23	HWY 6 near Beverly Dr
17	6	6.1016S	23	W HWY 6: Ridgecrest Retirement & Healthcare

    - High performance stops have at least 50 daily boardings. Stops with at least 25 boardings also qualify for shelters if they meet three of the following criteria:
        - Adjacent to major transit attractors (commercial/entertainment center, employment area, etc.)
        - Adjacent to health care and social service facilities
        - Adjacent to large residential units (250+ units)
        - Adjacent to educational facilities
        - Located at a route intersection
        - Service frequency is typically delayed (greater than 30 minutes)
    - Any stop generating at least 15 daily boardings qualifies for a bench/seated area. All stops containing amenities (bench, shelter, or both) should also offer a trash receptacle. Finally, bike racks are optional, but preferable, at any high demand stop (Appendix L, pg 116)

    - Graphic depiction of daily boarded thresholds can be found on Figure L-4 in the report (Appendix L, pg 118)
- Project 26: Realignment of Waco Transit Fixed Routes:
    - Realign and adjust fixed-route transit service to increase frequencies and improve connectivity throughout the WTS network and with the Bus Rapid Transit Corridor at major stops. Construct sidewalks and pedestrian-friendly crosswalks at significant destinations. Route design will provide for transit service expansion and contraction as needed (p 78).
- Removing service from highway segments along route 5 should be considered as they are not pedestrian-friendly and provide little access. (Appendix N Route Recommendation List, p 122).
- Segments of route 7 running along the highways should be considered for removal, as they are not pedestrian-friendly and provide little access. (Appendix N Route Recommendation List, p 123).

17th/18th/19th Streets Corridor Study (2017)

The 17th/18th/19th Street Corridor spans over five miles through Waco from Lake Shore Drive in the northwest to Primrose Drive in the southeast. The corridor study aimed to develop and evaluate concepts to consider (when redesigning and maintaining the corridor), including opportunities to: enhance sidewalks and bike travel; modify travel lanes to balance mobility and livability; spur economic development in the area; and protect and enhance the quality of life for communities.

The corridor study envisions five phases of implementation. The first phase would consist of safety improvements that can be readily implemented; the second phase would consist of lower-cost treatments; the third and fourth phases would include pedestrian improvements; and the fifth phase would require coordination with utility modifications in order to construct sidewalk improvements.

Proposed bicycle and pedestrian improvements from the various phases are summarized in the table below.

PROJECT	IMPROVEMENT TYPE
PHASE 1 – SAFETY AND OPERATIONAL ENHANCEMENTS	
1a. Replace the existing school crossing flashing beacon near Meridian Avenue with pedestrian activated hybrid beacons (often call a HAWK signal) on mast arms ($110,000). Restripe the crosswalk and stop bars ($2,000). Upgrade the ramps (5,000). Add 20% Engineering & Surveying plus 20% Contingency. Estimated cost: $163,000.	Pedestrian
1b. Restripe 18th Street between Homan Drive and Bosque Boulevard to convert one of the three southbound lanes to a northbound lane, add to and modify the pedestrian crossings, and modify the curb line and landings ($50,000). Add the needed signal indications for the northbound 18th Street movement at Homan and change the westbound green arrow to a right turn on red ($70,000). Add 20% Engineering & Surveying plus 20% Contingency. Estimated cost: $168,000.	Pedestrian
PHASE 2 – PAVEMENT MARKINGS FOR ROAD DIET AND TRAFFIC MANAGEMENT	
2a. Restripe 17th and 18th Streets between La Salle Avenue and IH 35 (see Figure 21) and between IH 35 and Webster Avenue (see Figure 21, Phase 1) to convert the outside travel lane to a buffered bike lane, for a total of 13,200 LF of buffered bike lane striping. Designate Webster Avenue as a bike route between 18th Street and 11th Street, and 11th Street between Webster and Waco Drive. Estimated cost: $132,000.	Bicycle
2c. Clean and repair the existing sidewalks along 18th Street between Webster Avenue and Franklin Avenue. Estimated cost: $80,000.	Pedestrian
2d. Restripe 17th Street between Waco Drive and Bosque Boulevard (2,250 LF) as a two-lane one-way street, allocating the center 22 feet to travel lanes and using pavement markings to delineate the edge-of-travel lanes about 5 feet from the curb on both sides.	Bicycle

Restripe outside lane of 18th Street as a buffered bike lane between Bosque Boulevard and Franklin Avenue. Estimated cost: $42,000.	
PHASE 3 – SIDEWALKS AND CURBLINE MODIFICATIONS BETWEEN LA SALLE AVE AND WACO DR	
3a. Reconfigure the 17th and 18th Street bridges to add the shared bicycle and pedestrian path along each bridge, removing the temporarily striped buffered bike lane. Estimated cost: $728,000 including engineering, survey and contingency.	Pedestrian and Bicycle
3b. Sidewalks, both sides of 17th and 18th Streets, approximately 27,000 LF. Estimated cost: $1,134,000 including engineering, survey and contingency.	Pedestrian
3c. Accessible ramps at all street corners, approximately 320 ramps. Estimated cost: $570,000 including engineering, survey and contingency.	Pedestrian
PHASE 4 – SIGNAL UPGRADES FOR ENHANCED PEDESTRIAN COUNTS	
Upgrade existing traffic signals to add Accessible Pedestrian System equipment (pushbutton, audible tones and messages and tactile signage) and countdown pedestrian heads 4a, 4b, 4c. 17th @ Dutton, Clay, Webster, Franklin, Austin, Washington, Columbus, Waco, and Bosque Estimated cost: $324,000	Pedestrian
PHASE 5: STREET RECONSTRUCTION FOR CURBLINE MODIFICATIONS AND SIDEWALKS NORTH OF WACO DR	
Install final Sidewalk Zone including: curbline modifications,12-foot sidewalks, streetscape and lighting improvements 5a. 6' Sidewalk: 8,100 LF. Estimated cost: $340,000 including engineering, survey and contingency. 5b. 12' Sidewalk Zone: 22,500 LF. Estimated cost: $2,520,000 including engineering, survey and contingency. 5c. Curb Modification: 21,900 LF. Estimated cost: $1,227,000 including engineering, survey and contingency. 5d. 10' Sidepath: 2,600 LF. Estimated cost: $342,000 including engineering, survey and contingency.	Pedestrian and Bicycle

City of Waco Parks and Recreation Masterplan (2017)

The purpose of the City of Waco Parks Master Plan is to develop and document a defined approach toward the maximization of recreation opportunities and resources, present and future, for the greatest benefit to Waco's general public over the next ten years (2017-2027) and beyond. The Master Plan includes recommendations for improving the department's ability to develop great parks for the enjoyment of all who live, work, and play in the City of Waco.

The following are priorities and findings from the masterplan that are relevant to active transportation:

- Park service areas are established for Neighborhood Parks based on an easily walkable distance (1/2 mile), and Community Parks are based on an easily bike-able distance (2 miles) (p 19).
- Top feedback for park improvements include improving/expanding riverfront parks and metropolitan trails (p 16). Metropolitan Trails function both as recreation corridors and alternative transportation routes for cyclists and pedestrians. They connect districts, neighborhoods, and parks. Trail surfaces are typically 10 feet wide, paved or otherwise improved, and designed to be ADA compliant. Lighting is typically provided along these corridors in areas of high use (p 21).
- Small Green Spaces may support future Metropolitan Trail connectivity (p 22)
- The condition of sidewalk amenities and accessibility to public transit stops serving parks is a notable concern (p 36).

Development Nodes

Priority

Short Term

Long Term

Waco City Limits

Outside Waco City Limits

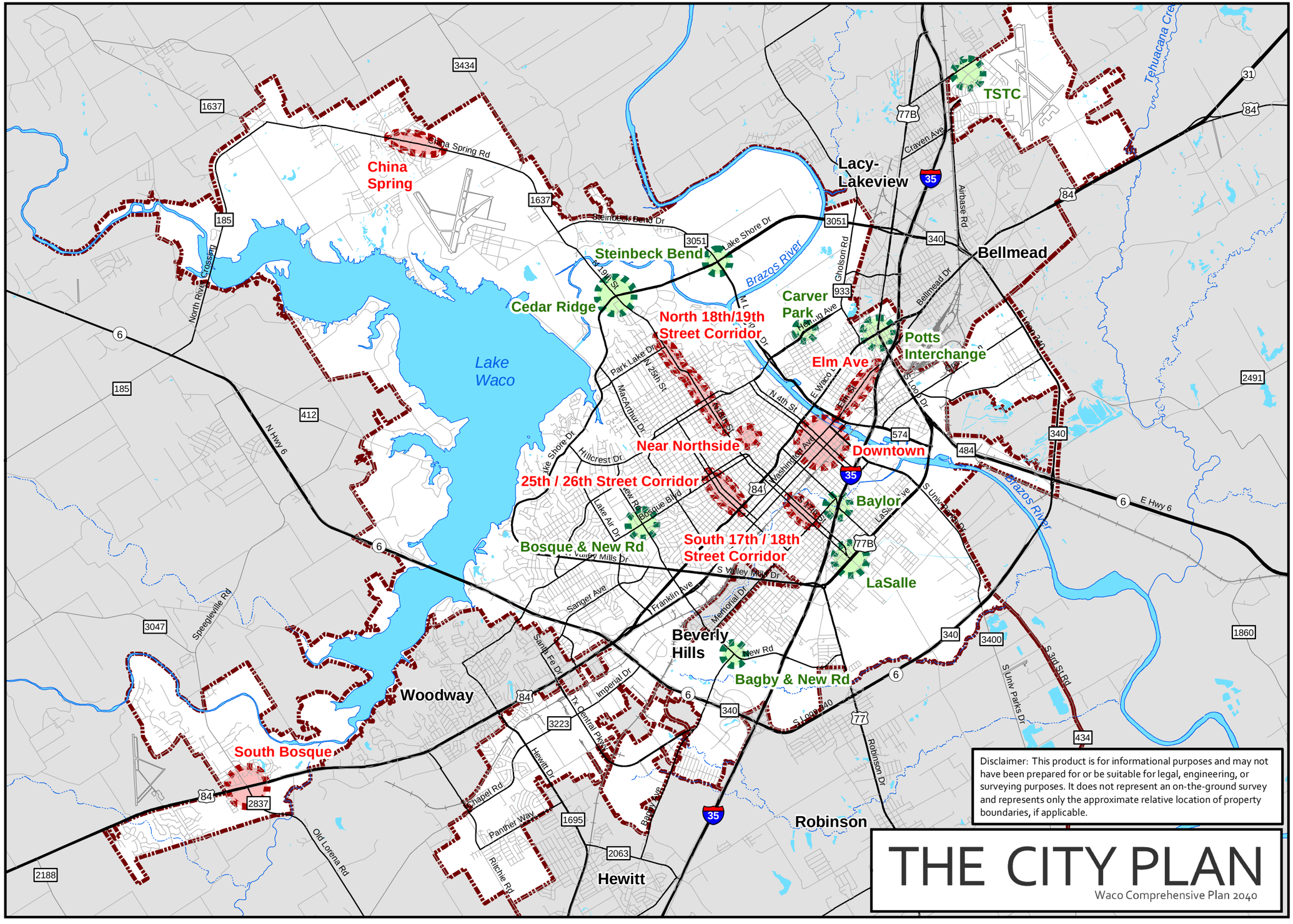
0 0.5 1 2

Miles

July 2016

Map 3.8: Proposed Development Nodes

CITY OF WACO



Disclaimer: This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries, if applicable.

