2045 ACTIVE TRANSPORTATION PLAN

MAY 2019

THE HOUSTON-GALVESTON METROPOLITAN PLANNING AREA
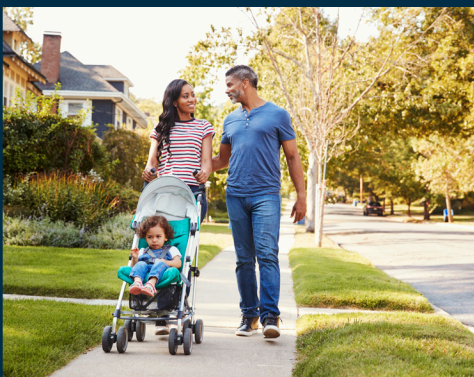
HGAC METROPOLITAN PLANNING ORGANIZATION

Image credit: Dan Burden

h-gac.com/go/pedbike

PLAN ADVISORY GROUP

Melissa Beeler
City of Houston

Lisa Graiff
Houston Parks Board

Monique Johnson
City of Sugar Land

Clark Martinson
Bike Houston

Yuhayna Mahmud
METRO

Clint McManus
Houston-Galveston Area Council

Ana Ramirez-Huerta
Texas Department of Transportation

Houston-Galveston Area Council
P.O. Box 22777
Houston, Texas 77227-2777
713.627.3200

PublicComments@h-gac.com
HGACmpo.com
Facebook.com/HGACmpo
Twitter.com/HGACmpo

2018 PEDESTRIAN-BICYCLIST SUBCOMMITTEE

Lauren Arnold
City of Conroe

Melissa Beeler
City of Houston

Karen Coglianese
City of Webster

Fabiana DeMarie
Energy Corridor District

Clay Forister
Brazoria County

Lisa Graiff
Houston Parks Board

Monique Johnson
City of Sugar Land

Louis Jullien, Chair
Westchase District

Shashi Kumar
City of Missouri City

Clark Martinson
Bike Houston

Yuhayna Mahmud, Vice Chair
METRO

John McGowan
The Woodlands Township

Christopher Orlea
City of Pearland

Susan Oyler
City of League City

Ana Ramirez-Huerta
Texas Department of Transportation

Doug Shannon
Harris County

Jeff Taebel
Houston-Galveston Area Council

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Introduction

2045 Active Transportation Plan

THE 2045 ACTIVE TRANSPORTATION PLAN

Everyone uses active transportation, whether they are walking to school, using a wheelchair to get to a transit station, biking to work, or pushing a stroller to the grocery store. As the eight counties of the region[1] add more than 4,000,000 new residents over the next 30 years,[2] well-planned walkways and bikeways will keep all road users safe and will act as relief valves for our congested roadway network.

PURPOSE AND CONTENTS

The Houston-Galveston Area Council (H-GAC) took input and guidance from partners from across the region to develop the 2045 Active Transportation Plan (ATP). The ATP takes stock of the existing conditions of the region's walkways and bikeways and outlines a set of strategies that guide public investment, align efforts across the region, and promote the local use of national best practices. The ATP also supports and informs the larger 2045 Regional Transportation Plan (RTP) which guides all roadway construction and maintenance in the eight counties.

The next few pages outline the benefits of active transportation in our communities. They are followed by an explanation of the ingredients used to create the ATP and a glossary of commonly used terms related to active transportation planning. Then, the plan dives into the existing conditions and regional needs based on available data. The ATP closes with a vision for a world-class active transportation network and spells out the goals and strategies that will be critical for us to achieve that vision.

WHAT IS ACTIVE TRANSPORTATION?

Active transportation refers to any form of non-motorized, human-powered transportation. This includes walking and biking, but also using a wheelchair, pushing a stroller, or using a scooter, skateboard, or rollerblades. In recent years, the definition of active transportation has expanded to include some forms of motorized transportation like electric scooters and electric bikes.

The ATP refers to active transportation users as pedestrians and bicyclists or as people who walk, bike, or roll. Although it may sound odd, the plan intentionally includes people who roll because the residents using wheelchairs and pushing strollers and walkers often have a tough time navigating existing infrastructure. By planning and designing for those users, we defacto design for everyone else.

BENEFITS OF ACTIVE TRANSPORTATION

Active transportation infrastructure improves connectivity for people walking, biking, and rolling, but it also brings a host of other benefits to the region.

MOBILITY CHOICE

In many parts of the region, a personal vehicle is the only feasible transportation option, limiting mobility for people without access to a car, people who prefer not to drive, and people who are unable to drive, like children, seniors and people with disabilities. Safe and convenient walkways and bikeways give residents the ability to choose the transportation option that best fits their needs. This includes the choice to ride transit since most bus and rail riders walk, bike, or roll to their transit stop. Transportation choice also supports a strong economy by expanding job opportunities for working adults without access to a car.

HEALTHY PEOPLE

Safe and convenient walkways and bikeways allow residents to incorporate physical activity into their daily routines, reducing obesity and improving overall health.[3] Recent commuter studies conducted in the United States and the United Kingdom have found that commuters who walk or bike are happier and sleep better than people who drive.[4] Inactivity, on the other hand, is strongly associated with poor health outcomes. Driving is a major source of physical inactivity and is linked to weight gain and obesity.[5]

CLEAN AIR

Walking, biking, and rolling are zero-emission transportation modes. By replacing automobile trips, active transportation reduces emissions from private vehicles and improves air quality. Light-duty passenger vehicles are responsible for almost 15% of the region's nitrogen oxides (NOx) emissions, contributing to the region's ground-level ozone non-attainment status.[6] A 2015 study from the Institute for Transportation and Development Policy found that if only 14% of travel in the world's cities were done by bike, global carbon emission would drop 11% by 2050.[7]

RESILIENT INFRASTRUCTURE

In recent years, climate disruptions and extreme weather events have impacted Texas transportation infrastructure. Walkways and bikeways can reduce negative impacts by offering redundant transportation routes; redundancy being a key component of resiliency. Particularly in the Houston-Galveston region, walkways and bikeways can play dynamic and multipurpose roles as flood barriers and flood detention spaces.

Image credit: Dan Burden

THRIVING ECONOMY

Active transportation fosters economic growth and vitality in communities by creating access to jobs, increasing property values, contributing to tourism, and reducing the cost of maintenance on roadways. On its own, bicycling is one of the top 10 most popular recreational activities in the country, with participants pumping an estimated $133 billion annually into the U.S. economy.[8]

Increases Property Values

Active transportation infrastructure can significantly boost property values. An Urban Land Institute study found that properties located near the Katy Trail in Dallas climbed 80 percent between 2006 and 2016.[9] The same report describes the impact on land values for the 1,800 parcels within 500 feet of Indianapolis's Cultural Trail. In total, those parcels saw a land value increase of $1.01 billion in only six years. In Minnesota, real estate agents reported that proximity to