THE CITY PLAN

Waco Comprehensive Plan 2040

S:\planning\Comprehensive Plan 2015\Draft Document\Draft 1.2 July 2016\maps\GIS\3.8 development_nodes.mxd 6/27/2016: ChelseaP

Appendix D: ATP Recommended Projects – Universe of Need

Appendix D - Universe of Need (updated 7/11/19)

Project_ID	Facility	From	To	Scope of Work	Sidewalk 1 side	Sidewalk both sides	Special ADA Ramps	Signal Reconstruct	Road Diet	Bike Route	Bike Lanes	Buffered Bike Lanes	Shared Use Path	Improve Lighting	Pedestrian Overpass	Cycle Track or Protected Bike Lane
B-001	N 18th St	Homan Ave	Bosque Blvd	Convert to Two-Way Operations and add bike lanes and sidewalk		X	X		X		X					
B-002A	MacArthur Dr	Lake Shore Dr	Park Lake Dr	Restripe to accommodate bike lanes and sidewalk on one side to provide north/south crosstown connection	X		X	X			X					
B-002B	MacArthur Dr	Hillcrest Dr	Park Lake Dr	Reconstruct as 3 lanes with bike lanes and continuous sidewalks to provide north/south crosstown connection		X	X		X		X					
B-002C	N 34th / N 36th St	Hillcrest Dr	W Waco Dr (US 84)	Construct sidewalk on one side and restripe for bike lanes to provide north/south crosstown connection. Consider ending bike lanes at Sanger Ave, but continuing sidewalk to Waco Dr.	X		X				X					
B-003A	Delhi Dr	Santa Fe Dr	Cranbrook Dr	Sign as bike route with sharrows and sidewalk		X	X			X						
B-003B	Sanger Ave Overpass	Harvey Dr	Cranbrook Dr	Road diet. Restripe to 2 lanes with bike lanes					X		X			X		
B-003C	Sanger Ave Overpass	Harvey Dr	Londonderry Dr or Cranbrook Dr	Construct separate ADA compliant pedestrian overpass and accompanying sidewalk approaches	X		X	X						X	X	
B-003D	Sanger Ave	Harvey Dr	Valley Mills Dr	Restripe to 3 lanes with bike lanes and construct sidewalks on one side to provide east-west crosstown connection. Includes pedestrian accommodation across creek near Towne Oaks Dr.	X		X	X	X		X					
B-003E	Sanger Ave	N Valley Mills Dr	N 42nd	Stripe bike lanes and sidewalk on both sides; in vicinity of Crestview Park, Crestview Elementary, and Texas Christian Academy		X	X				X					
B-003F	Sanger Ave	N 42nd St	29th St	Sign as bike route with sharrows and sidewalk on one side	X		X			X						
B-003G	Sanger Ave/N 29th St	36th	Washington	Sign as bike route with sharrows and install sidewalk on one side to connect to pedestrian corridor along Austin Ave. Sidewalk should be on west side of N 29th St.	X		X			X				X		
B-003H	Sanger Ave	N 29th St	N 15th St	Sign as bike route with sharrows						X						
B-004	Bosque Blvd	N New Rd	N Valley Mills Dr	Restripe to 5 lanes with buffered bike lanes; in vicinity of Bosque/New Road Development Node, Extraco Event Center, Waco High School, HEB, Target, West Waco Library, and many other services					X			X				
B-005A	Estates Dr	Woodway Park	US Hwy 84	Restripe to 3 lanes with bike lanes and construct sidewalks on one side; in vicinity of Woodway Elementary School, Woodway Park, Woodway City Hall, Family Center and Municipal Court, and Carleen Bright Arboretum	X		X		X		X					
B-005B	Hewitt Dr (FM 1695)	US Hwy 84	Chapel Rd	Add protected bike lanes										X		X
B-006A	Mary Ave	11th St	S 32nd St	Construct shared use path to provide central Waco off-street bike/ped connection									X	X		
B-006B	Mary Ave	11th St	S University Parks Dr	Sign as bike route with sharrows in downtown area; in vicinity of Downtown Development Node						X						
B-006C	Cottonbelt RR Bridge across Brazos River	S University Parks Dr	Riverwalk	Construct shared use path across bridge; will connect to Elm Ave Development Node.									X	X		
B-007	MKT RR Trail	Lake Shore Dr (FM 3051)	Mann St	Construct shared use path on former rail line and utility corridor				X					X	X		
B-008	Bellmead Dr (US 84)	Hogan Ln	Katy St	Restripe to 3 lanes with bike lanes and construct sidewalks on both sides		X	X	X	X			X				
B-009A	Speegleville Rd	US 84 WB Frontage Rd	River Valley IS Entrance	Construct shared use path on SB side; in vicinity of River Valley intermediate School, Twin Rivers, and South Bosque Development Node				X					X	X		
B-009B	Speegleville Rd/Old Lorena Rd	US Hwy 84	Church Rd	Construct shared use path to connect to existing Cottonbelt Trail; in vicinity of South Bosque Development Node				X					X	X		
B-010	Brazos Riverwalk	Brazos Park East	Waco Mammoth Natl Monument	Construct shared use path to connect existing riverwalk to Waco Mammoth National Monument									X	X		
B-011	N 19th St	Lake Shore Dr	Park Lake Dr	Construct shared use path on NB side; in vicinity of MCC, HEB, and two development nodes (Cedar Ridge and N 18th/19th Streets).									X	X		

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Project_ID	Facility	From	To	Scope of Work	Sidewalk 1 side	Sidewalk both sides	Special ADA Ramps	Signal Reconstruct	Road Diet	Bike Route	Bike Lanes	Buffered Bike Lanes	Shared Use Path	Improve Lighting	Pedestrian Overpass	Cycle Track or Protected Bike Lane
B-012	Park Lake Dr	N 19th St	N 25th St	Remove bike lanes, instead, consider shared lanes with sharrows and signage. Add sidewalk to at least one side.						X						
B-013A	Cottonbelt RR ROW	Cottonbelt Parkway	Harris Creek Rd	Construct shared use path (extension of Cottonbelt Trail)									X			
B-013B	Harris Creek Rd	Harris Creek Rd	Cottonbelt Trail/Trailblazer Park	Construct shared use path (extension of Cottonbelt Trail)									X	X		
B-013C	Hannah Hill Rd/US 84 Frontage Rd NB	Cottonbelt Trail	Panther Way	Construct shared use path (extension of Cottonbelt Trail)									X	X		
B-013D	Cottonbelt RR ROW	Jefferson Ave/3rd St (McGregor)	Cottonbelt Pkwy	ADA accessible crushed granite trail from Cottonbelt Pkwy to future McGregor Community Center. Potential future connection to paved portion of Cottonbelt Trail.									X	X		
B-013E	Harris Creek Rd	Stageline Dr	Harris Creek Rd	Construct shared use path (extension of Cottonbelt Trail)									X	X		
B-014	Lake Shore Dr / M L King Jr Dr	N 19th St	Brazos Park East	Construct bike/ped bridge across river (parallel to Lake Shore Dr) and connecting shared use path; in vicinity of Cedar Ridge and Steinbeck Bend Development Nodes		X	X	X					X	X		
B-015	Brazos Riverwalk	Lake Waco Dam Trail	MCC riverwalk	Construct shared use path connection from Lake Waco Dam Trail to MCC									X			
B-016	Tree Lake Dr (collector)	China Spring Rd	Flat Rock Rd	Widen paved area and stripe buffered bike lanes and sidewalks to connect China Spring neighborhood to shared use path toward downtown Waco; also to connect pedestrians to China Spring development node		X	X					X		X		
B-017	Flat Rock Rd (collector)	Christopher Ln	China Spring Rd (FM 1637)	Widen paved area and stripe buffered bike lanes and sidewalks to connect China Spring neighborhood to shared use path toward downtown Waco; also to connect pedestrians to China Spring development node		X	X					X		X		
B-018	Skeet Eason Rd	Flat Rock Rd	Lake Waco Dam Trail	Construct shared use path to connect China Spring neighborhood to Lake Waco Dam trail and downtown Waco									X			
B-019	Lake Shore Dr	Wooded Acres Dr	N 19th St (FM 1637)	Restripe to include bike lanes and install sidewalk on both sides		X	X				X			X		
B-020	Cobbs Dr	Fish Pond Rd	Hillcrest Dr	Restripe to include bike lanes and install sidewalk on both sides (some areas of gap closure); in vicinity of Lake Air Middle School. Improve pedestrian crossing at Valley Mills Dr. intersection.		X	X				X			X		
B-021	Hillcrest Dr	Lake Shore Dr	N 41st St	Stripe bike lanes and sidewalk on both sides to provide east-west connection between Lake Shoare Dr and Lyle/Herring Ave		X	X				X					
B-022	Herring Ave	N 4th St	Hillcrest Dr	Stripe bike lanes to create east-west connection between N 4th/N 5th St and MacArthur Dr							X					
B-023A	Herring/Lyle Ave	N 12th St	Hillcrest Dr	Stripe bike lanes to create east-west connection between N 4th/N 5th St and MacArthur Dr							X					
B-023B	Herring Ave	N 4th St	N University Parks Dr	shared use path to connect bike lanes on Herring Ave to existing shared use path along Herring Ave bridge									X			
B-024	Montrose/Behrens Circle/ La Clede St/Wilder St	MKT RR Trail	Bellmead Dr	Stripe bike lanes. In vicinity of La Vega Elementary and primary schools. Connects Bus 77 corridor to Bellmead Dr							X			X		
B-025	Mann St	MKT RR Trail	Elm Ave	Stripe bike lanes to connect Elm Ave Development Node to shared use path along former MKT rail line							X			X		
B-026	Peplow Dr	Old Robinson Rd	Chaddo Ln	Construct shared use path; in vicinity of Robinson Elementary School, Robinson Primary School, Peplow Park, and Brookshires grocery				X					X			
B-027A	Washington Ave	29th St	25th	Sign as bike route with sharrows and sidewalk on one side	X		X			X						
B-027B	Washington Ave	25th St	18th St	Stripe bike lanes in vicinity of Uptown businesses and Waco Main Library							X			X		
B-027C	Washington Ave	18th	5th St	construct two-way cycle track or protected bike lanes in vicinity of Downtown Development Node										X		X
B-028A	Chapel Rd	Old Lorena Rd	Ritchie Rd	Regional Bike Route						X						

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B-028B	Chapel Rd	Ritchie Rd	Hewitt Dr	Widen to four lanes divided with buffered bike lanes, add continuous sidewalk on both sides		X					X			X		
B-028C	Imperial Dr (FM 3223)	Hewitt Dr (FM 1695)	Texas Central Pkwy	Construct off-street shared use path									X	X		
B-029	W Tate Ave	Old Robinson	Pompano Park Dr	Construct shared use path; in vicinity of Robinson Jr High and High School and residences				X					X	X		
B-030	S 32nd St	Mary Ave	Clay Ave	Sign as bike route with sharrows and sidewalk on east side; in vicinity of Hart-Patterson Track Complex. Connect to Mary Ave shared use path.	X		X			X				X		
B-031	Crest Dr	US Bus 77	Campus Dr (TSTC)	Add bike lanes and construct continuous sidewalk on one side in vicinity of TSTC and TSTC Development Node. Connects Lacy-Lakeview to TSTC.	X		X	X			X			X		
B-032A	S 26th St	Clay Ave	Mary Ave	Sign as bike route with sharrows and sidewalk on one side; in vicinity of Bell's Hill Park. Connect to Mary Ave shared use path	X		X			X				X		
B-032B	S 26th St	Clay Ave	Dutton Ave	Road diet. Restripe to 2 lanes with bike lanes, add sidewalk to one side	X		X		X		X					
B-032C	S 26th St	Dutton Ave	Bagby Ave	Add bike lanes and sidewalk on one side	X						X					
B-033	N 4th St	Jefferson Ave	Herring Ave	Stripe bike lanes and sidewalk gap closure		X	X				X					
B-034	N 5th St	Jefferson Ave	Herring Ave	Stripe bike lanes and sidewalk gap closure		X	X				X					
B-035	N 15A	Baker Ln	Lyle Ave	Sign as bike route with sharrows						X						
B-036A	N 15th St	Lyle Ave	Herring Ave	Sign as bike route with sharrows						X						
B-036B	N 15th St	Herring Ave	Washington Ave	Sign as bike route with sharrows and sidewalk on both sides (gap closure). In vicinity of Near Northside Development Node, West Ave Elementary School, Mission Waco, Jubilee Grocery Store, Family Health Center, and Jubilee Park		X	X	X		X						
B-037	Bosque Blvd	N 15th St	University Parks Dr	Stripe bike lanes and add sidewalk on one side; in vicinity of Dewey Park and to connect to Cameron Park	X						X			X		
B-038A	S 5th St / Dutton Ave	Cleveland Ave	University Parks Dr	Stripe bike lanes (sharrows under IH-35), in vicinity of Downtown and Baylor Development Nodes to complete connection between 4th/5th St bike lanes and U Parks shared use path		X	X	X		X	X					
B-038B	S 4th St	IH-35 SB frontage Road	Dutton Ave	Stripe bike lanes (sharrows under IH-35), in vicinity of Downtown and Baylor Development Nodes to complete connection between 4th/5th St bike lanes and U Parks shared use path		X	X	X		X	X					
B-039A	University Parks Dr	IH-35	Franklin Ave	Add protected bike lane on each side of University Parks or two-way cycle track on one side of University Parks. In vicinity of Brazos Promenade and downtown development.				X	X							X
B-039B	University Parks Dr	IH-35	La Salle Ave	Road diet; add protected bike lanes on both sides of the street. Also, add sidewalk on both sides where it currently doesn't exist. Project is in vicinity of Baylor Development Node.		X		X	X							X
B-039C	University Parks Dr	La Salle	Garden Dr	Add bicycle and pedestrian path along south side of street, to accommodate travel to Baylor Campus and downtown									X	X		
B-040	Garden Dr	S University Parks Dr	S 12th St	Stripe bike lanes to connect to shared use path on University Parks Dr and bike lanes on 12th St. In vicinity of Baylor Development Node and							X			X		
B-041	S 3rd St	Garden Dr	just past Daugherty	Stripe bike lanes to connect to existing bike lanes on Baylor Campus, and add sidewalk to one side. In vicinity of Baylor Development Node	X						X					
B-042	Speight/16th St/James Ave	S 18th St	S 7th St	Stripe bike lanes in vicinity of Baylor Development Node							X					
B-043A	Bagby Ave	S 2nd St	University Parks Dr	Stripe bike lanes; in vicinity of Baylor Development Node and to connect existing bike lanes							X					
B-043B	Bagby Ave	S 3rd St	S 12th St	Stripe bike lanes; in vicinity of Baylor Development Node and to connect existing bike lanes							X					
B-044A	Irving Lee	Bagby Ave	IH-35 SB Frontage Rd	Stripe bike lanes. Near HEB				X			X					

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Project_ID	Facility	From	To	Scope of Work	Sidewalk 1 side	Sidewalk both sides	Special ADA Ramps	Signal Reconstruct	Road Diet	Bike Route	Bike Lanes	Buffered Bike Lanes	Shared Use Path	Improve Lighting	Pedestrian Overpass	Cycle Track or Protected Bike Lane
B-044B	Primrose Dr	IH-35 SB Frontage Rd	Old Robinson Rd	Stripe bike lanes and add sidewalk on one side to connect South Waco neighborhoods to HEB across the interstate	X						X			X		
B-044C	Primrose Dr/Irving Lee St	Old Robinson Rd	S 12th St	Stripe bike lanes and add sidewalk on one side to connect to existing bike lanes on 12th St, HEB, and down toward Alta Vista Elementary and University High School. In vicinity of south Waco neighborhoods and South Waco Elementary.	X						X			X		
B-045A	Bagby Ave	New Road	S 26th St	Stripe bike lanes and add sidewalks on both sides (gap closure); in vicinity of Kendrick Park, Kendrick Elementary School, and Bagby/New Road Development Node. This includes the Transit Needs Study priority transit improvement area - which identified the need to construct amenities such as sidewalk and ADA accommodations to nearby destinations (Bagby Ave)		X					X			X		
B-045B	Bagby Ave	Texas Central Parkway	S New Road	Off-street shared use path; in vicinity of Bagby/New Road Development Node, Central Texas Marketplace. This includes the Transit Needs Study priority transit improvement area - including the need to construct amenities such as sidewalk and ADA accommodations to nearby destinations (Central Texas Marketplace & Residences at Central Texas Marketplace)									X	X		
B-045C	Old Temple Rd/Bagby	Hewitt Dr (FM 1695)	Texas Central Pkwy	Sign as regional bike route, however, stripe bike lanes between Sun Valley Road and Spring Valley Road.						X	X					
B-046A	Dutton Ave/S 15th St	17th St	S 11th St/Clay Ave	Sign as bike route with sharrows. Project will connect Kate Ross apartments, Cesar Chavez Middle School, Kiwanis Field, and Cotton Palace Park to other existing bike lanes. Also connects to former Baylor stadium (future redevelopment area).						X						
B-046B	Dutton Ave	Valley Mills Dr	17th St	Road diet and stripe bike lanes.					X		X					
B-046C	Memorial Dr	New Road	Valley Mills Dr	Sign as bike route with sharrows.						X						
B-047	Richter St	Memorial Dr	Bagby Ave	Stripe bike lanes to connect Bagby Ave and Memorial Dr bike lane and route							X					
B-048	Gurley Ln	S 27th St	S 12th St	Sign as bike route with sharrows to connect South Waco Elementary School, South Waco Library, South 18th St Community Clinic, and Southern Little League/Alta Vista baseball fields to bike lanes on S 12th St						X						
B-049	S 7th St	Speight Ave	Bagby Ave	Stripe bike lanes to connect to existing bike lanes on Baylor Campus. Project is in vicinity of Baylor Development Node							X					
B-050	Clay Ave	Valley Mills	S University Parks Dr	Bike lane with continuous sidewalks to connect Kate Ross apartments, Cesar Chavez Middle School and Kiwanis Field, Cotton Palace Park to other existing bike lanes. Connect to potential future development area at former Floyd Casey Stadium.		X	X	X			X			X		
B-051	38th St	Sanger Ave	Austin Ave	Sign as bike route with sharrows and install sidewalk on one side to connect to pedestrian corridor along Austin Ave	X		X			X						
B-052	Austin Ave	S 38th St	N 29th St	Sign as bike route with sharrows and install sidewalk on one side to connect to pedestrian corridor along Austin Ave	X		X			X						
B-053A	Old Robinson Rd	Chesser Dr	Moonlight Dr (FM 3148)	Construct shared use path on one side of the street; in vicinity of University High School, Robinson Elementary School, Peplow Park, Robinson City Court, Robinson Jr High, Robinson Intermediate, and Robinson High				X					X	X		
B-053B	Old Robinson Rd	Chesser Dr	Primrose Dr	Construct bike lanes and sidewalk on one side; in in vicinity of Alta Vista Elementary School, Alta Vista Park, HEB Training Offices	X		X				X					

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Project_ID	Facility	From	To	Scope of Work	Sidewalk 1 side	Sidewalk both sides	Special ADA Ramps	Signal Reconstruct	Road Diet	Bike Route	Bike Lanes	Buffered Bike Lanes	Shared Use Path	Improve Lighting	Pedestrian Overpass	Cycle Track or Protected Bike Lane
B-053C	Alta Vista Dr	IH-35 NB Frontage Rd	Old Robinson Rd	Sign as bike route with sharrows and construct sidewalk on one side; in vicinity of Alta Vista Elementary School, Alta Vista Park, HEB Training Offices	X		X			X				X		
B-054A	New Rd	Colcord Ave	Cobbs Dr	Stripe bike lanes and sidewalk gap closure on west (park) side; in vicinity of Lake Air Little League fields, Lions Park, and Waco High School	X		X				X					
B-054B	New Rd	Colcord Ave	Bosque Blvd	Stripe bike lanes and sidewalk gap closure on west (park) side; in vicinity of Lake Air Little League fields, Lions Park, and Waco High School	X		X				X					
B-055	Ritchie Rd	Warren St	Hewitt Dr	Construct shared use path on east side of Ritchie Rd to connect to shared use path within Waco city limits				X					X	X		
B-056	Wooded Acres Dr	Lake Shore Dr	Bosque Blvd	Stripe bike lanes and install sidewalk on both sides (some areas of gap closure). Provides north-south connection between residential and commercial corridors near Bosque and Valley Mills		X	X		X		X					
B-057	Bishop Dr/Mt Carmel/Mountain view Dr/Roberts Dr	Wooded Acres Dr	Lake Air Dr	Sign as bike route with sharrows and sidewalk on one side; in vicinity of Mountainview Park and Elementary School and Vanguard Prep	X		X			X						
B-058	Lake Air Dr	Cobbs Dr	Hillcrest Dr	Stripe bike lanes to connect Hillcrest and Cobbs Dr bike lanes. In vicinity of Lake Air Middle School.							X					
B-059	Woodall/Ave G/Lakeview	Craven Ave	Craven Ave	Sign as bike route with sharrows and sidewalk on one side of the street (park side); in vicinity of Live Oak Park	X		X			X				X		
B-060	Richland Dr	Edmond Dr	Richland Mall	Stripe bike lanes and add sidewalk along one side of the street to connect residential area to Richland Mall	X						X					
B-061	N 65th St/Tennyson Dr/Owen Ln	Bosque Blvd	W Hwy 6 Eastbound Frontage Rd	Sign as bike route with sharrows and sidewalk on park side; in vicinity of Parkdale Elementary School, Tennyson Middle School, Jaycee Park. Includes Transit Needs Study priority transit improvement area - including construct amenities such as sidewalk and ADA accommodations to nearby destinations (Central Texas Marketplace)	X		X			X				X		
B-062	Edmond Ave	Rambler Dr	Richland Dr	Sign as bike route with sharrows and sidewalk on one side; in vicinity of Parkdale Elementary School	X		X			X				X		
B-063	Colcord Ave	N 42nd St	N University Parks Dr	Sign as bike route with sharrows and sidewalk gap closure in vicinity of Near Northside Development Node and to connect to Cameron Park area		X	X	X		X						
B-064	Maple Ave	New Rd	N 15th St	Sign as bike route with sharrows to provide east-west connection between New Road and N 15th St						X						
B-065	Alexander Ave	N 30th St	N 15A	Sign as bike route with sharrows to provide east-west connection between MacArthur Dr and N 15A, add continuous sidewalk		X	X	X		X						
B-066	Baker Ln	N 15A	Lindsey Hollow	Sign as bike route with sharrows to connect Cameron Park neighborhood to bike routes leading to N 19th St corridor						X						
B-067	Brook Ave	N 15th St	N 5th St	Sign as bike route with sharrows and close sidewalk gap on both sides; in vicinity of Brook Oaks Elementary School		X	X			X						
B-068	Dallas St	Elm Ave	Calumet	Stripe bike lanes and add sidewalk to one side (gap closure), and ADA curb ramp improvements (transit route and Estella May housing). This will connect to Elm Ave Development Node and shared use path along former MKT rail line	X		X	X			X					

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B-069	Faulkner Ln	Martin Luther King Jr	Gholson Rd	Stripe bike lanes and install sidewalks. This includes the Transit Needs Study priority transit improvement area - including construct amenities such as sidewalk and ADA accommodations to nearby destinations (Doris Miller Family YMCA, JH Hines Elementary, GL Wiley Opportunity Center)		X	X				X					
B-070A & B-070B	JJ Flewellen Rd	Doris Miller Elementary School	Faulkner Ln	Stripe bike lanes and add sidewalk to east side (gap closure between Faulkner and Dearborn St). Project is in vicinity of Oscar DuCongé Park, Eastern Little League Park, Carver Middle School, Rapoport Academy, Doris Miller Elementary School, and Estella Maxey housing and Carver Park Development Node	X						X					
B-071	Gholson Rd	MKT RR Trail	Faulkner Ln	Sign as bike route. Signs should indicate that bicyclists should ride in paved shoulder. This will connect to shared use path on MKT RR and other bike lanes. Sharrows not recommended here due to vehicle volumes and speed.						X				X		
B-072	Clifton / Elm	Faulkner Ln	Garrison St	Stripe bike lanes and install continuous sidewalk; in vicinity of Elm Ave Development Node and to connect to other bike lanes		X		X			X					
B-073	Garrison/Forrest	Faulkner Ln	Brooklyn St	Stripe bike lanes and install sidewalks (gap closure); in vicinity of G L Wiley Middle School and Rapoport Academy and Elm Ave Development Node		X	X				X					
B-074	Bus 77 and E Waco Dr	U Parks	S Loop 340	Construct pedestrian and bicycle facilities according to Bus 77 corridor study. Priority sections include Potts Interchange (also a Development Node) and Lacy-Lakeview between Craven and Crest		X	X	X	X		X	X	X	X		
B-075	1st St	Warren Rd	Old Temple Rd	Sign as bike route with sharrows with sidewalk on both sides.		X	X			X						
B-076	Warren St	Ritchie Rd	1st St	Sign as bike route with sharrows with sidewalk on both sides, connect to shared use path on Ritchie Rd		X	X			X				X		
B-077	Midway Dr	Clinton Dr	Estates Dr	Sign as bike route with sharrows and sidewalk on south side	X		X			X				X		
B-078	Fairway Dr	Bryce Dr	Estates Dr	Sign as bike route with sharrows						X						
B-079	Poage Dr	US 84 Frontage Rd	W Fairway	Sign as bike route with sharrows and add sidewalk to one side	X					X						
B-080	Stony Point	Poage Dr	W Fairway	Sign as bike route with sharrows						X						
B-081	Bryce Dr/Harvey Dr	W Fairway	Midway Dr	Sign as bike route with sharrows and add sidewalk to one side	X					X						
B-082	Lindsey Hollow/Rice/Sturgis	Baker Lane	Herring Ave	Sign as bike route with sharrows						X						
B-083A	Old Lorena Rd	Church Rd	Pilgrim Ln	Sign as regional bike route to connect McGregor area to Lorena						X						
B-083B	N Houston St/Center S	Pilgrim Ln	IH-35 Frontage Rd	Sign as bike route with sharrows and add sidewalk to one side	X					X						
B-083C	Williams Rd and Leopard Ln	Country Spring Rd	N Houston St	Sign as bike route with sharrows and add sidewalk to one sides	X					X						
B-084	Sandalwood Dr	Poage Dr	Ritchie Rd	Sign as bike route with sharrows and sidewalk on one side to connect Poage Dr bike route to Ritchie Road shared use path; in vicinity of Poage Park						X						
B-085	Warren Rd	Old Lorena Rd	Ritchie Rd	Sign as regional bike route						X						
B-086	Castleman Creek	Warren Park at Old Temple Rd (Hewitt)	Warren St	Construct shared use path									X	X		
B-087A	Walnut St/Oak Dr	Crest Dr	Ave G	Sign as bike route with sharrows and sidewalk on one side	X		X			X						
B-087B	Patricia St / Crest Dr	Walnut St	James St	Sign as bike route with sharrows and sidewalk on one side	X		X			X						
B-088	Rita St and Ave B	Walnut St	US Bus 77	Sign as bike route with sharrows and sidewalk on one side	X		X			X						
B-089	Cadet Way	James St	IH-35 SB Frontage Rd	Sign as bike route with sharrows and sidewalk on one side	X		X			X				X		

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B-090	Hogan Ln/ Beale St	Behrens Circle	Boston St	Sign as bike route with sharrows and sidewalk on one side; in vicinity of Lions Park, Brame Park, and La Vega schools, HEB and other businesses	X		X			X						
B-091	Wheeler/Barlow/ Gilliam/Latimer	Hogan Ln	Laclede St	Sign as bike route with sharrows and sidewalk on one side; in vicinity of Lions Park, Brame Park, and La Vega schools, HEB and other businesses	X		X			X				X		
B-092	Orchard Lane	S Loop Dr/Bus 77 SB frontage rd	E Loop 340	Bike lane and sidewalk on one side; connects to existing bike lanes on Orchard Lane (west side of S Loop Dr/Bus 77)	X		X				X					
B-093	Crow Dr/Hermosa Dr	Orchard Ln	Madera Dr	Sign as bike route with sharrows and sidewalk on one side; in vicinity of Buena Vista Park and La Vega Middle School	X		X			X						
B-094A	McFerrin Ave	MacArthur Dr	N 19th St	Sign as bike route with sharrows and sidewalk on both sides (gap closure); in vicinity of North Waco Park		X	X			X						
B-094B	N 25th St/N 22nd St/Edna Ave/N 21st St	McFerrin Ave	McFerrin Ave	Sign as bike route with sharrows and sidewalk on one side (gap closure); in vicinity of North Waco Park	X		X			X						
B-095A	Rose St/Chestnut St	Garrison St	Elm Ave	Sign as bike route with sharrows and sidewalk on both sides (gap closure); in vicinity of East Waco Park, Rapoport Academy, and Elm Ave Development Node		X	X			X						
B-095B	Chestnut St/Hood St/McKeen St	Rose St	Rose St	Sign as bike route with sharrows and sidewalk on one side (gap closure); in vicinity of East Waco Park, Rapoport Academy, and Elm Ave Development Node	X		X			X						
B-097	Polo Park Dr/Shawnee Trail/Riders way/Houston Dr/Travis Ln	Panther Way	Warren Dr	Sign as bike route with sharrows; in vicinity of Pioneer Park						X						
B-098A	N 44th St	Cobbs Dr	Trice Ave	Sign as bike route with sharrows; in vicinity of Extraco Event Center, Waco High School, Lake Air Little League fields, Lions Park, and Harrison Senior Center.						X						
B-098B	Trice Ave	N 44th St	New Road	Sign as bike route with sharrows; in vicinity of Extraco Event Center, Waco High School, Lake Air Little League fields, Lions Park, and Harrison Senior Center						X						
B-098C	N 42nd St	Trice Ave	Bosque Blvd	Sign as bike route with sharrows; in vicinity of Extraco Event Center, Waco High School, Lake Air Little League fields, Lions Park, and Harrison Senior Center						X						
B-099	E Brookview Dr/N 31st St	N 36th St	Sanger Ave	Sign as bike route with sharrows and sidewalk on both sides (gap closure); in vicinity of S.J. Guthrie Park	X		X			X						
B-100	Alexander Ave/N 30th St/Mitchell Ave/N31st St/Lyle Ave	MacArthur Dr	Lyle Ave	Sign as bike route with sharrows and sidewalk on both sides (gap closure); in vicinity of Mitchell Park	X		X			X						
B-101A	Fish Pond Rd	SH 6 frontage rd	Cobbs Dr	Add bike lanes and sidewalk on one side							X			X		
B-101B	Rambler Dr/Viking Dr	Fish Pond Rd	Fish Pond Rd	Sign as bike route with sharrows (in vicinity of Viking Hills Park) and sidewalk on park side	X					X				X		
B-102	Old McGregor Rd	Broughton Dr	W Hwy 6 frontage	Sign as bike route with sharrows and sidewalk on one side; in vicinity of Whitehill Park and Broughton baseball fields	X		X			X				X		
B-103A	Wedgewood Dr	Bosque Blvd	Delhi Dr	Sign as bike route with sharrows and sidewalk on one side	X		X			X				X		
B-103B	Santa Fe Dr/Fresno Dr	Delhi Dr	Old McGregor Rd	Bike lanes and sidewalk on one side; in vicinity of Whitehill Park and Broughton baseball fields	X		X				X			X		
B-104	Ritchie Rd/Wickson Rd	Wickson Rd	Panther Way	Construct shared use path; in vicinity of South Bosque Elementary School. Utilize existing sidewalk on Ritchie Rd bridge				X					X	X		
B-105	S 7th/Gurley	La Salle Ave	S 12th St	Construct sidewalk on one side and sign as bike route with sharrows; in vicinity of Oakwood Park. Connects to bike lanes on 12th St.	X		X			X						

Appendix D - Universe of Need (updated 7/11/19)

Project_ID	Facility	From	To	Scope of Work	Sidewalk 1 side	Sidewalk both sides	Special ADA Ramps	Signal Reconstruct	Road Diet	Bike Route	Bike Lanes	Buffered Bike Lanes	Shared Use Path	Improve Lighting	Pedestrian Overpass	Cycle Track or Protected Bike Lane
B-106	E 7th St/Old Caulfield Ranch Rd/Church Rd	Main St (SH 317)	Old Lorena Rd	Sign as regional bike route						X						
B-107A	Indian Tr/Bubert Ln/Horne Hill Rd	Old Caulfield Ranch Rd	Spring Valley Rd	Sign as regional bike route						X						
B-107B	Cotton Belt Parkway	Old Caulfield Ranch Rd	Spring Valley Rd	Sign as regional bike route						X						
B-108	Eddy-Gatesville Pkwy	SH 317	IH-35	Sign as regional bike route from Moody to Bruceville Eddy, except stripe bike lanes within Moody & Bruceville-Eddy proper	X					X	X					
B-109A	Texas Central Parkway	Old McGregor	Imperial Dr	Add buffered bike lanes and sidewalk between Old McGregor and Imperial Dr	X							X		X		
B-109B	Texas Central Parkway	Imperial Dr	Bagby Ave	Construct shared use path									X			
B-110	S New Rd	Beverly Dr	Bagby Ave	Construct shared use path; in vicinity of VA Hospital and Bagby/New Road Development Node									X			
B-111	US 84 WB Frontage Rd / Twin Rivers Blvd	Twin Rivers Cir	Speegleville Rd	Construct sidewalk in front of Twin Rivers; in vicinity of South Bosque Development Node	X											
B-112A	17th St / 18th St	Primrose	Homan Ave	Construct pedestrian and bicycle facilities according to 17/18/19 Corridor Study. Reduce travel lanes and add shared use path along bridge. Connects to and between N 18th/19th St Corridor, S 17th/18th St Corridor, and La Salle Development Nodes.		X	X	X	X				X			
B-112B	18th St / 19th St	Homan Ave	Lake Shore Dr	Construct pedestrian and bicycle facilities according to 17/18/19 Corridor Study. Reduce travel lanes and add shared use path along bridge. Connects to and between N 18th/19th St Corridor, S 17th/18th St Corridor, and La Salle Development Nodes. This includes the Transit Needs Study priority transit improvement area - which identified the need to construct amenities such as sidewalk and ADA accommodations to nearby destinations (N 18th #1 & #2)		X	X	X	X				X			
B-114A	Spring Valley Rd	FM 107	Old Lorena Rd	Regional bike route. Requires road widening and/or paved shoulders to be appropriate for a bike route.						X						
B-114B	Spring Valley Rd	Old Lorena Rd	Hewitt Dr (FM 1695)	Regional bike route. Requires road widening and/or paved shoulders to be appropriate for a bike route.						X						
B-114C	Spring Valley Rd	Hewitt Dr (FM 1695)	Sun Valley Rd	Bike route and sidewalk on both sides (sidewalk calculation excludes section that will be improved as part of TxDOT project).		X	X	X		X				X		
B-115A	Panther Way	Woodgate Dr	Hewitt Dr	Construct buffered bike lane and sidewalk on both sides		X	X					X		X		
B-115B	Hewitt Dr (FM 1695)	Panther Way	Mars Dr	Construct shared use path; in vicinity of Midway ISD schools									X	X		
B-116	La Salle	Primrose Dr	University Parks Dr	Construct pedestrian and bicycle facilities - will require a corridor study. In vicinity of Baylor and La Salle development nodes		X	X	X	X			X				
B-117	Rambler Dr/Sanger Ave	Fish Pond Rd	Sanger Ave	Sign as bike route with sharrows.						X						
B-118	E 3rd St/Main St (SH 317)/Old McGregor-Crawford Rd (McGregor)	Just past N Navajo Trail	E 7th/E 3rd	Sign as bike route with sharrows. Connect to McGregor Cottonbelt Trail.						X						
B-119	Mackey Ranch Rd/Old Bethany Rd/Robin Rd/Box Ranch Rd/Country Spring Rd	Eddy-Gatesville Pkwy	Williams Rd	Sign as bike route with sharrows to connect western Lorena neighborhoods and Lorena ISD schools to downtown Lorena						X						
B-120A	Bordon St/Rosenthal Pkwy (2837)(Lorena)	Old Lorena Rd	Bus 77	Regional bike route from Lorena to Rosenthal						X						

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B-120B	Hillside Dr/Moonlight Dr/S 12th St/Newland Dr/Tinsley Dr	Rosenthal Pkwy	Old Robinson Rd	Regional bike route to connect east-west bike route to Robinson						X						
B-120C	S 12th St/Garden Dr	Newland Dr	S 12th St	Regional bike route to connect Robinson to South Waco						X						
B-120D	Robinson Rd (Bus 77)/E Rocket Rd/S 3rd St/Hobbs Ln	Rosenthal Pkwy	E Moonlight Dr	Regional bike route near Robinson						X						
B-120E	Old Robinson Rd/Downsville Rd	E Moonlight Dr	S University Parks Dr	Regional bike route near Robinson						X						
B-121	Cap Fisk Rd/Middle Bosque (401)/Old Patton Rd/Chisholm Trail/Old McGregor-Crawford Rd/Main St (317)	South of Valley Mills (MCLENNAN COUNTY LINE)	North of McGregor (S NAVAJO TRAIL)	Regional bike route to connect south of Valley Mills to McGregor						X						
B-122	Compton School Rd/Twin Bends Rd/Old Crawford Rd/Baylor Camp Rd/Yankie Rd	Chisolm Trail	Flat Rock Rd	Regional bike route to connect Crawford to China Spring neighborhood in Waco						X						
B-123A	Bellview Rd/Shiloh Church Rd/Cedar Rock Pkwy/Stardust Rd/Galaxy Rd/Willow Grove Rd	Compto School Rd	Speegle Rd	Regional bike route to connect east-west bike routes to Speegleville						X						
B-123B	Galaxy Rd	Old Crawford Rd	Stardust Rd	Regional bike route to connect east-west bike routes to Speegleville						X						
B-124A	Windsor Rd/Middle Windsor Road/New Windsor Pkwy/Speeglevill e Rd	317 (Lone Star Pkwy)	Oak Rd	Regional bike route to connect McGregor to Speegleville Road/Twin Rivers/Hidden Valley area						X						
B-124B	5th St E (Crawford)/Ceda r Rock Pkwy/Anderson Ln/	Old McGregor Crawford Road	New Windsor Pkwy	Regional bike route to connect Crawford to other routes						X						
B-125	Rock Creek Rd/Steinbeck Bend Dr/Martin Luther King Jr Dr	Old China Spring Rd	Herring Ave	Regional bike route to connect China Spring neighborhood to downtown Waco						X						
B-126	JJ Flewellen Rd/Gholson Rd/Spring Lake Rd/Old Dallas Rd/N Katy Rd/Ross Rd/Gholson Rd	north of Herring	Wildcat Circle	Regional bike route to connect Waco to Ross and Gholson						X						
B-127A	Tokio Rd/W Columbus	Wildcat Circle	Harrison St	Regional bike route to connect Gholson to West						X						

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B-127B	W Tours Rd/Wiggins Rd/Brickyard Rd	W Tours Rd	Tokio Rd	Regional bike route to connect Ross to east-west routes						X						
B-127C	Wiggins Rd/Old Dallas Rd	Brickyard Rd	Tokio Rd	Regional bike route to connect West and Ross						X						
B-127D	Old Dallas Rd/Heitmiller Rd/N Base Rd/	Wiggins Rd	Leroy Pkwy	Regional bike route (north/south connector)						X						
B-128A	Tours Rd/Heritage Pkwy/Cottonwood Rd	N Katy Rd	N Reagan St	Regional bike route to connect Ross to West						X						
B-128B	Leroy Pkwy/Heritage Pkwy	Old Dallas Rd	Tree Top Dr/Heritage Pkwy	Regional bike route to connect Ross to Leroy						X						
B-128C	E Commerce St/Heritage Pkwy/Sutherland Rd/N Lake St	Leroy Pkwy	Wood St	Regional bike route to connect Leroy to Axtell						X						
B-129	Kelinsky Rd/Lincoln City Rd/Oak Knoll Ln/Manzanec Rd/Our Way Rd/Maehr Rd/Concord Rd/Williams Rd/Harrison Rd/Penton Rd/Campground Rd/Old Mexia Rd/Orchard Ln	Leroy Pkwy	E Loop 340	Regional bike route to connect Orchard Lane area of Waco to regional bike route running east-west						X						
B-130	Monthie Rd/Bays Rd/Denton Rd	Our Way Rd	Sutherland Rd	Regional bike route						X						
B-131	Old Mexia Rd/Native Oaks Rd/Old Axtell Rd	Old Mexia Rd	N Lake St	Regional bike route						X						
B-132	Orchard Ln/Old Springfield Rd/Elk Rd/S Vichard Rd/Hurst Rd/S Lake St	Crow Ln	Wood St	Regional bike route						X						
B-133	Trading Post Rd/Sommerfield Dr/Wilbanks Dr/Darwin St	Elk Rd	Hallsburg Rd	Regional bike route to connect Hallsburg to east-west bike route						X						
B-134	Londonderry	Old McGregor	Sanger Ave	Bike lanes and sidewalk on both sides; in vicinity of medical offices and hospital		X			X		X			X		
B-135	Bosque Blvd	Estates Dr	Wedgewood Dr	Reconstruct as 3 lanes with bike lanes					X		X					
B-136	Woodgate Dr	Chapel Rd	Panther Way	Add bike lanes; in vicinity of Woodgate Intermediate School. Connect to bike lanes on Chapel Rd and Panther Way							X			X		
B-137	Connally Circle	Old Dallas Rd	Old Dallas Rd	Bike route with sharrows; in vicinity of Connally Jr High						X				X		
B-138	Speegleville Rd/Speegle Rd	New Windsor Pkwy	Willow Grove Rd	Regional bike route						X						
B-139	Calumet	Dallas St	JJ Flewellen	Bike route with sharrows to connect Dallas and JJ Flewellen bike lanes. Add sidewalk to one side.	X					X						
B-140	Cobbs/Leland	N 41st St	N 34th St	Sign as bike route with sharrows						X						
B-141A	Craven Ave	Bus 77	Campus Dr (TSTC)	Add bike lanes. Will require road diet along Airbase between Craven and TSTC					X		X			X		

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B-141B	E Craven Ave	US Bus 77	Vance Ave	Construct continuous sidewalk on one side. Connects Lacy-Lakeview to TSTC. Construct Pedestrian Crossing at UP RR & Airbase Rd, connection to Vance. This includes the Transit Needs Study priority transit improvement area - including the need to construct amenities such as sidewalk and ADA accommodations to nearby destinations (S TSTC Waco Campus) in vicinity of TSTC Development Node	X		X	X						X		
B-141C	Airbase Rd, Boiling Dr, Scott Circle	E Craven Ave	Campus Dr (TSTC)	Construct continuous sidewalk on one side to connect Lacy-Lakeview to TSTC	X		X							X		
B-142	N Valley Mills Dr	Bosque Blvd	Cobbs Dr	Buffered bike lanes and sidewalk on both sides. Connects to Wooded Acres, Bosque, and Cobbs bike lanes		X			X		X					
B-143	Devonshire and Longwood	Spring Valley Rd	Ritchie Rd	Sign as bike route with sharrows to connect Spring Valley Rd bikeway to Ritchie Rd shared use path						X						
B-144	Mill St	Dallas St	Brazos Riverwalk	Sign as bike route with sharrows to connect bike lanes on Dallas (and MKT Trail) to riverwalk		X				X				X		
B-145	Lyndale St	western terminus	St Andrews Dr	Sign as bike route with sharrows and sidewalk on both sides, to connect neighborhoods to Robinson Jr High, and future Town Center area		X		X		X				X		
P-001	IH-35	Behrens Cir	N Loop 340	Construct Pedestrian Overpass in vicinity of Wal-Mart			X							X	X	
P-002	Carver Ave	Dallas St	J J Flewellen Rd	Construct continuous sidewalk on one side; in vicinity of Oscar DuCongé Park, Carver Middle School, and Carver Park Development Node	X		X									
P-004	Industrial Blvd	MKT RR Trail	The Landing Apartments (just east of river)	Construct sidewalk on both sides, in vicinity of Pilgrim Pride Cargill, Brazos Village Apts. This includes the Transit Needs Study priority transit improvement area - which identified the need to construct amenities such as sidewalk and ADA accommodations to nearby destinations (Brazos Village Apartments)		X	X	X						X		
P-005	Lake Shore Dr	Intersection @ N 19th St		Reconstruct intersection and traffic signal to Accommodate Pedestrians in vicinity of Cedar Park Development Node and MCC			X	X								
P-006	Lake Shore Dr	Intersection @ Waco Dam Trail		Reconstruct intersection to accommodate pedestrians and bicyclists			X	X								
P-007	Robinson Dr (US 77)	S Loop 340	Moonlight Dr (FM 3148)	Construct continuous sidewalk on both sides in downtown Robinson, and to connect residences to downtown Robinson		X	X	X						X		
P-008	Bagby Ave	Intersection @ S 2nd St		Reconstruct intersection & signal to accommodate ped scatter phase (in vicinity of Baylor Development Node)			X	X								
P-009	Hewitt Dr (FM 1695)	US 84 WB Frontage Rd	US 84 EB Frontage Rd	Widen bridge to accommodate ADA accessible sidewalks on both sides, this will also help to accommodate future BRT station in this location.		X	X	X						X		
P-012	Gholson Rd	Tejas Diesel Services and Tire	Ft Graham	Construct sidewalk on east side; in vicinity of businesses and juvenile probation center on Gholson Rd	X		X							X		
P-013	Mars Dr	Hewitt Dr (FM 1695)	Texas Central Pkwy	Construct shared use path; in vicinity of Midway ISD schools									X	X		
P-014	Main St (SH 317)	W 11th Ave	US Hwy 84	construct continuous sidewalk on both sides (gap closure) in downtown McGregor with pedestrian crossing improvements at W 3rd, W 6th, and Hwy 84		X	X	X								
P-016A	N Loop 340	Intersection @ Bank Dr		Reconstruct intersection & signal to accommodate pedestrians and improve safety, in Bellmead; in vicinity of businesses on Loop 340 and La Vega High School			X	X						X		
P-016B	N Loop 340	Intersection @Scroggins Dr		Add bike lanes and sidewalks to accommodate BRT station accessibility.			X	X						X		

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P-016C	N Loop 340	Intersection @ Research Blvd		Reconstruct intersection & signal to accommodate pedestrians and improve safety in Bellmead; in vicinity of businesses on Loop 340 including Walmart			X	X						X		
P-018A	N 19th St	Intersection at Powell Dr		Reconstruction intersection & signal to accommodate pedestrians and improve safety at MCC; in vicinity of MCC and US Post Office			X	X						X		
P-018B	N 19th St	Intersection at College Dr		Reconstruction intersection & signal to accommodate pedestrians and improve safety; in vicinity of MCC and US Post Office and Waco Premier High School			X	X						X		
P-018C	College Dr	Intersection at McLennan Dr		Reconstruction intersection & signal to accommodate pedestrians and improve safety; in vicinity of MCC			X	X						X		
P-019	New Road	Bosque Blvd	Franklin Ave	Construct continuous sidewalk on both sides (gap closure). In vicinity of Walmart, VA Hospital, Crestview Elementary School, Texas Christian Academy, Waco Baptist Academy, and Crestview Park		X	X	X						X		
P-020	S New Rd	Memorial Dr	Franklin Ave	Widen bridge to accommodate ADA accessible sidewalks on one side, and include sidewalk extension until Beverly Dr. This includes the Transit Needs Study priority transit improvement area - including the need to construct amenities such as sidewalk and ADA accommodations to nearby destinations (Walmart)	X		X	X						X		
P-021	Hewitt Dr (FM 1695)	US 84 Frontage Rd	Warren St	Construct continuous sidewalk on both sides		X	X	X						X		
P-022	N 25th St	Park Lake Dr	Mary Ave	Construct continuous sidewalk on both sides; in vicinity of 25th/26th St Corridor Development Node (some areas of gap closure), Provident Heights Elementary School, Waco Charter School, Brazos Middle School, St Louis and Reicher Schools		X	X									
P-023	N 26th St	Mary Ave	Maple Ave	Construct continuous sidewalk on both sides; in vicinity of 25th/26th St Corridor Development Node (some areas of gap closure)		X	X									
P-024	S 12th St	Garden Dr	La Salle Ave	Construct sidewalk on one east side (gap closure)	X		X									
P-025	Moonlight Dr (FM 3148)	Old Robinson	Ivan Rd	Construct continuous sidewalk on both sides		X	X	X						X		
P-026	Dutton Ave	Valley Mills Dr	S 26th	Construct sidewalk on south side (in vicinity of South Waco Park)	X		X							X		
P-027	S 26th St	Dutton Ave	Bagby Ave	Construct sidewalk on west side (in vicinity of South Waco Park)	X		X									
P-028	S 29th St	Dutton Ave	Speight Ave	Construct sidewalk on east side (in vicinity of South Waco Park)	X		X									
P-029	Speight Ave	Valley Mills Dr	S 26th St	Construct sidewalk on west side (in vicinity of South Waco Park)	X		X									
P-030	W Hwy 6 eastbound frontage road	Bosque Blvd	Midway Park	Construct sidewalk along frontage road to connect Texas Oncology and Ridgewood Retirement Center to Midway Park. This includes the Transit Needs Study priority transit improvement area - which identified the need to construct amenities such as sidewalk and ADA accommodations to Ridgecrest Retirement & Healthcare	X		X							X		
P-032	US Hwy 84 (McGregor)	Main St (SH 317)	N Johnson Dr	Construct continuous sidewalk on south side; in vicinity of businesses on Hwy 84 with crossing improvements at N Johnson Dr	X		X	X								
P-033A	Lonestar Pkwy (SH 317)	US Hwy 84	E Windsor Rd	Construct continuous sidewalk on east side of street	X		X	X								
P-033B	Lonestar Pkwy (SH 317)	E Windsor Rd	Alamo St	Construct continuous sidewalk on east side of street	X		X	X						X		
P-035	Johnson Dr	US Hwy 84 (McGregor)	Bluebonnet Pkwy	Construct continuous sidewalk on both sides; in vicinity of McGregor Housing Authority, Westview Manor, Bewly Park, C3, McGregor Elementary School, and Bluebonnet Park (some areas of gap closure only)		X	X	X						X		

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P-036	Bluebonnet Pkwy	Johnson Dr	Main St (SH 317)	Construct continuous sidewalk on one side; in vicinity of McGregor Elementary School and McGregor High School	X		X									
P-037	Lonestar Pkwy (SH 317)	W 11th Ave	Bluebonnet Pkwy	Construct sidewalk on west side; in vicinity of McGregor High School including pedestrian crossing improvement at Bluebonnet Parkway	X		X									
P-038	Lonestar Pkwy (SH 317)	Rachel Rd	Bluebonnet Pkwy	Construct sidewalk on east side	X		X							X		
P-041	Dutton Ave	S 15th St	S 11th St	ADA sidewalk and curb ramp improvements along bus route and near Kate Ross apts; and in vicinity of Cotton Palace Sports Complex and Cesar Chavez Academy		X	X									
P-042	S 11th St	Ross Ave	Clay Ave	ADA sidewalk and curb ramp improvements along bus route and near Kate Ross apts		X	X									
P-043A	Primrose Dr/ S 12th St / Gurley Ln / S 18th St			ADA sidewalk and curb ramp improvements on one side, along bus route near South Terrace Apts	X		X							X		
P-043B	Kennedy Cir/Lyndon Cr/ Carter Dr/S 14th St/ Benton Dr			ADA sidewalk and curb ramp improvements on one side, along bus route and within South Terrace Apts	X		X									
P-044	Adams St/ Bennett St / Delano Ave / Calumet Ave / Abbott St / Cantrell St			ADA sidewalk and curb ramp improvements on one side, within Estella Maxey apts to provide access to transit and other active modes	X		X									
P-046	N Valley Mills Dr	Bosque Blvd	Bosque Blvd	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-047	N Valley Mills Dr	Wooded Acres Dr	Wooded Acres Dr	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-048	N Valley Mills Dr	Lake Air Dr	Lake Air Dr	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-049	N Valley Mills Dr	Sanger Ave	Sanger Ave	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-050	N Valley Mills Dr	N New Rd	N New Rd	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-051	N Valley Mills Dr	W Waco Dr	W Waco Dr	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-052	N Valley Mills Dr	Memorial Dr	Dutton Ave	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-053	N Valley Mills Dr	Speight Ave	Speight Ave	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-054	N Valley Mills Dr	Bagby Ave	Bagby Ave	Improve pedestrian crossing such as ADA curb ramps, crosswalk markings, pedestrian countdown, pedestrian refuge island, protected left turn		X	X	X						X		
P-055	N 19th St	College Dr / Gregory Ln	Park Lake Dr	Sidewalk gap closure and ADA sidewalk improvements on both sides in vicinity of Whispering Oaks, William Booth Garden Apts, HEB and other services.		X	X									
P-056	Oak Rd	Just west of Canyon Trail	Speegleville Rd	Sidewalk on one side of the street in vicinity of River Valley Intermediate School	X		X							X		

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P-057	Woodgate Dr	Chapel Rd	Panther Way	Sidewalk gap closure on west side of street in vicinity of Midway Intermediate School	X		X							X		
P-058	Behrens Circle	Hogan Ln	Bus 77	Install sidewalk on both sides to connect residences to services on either side of IH-35 and Bus 77		X	X									
P-059	Hewitt Dr (FM 1695)	Park Place Dr	Ritchie Rd	Sidewalk gap closure both sides		X	X							X		
P-060	Williams Rd/Old Lorena Rd	Lorena Primary School	N Houston St	Sidewalk on both sides; in vicinity of Lorena ISD schools and Brookshire Brothers		X	X							X		
P-061	Austin Ave	Waco Dr	3rd St	Sidewalk gap closure on both sides of the street		X	X									
P-062	Park Lake Dr	Lake Shore Dr	N 19th St	Install sidewalk on north side to connect neighborhoods to North 18th/19th Street Corridor Development Node	X		X									
P-063	Taylor Ave	Martin Luther King Jr	Martin Luther King Jr	Add sidewalks to accommodate access to the BRT stations.		X	X							X		
P-064	IH-35 NB Frontage Rd	N Loop 340	Walmart Entrance	Transit Needs Study priority transit improvement area - construct amenities such as sidewalk and ADA accommodations to nearby destinations (Walmart)	X		X							X		
P-065	Highlander Dr	Highlander Dr	Highlander Dr	Transit Needs Study priority transit improvement area - construct amenities such as sidewalk and ADA accommodations to nearby destinations (MCC & MCC South)		X	X							X		
P-066	Orchard Lane	M L King Dr (Loop 574)	Bus 77	Transit Needs Study priority transit improvement area - construct amenities such as sidewalk and ADA accommodations to nearby destinations (McLane Stadium)		X	X							X		
P-067	Bellmead Dr (US 84)	Dewey Pickney	Dewey Pickney	Transit Needs Study priority transit improvement area - construct amenities such as sidewalk and ADA accommodations to nearby destinations (TxDOT Offices)		X	X							X		
P-068	IH-35 SB Frontage Rd (Jack Kultgen Expwy)	Marketplace Dr	Marketplace Dr	Transit Needs Study priority transit improvement area - construct amenities such as sidewalk and ADA accommodations to nearby destinations (Central Texas Marketplace)		X	X							X		
P-069	W Loop 340	Beverly Dr	Beverly Dr	Transit Needs Study priority transit improvement area - construct amenities such as sidewalk and ADA accommodations to nearby destinations (W Loop 340)		X	X							X		
P-070	Lake Air Dr	Franklin Ave Service Rd	Hillcrest Dr	Sidewalk gap closure both sides		X	X	X								
P-071	5th St	Cleveland Ave	Clay Ave	Sidewalk gap closure both sides of the street		X	X									
P-072	6th St	Franklin Ave	Mary Ave	Sidewalk gap closure both sides		X	X									
P-073	Waco Dr	Lake Air Dr	Clifton Ave	Sidewalk gap closure both sides, including ADA pedestrian accommodation across bridges. This will also help to accommodate future BRT station along this corridor.		X	X	X								
P-074	Williams Rd & E Loop 340	Loop 340	Loop 340	Pedestrian and bicycle overpass for students traveling to La Vega Intermediate School											X	
P-075	Joel Hooper Dr/N Bordon St/Old Lorena Rd	Conoco Gas Station	IH-35	Construct sidewalk on both sides to provide connectivity between central Lorena residential neighborhoods, Evans Field park, and downtown (Center St)		X										
P-076	Ver-Lo Dr	IH-35 NB Frontage Rd	Springdale Ln	Construct sidewalk on one side of street	X											
P-077	Rosenthal Rd (2837)	IH-35 NB Frontage Rd	Old Rosenthal Rd	Construct sidewalk on both sides of street		X								X		
P-078	Shamrock Dr	Old Robinson Rd	north of cemetery	Construct sidewalk on both sides of street to connect neighborhoods to Town Center development		X								X		
P-079	Stegall Dr	Old Robinson Rd	south of cemetery	Construct sidewalk on both sides of street to connect neighborhoods to Town Center development		X										
P-080	Tate Ave	Old Robinson Rd	St Andrews Dr	Construct sidewalk on both sides of street to connect neighborhoods to Town Center development		X										

Appendix D - Universe of Need (updated 7/11/19)

Project_ID	Facility	From	To	Scope of Work	Sidewalk 1 side	Sidewalk both sides	Special ADA Ramps	Signal Reconstruct	Road Diet	Bike Route	Bike Lanes	Buffered Bike Lanes	Shared Use Path	Improve Lighting	Pedestrian Overpass	Cycle Track or Protected Bike Lane
P-081	W State Hwy 6 and Eagle Way	Eagle Way/Valley Mills Middle and High School	McLennan County line	Construct shared use path on east side of W State Hwy 6 to connect residences (including manufactured home park) to the school campus, and to connect to previously funded TxDOT SRTS sidewalk project			X						X			

Appendix E: Public Comments on the Draft Active Transportation Plan

Public Comments Received on the Draft Active Transportation Plan

Dave Morrow, Advocacy Director, Waco Bicycle Club, 5/4/19

1. Adjust population ethnic distribution to total 100% (page 9)
2. Explain that at current funding levels it would take 100 years to complete projects. (page 53)

Leilani Mueller, Resident, 5/8/19

I am really excited about the improvements that are going to made. However, when I looked at the map around the South Waco Elementary School, close to where I live, I was disappointed to see that sidewalks and bike lanes would not be extended on Gurley from 12th st. past the school to 27th st. I am mother with two young kids under the age of five. I enjoy walking to the library. My husband frequently bikes and runs from our area. More young families are moving into the area, and for the safety of the children and to encourage more walking sidewalks and bike lanes should be added on this stretch of Gurley. It also seems that those sidewalks should include some additional drainage for the rain which is messing up the street. Is there anything that can be done to add this sidewalks to the plan along this stretch?

Michael Jeter, Resident, 6/4/19 and 7/1/19

As far as the proposed priority projects on map 7.4, I agree with you on the importance of creating long, connected corridors. I don't think that the Lake Shore Drive or Mars Drive planned routes are high priority projects, and I think that they should be removed from the priority list. Here's why:

- From looking at the map, it doesn't look like the Mars Drive shared used path would contribute at all towards creating long, connected corridors.
- As far as the Lake Shore Drive section, I think that it would be a great disservice to those who would rely on bicycles for vital transportation, not just recreation, if the first attempt at a significant East-West corridor in Waco were to be made on the outside edge of the city, instead of through it.

So instead of those routes being a priority, I suggest prioritizing an East-West route through the city that would seem to meet the majority of the criteria questions, such as "Will the project benefit populations with demonstrated need for pedestrian and bicycle facilities?", "Will the project connect people to schools or commercial/employment centers?", etc. Towards that goal:

- I would recommend Washington, Sanger, Colcord, Maple or Herring as alternatives in working on a cross-city corridor that would best serve Waco's residents. While any of these would be helpful, if I were to pick one to add to the highest priority projects, I would suggest starting with both B-027A and B-027B, to continue the Washington route. Sanger Avenue would also be a great candidate for such a route, especially B-003D- B-003H. B004 would be an easy and helpful way to connect more people to many great services by just re-striping the road. Also, the re-striping of B-037 would be another great help in making more East-West options.

Also,

- I would also suggest making a central north-south corridor along 17th/18th streets a high priority- including projects B-001, B-011, B-112A and B-112B. Connected to the planned 11th street bike lane in South Waco by a stretch of Washington Avenue, this could create a

corridor all the way from Garden Drive to Lake Shore Drive, connecting the farthest reaches of our city in those directions.

- Lastly, while my focus is more on bicycles (as the distances in our city make them a much more likely candidate than walking to help connect people to jobs and services), I also value the importance of creating long corridors of continuous sidewalks, and I think starting on Waco Drive would be a great idea.
- I think I mostly wrote this in above, but I'd reiterate that the 17th/18th corridor would be a natural north-south corridor for bikes, providing those in central and central-south Waco greater access to grocery stores (i.e. HEB on Park Lake and the Jubilee Market just a few blocks off 18th), and also to MCC- having greater higher education access for our city's poorer residents would be a huge win, in my opinion. And it would also make libraries, possible employers, downtown and more accessible to residents of North Waco.

Hello, my name is Michael Jeter and I am a resident of Waco, residing at 916 N 20th St. I greatly appreciate all the work that the MPO has done in this Active Transportation Plan- I know it has taken time, money and effort, but I believe strongly that improvement in this area is crucial for our city.
I often bike to work, and occasionally to different parts of Waco, including downtown, the Central Library, Cameron Park, and Baylor University, so my comment is on the proposed bikeways.
I am very happy to see the Washington Avenue proposed bikeway. I also think the proposed bikeway from South Waco up 11th St is a great idea- a corridor in that direction is much needed. However, I was sad to see that this bikeway stopped at Waco Drive. For people like me traveling from North Waco to downtown, uptown, or Baylor, this still leaves no good north-south option for us to travel down one of the numbered streets to get to Washington or another corridor that goes east-west. Looking at the map, this large gap is evident between 4th and 34th streets and between Washington and Park Lake, essentially a "bikeway desert".

I would urge you to reconsider allocating funds towards peripheral, less-populated areas, such as Lake Shore Drive, which tend to be more used by recreational cyclists, and instead to focus funding on providing bikeways in this bikeway desert I outlined above so that biking to work would become possible for more of the lower-income residents of this highly populated area, many who have transportation issues. Looking at map 5.7, you can see that most of this bikeway desert coincides with data that shows no bicycle commuters. As a 9-year resident of this neighborhood, I can attest that it is difficult and dangerous to bike from here to different parts of our city. I strongly believe that without viable bikeways through this area, that trend will only continue, and those who would need a cheap, viable transportation option like biking the most would be left behind.

Thank you for your consideration. Please feel free to contact me if you would like to talk about this more or have any questions.

Gandolf Burrus, Grants Coordinator for the City of Valley Mills, 7/3/19

I am submitting this memo at the request of Mayor Jerry Wittmer on behalf of the City of Valley Mills. We are providing comment for the Draft of the Waco Area Active Transportation Plan. On July 1, the City of Valley Mills submitted a courtesy notification letter and map to the Waco MPO describing the proposed SRTA/TA project that is being submitted to TxDOT under the 2019 Call. The proposed project will request funding for 5,400 LF 10-foot-wide SUP to provide safe access to the Valley Mills Junior/Senior High School located on SH 6. The proposed Shared Use Path project will be submitted in both the SRTS and TA categories.

The City appreciates the opportunity to provide additional comment clarifying the parameters of this proposed project. The City has received significant positive public comment on the proposed project at City Council Meetings, Public Hearings and Open Houses where maps and descriptions of the proposed project have been presented to the public. There is significant, strong support for this project, which will provide a significant safety benefit to the school children whose only available route to walk to the Junior/Senior High is along the shoulder of SH 6 where there are no sidewalks or pedestrian safety features. The speed limit is 55 MPH.

Valley Mills has previously constructed a Local Let TxDOT SRTS Project CSJ# 0909-28-034 that was successfully completed in 2012. The proposed project will enable students walking from the Junior/Senior High School to access the Safe Sidewalks constructed in the previous SRTS Project. The route will also be used by the track team for their cross-county workouts.

Valley Mills applied for and received a grant to develop a Safe Routes To Schools Plan in 2009. That plan was the basis for the SRTS application that was funded as CSJ #0909-28-034 and successfully completed. The City has gathered a new SRTS T and they are in the process of updating the SRTS Plan. The original SRTS plan and construction project had a positive unifying effect on the City and there is great enthusiasm for the possibility of a second project to benefit the children of our community.

Please note that the School on SH 6 was not included in the original SRTS plan because at the time of the Plan's development, it was a Senior High School. Now that it is a combined Junior/Senior High School, the City has included it in its transportation planning and has developed the proposed SRTS/TA application to construct a safe route to the school.

We believe this project is consistent with the goals of the MPO regarding multi modal transportation and with the draft Active Transportation Plan. We look forward to sharing more details of this project at the upcoming July meetings of the Waco MPO Transportation Committee.

Substantive Change	Location of Change	Reason
Revised Project B-048 by splitting into two projects: B-048A (bike route with sharrows and sidewalk) and B-048B (bike lane and sidewalk). Extended project limits for B-112A (17/18 St complete street) to terminate at Gurley Ln instead of Primrose Dr. This provides better connectivity to other proposed bikeways in the area.	Maps 7.1, 7.2, 7.3, 7.4, and Appendix D	Public comment. Gurley Ln from 18th St to its southern terminus is appropriate for a bike route because this is a dead-end street with local traffic only, and traffic volume/vehicle speed is expected to be compatible with a bike route. The ATP now recommends a bike lane along Gurley Ln from 18th St to S 12th St, because this section has potentially higher traffic volume, and there appears to be appropriate conditions for a bike lane (adequate pavement width and limited on-street parking). The COW will be installing sidewalk along Gurley Ln from 27th St to 12th St as part of their TxDOT grant project.
Revised demographic information for McLennan County	pg 9	Public comment; correct administrative error
Clarified timeline for implementation of entire universe of need	pg 53	Public comment; correct administrative error
Split project B-083B in Lorena into two projects (B-083B and B-083C). B-083B is regional priority, and B-083C is local priority. Revised project limits for P-060.	Tables 7.2 and 7.3, Maps 7.1 and 7.3, and Appendix D	Cleaned up overlapping project limits. Clarified which projects are part of the regional priority corridor vs local priority corridor.
Added new project, P-081 in the city of Valley Mills, to construct a shared use path along State Hwy 6 from at least the McLennan County line (although the city of Valley Mills will extend this project further to the west, to Southern Rd) to the Valley Mills Middle/High School on Eagle Way. Project P-081 was also identified as a local priority corridor.	Table 7.3, Maps 7.1 and 7.3, and Appendix D	Public comment. City of Valley Mills has submitted a SRTS/TAP grant application to TxDOT for this project, and has requested its inclusion in the MPO's ATP, because it is consistent with the goals of the ATP, and provides a safe, off-street pedestrian and bicycle connection between residential areas (including a manufactured home park) and the school campus, along a high speed roadway.

Recommended Projects in Draft Active Transportation Plan South Waco Area

Draft ATP Recommended Projects

Recommended Project Type

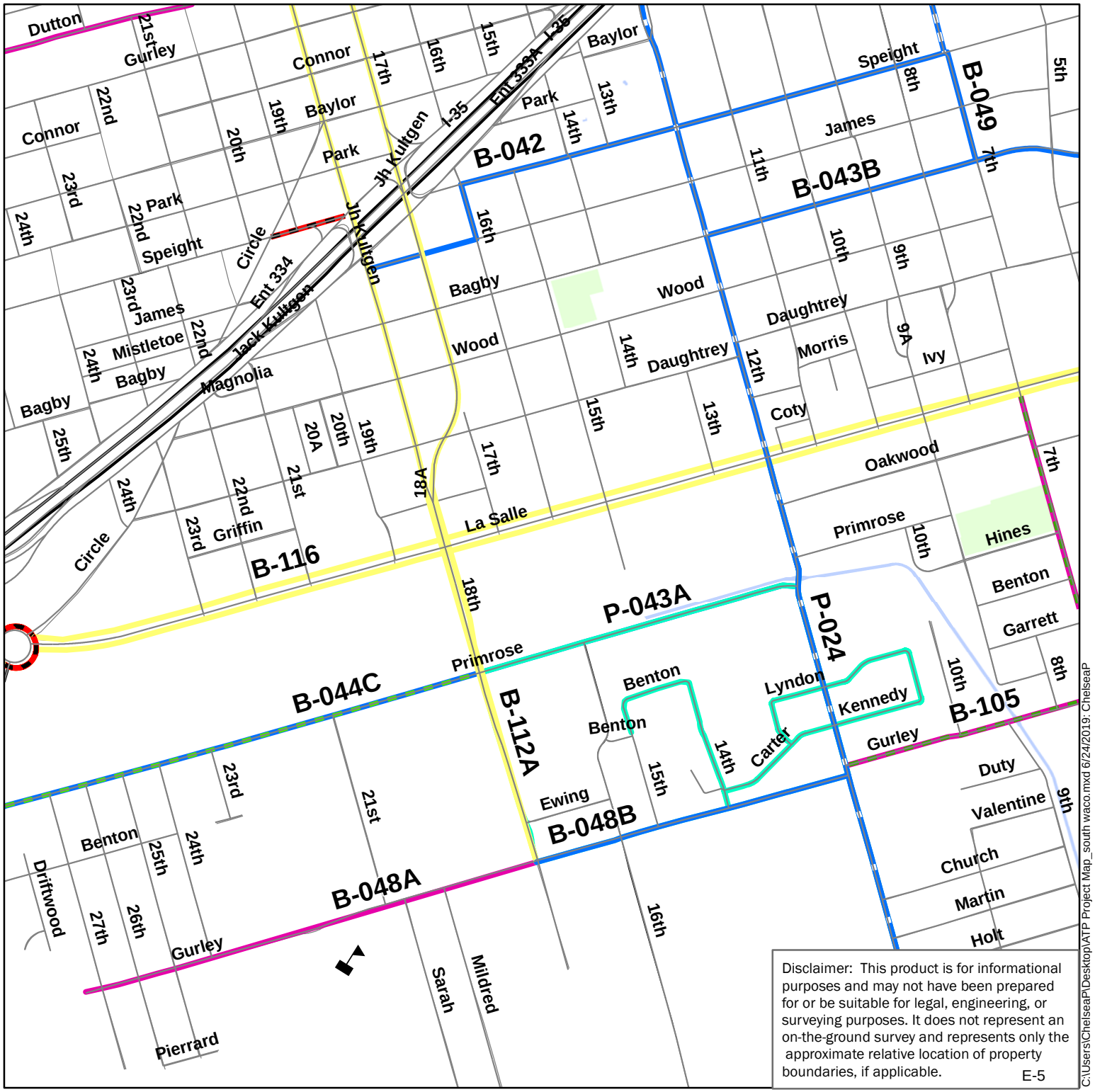
- Regional Bike Route
- Bike Route with Sharrows
- Bike Lane
- Complete Street
- Sidewalk on One Side
- ADA Sidewalk Improvements
- Bike Lane and Sidewalk on One Side
- Bike Route with Sharrows and Sidewalk on One Side
- Barrier to Connectivity

Existing/Planned Bikeways

- Shared Use Path
- Bike Lane
- Bike Ped Lane
- Bike Route
- Future Shared Use Path
- Future Protected Bike Lane
- Future Bike Lane
- Schools

0 425 850 1,700 Feet

Waco Metropolitan Planning Organization June 2019



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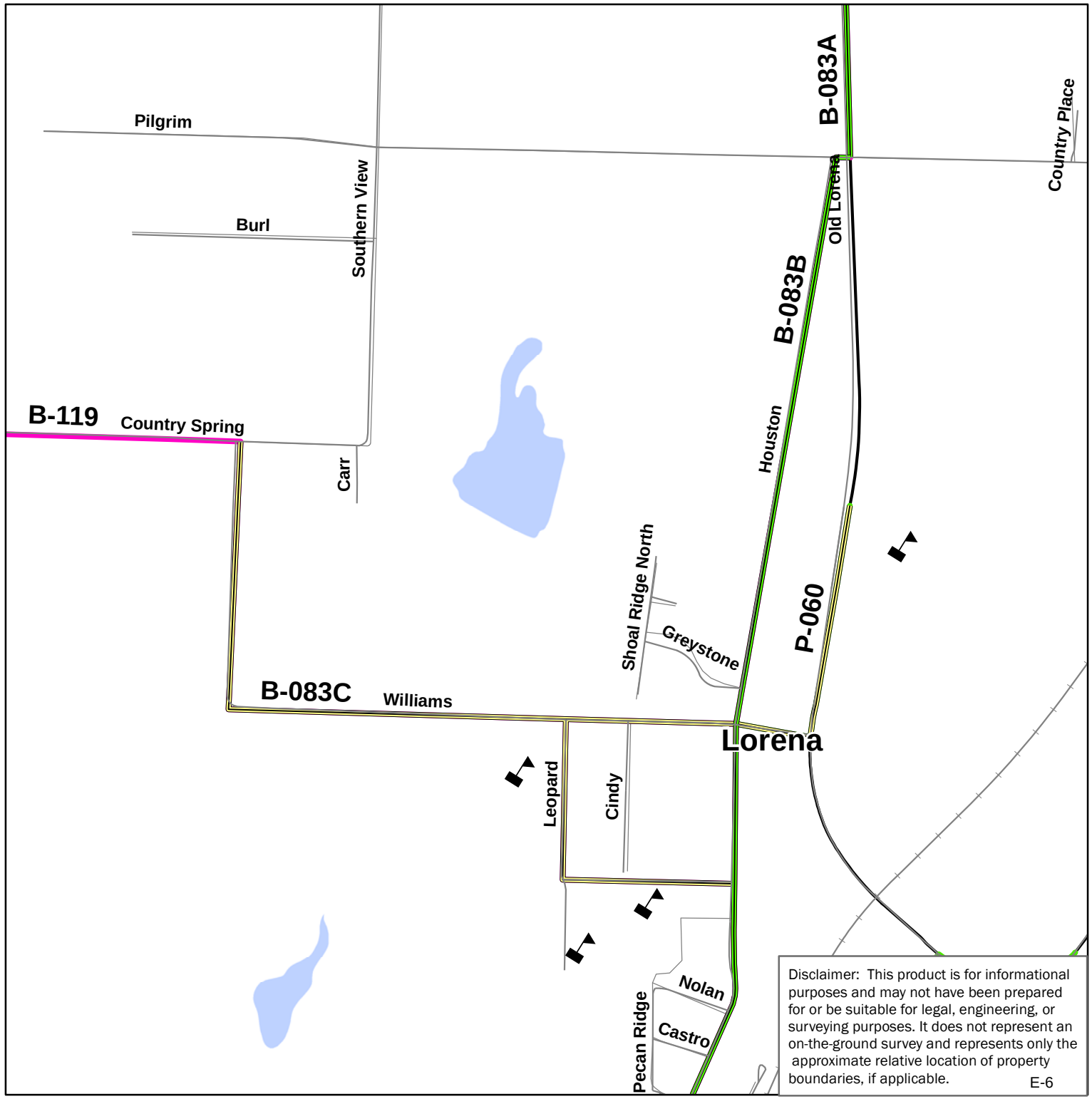
Recommended Projects in Draft Active Transportation Plan Lorena Area



- Regional Priority Corridors
- Local Priority Corridors
- Regional Bike Route
- Sidewalk on Both Sides
- Bike Route with Sharrows and Sidewalk on One Side
- Schools

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Waco Metropolitan Planning Organization June 2019

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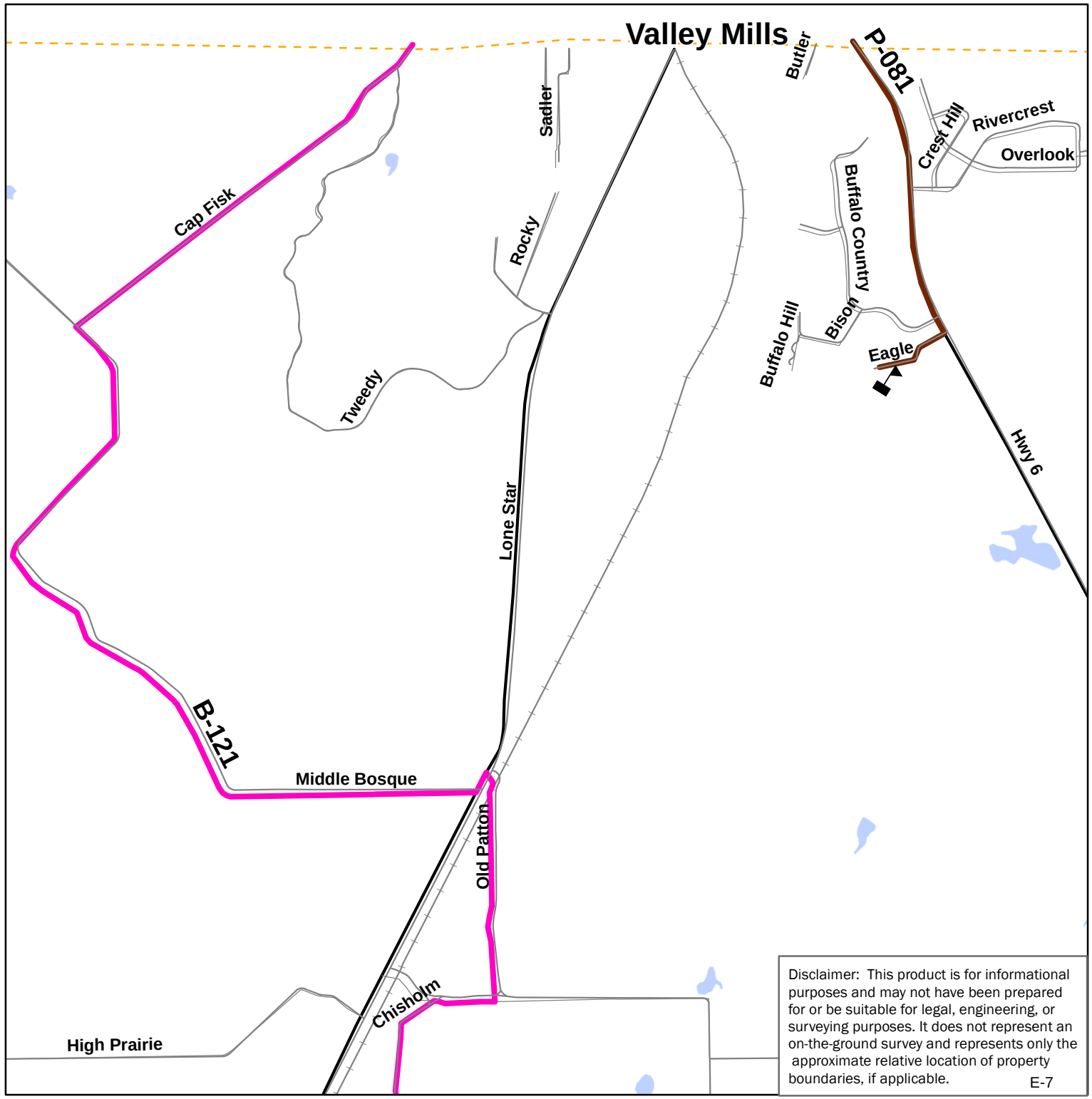
Recommended Projects in
Draft Active Transportation Plan
City of Valley Mills Area

Draft ATP Recommended Projects

- Regional Bike Route
- Shared Use Path
- Schools
- McLennan County Line



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Waco Metropolitan Planning Organization July 2019

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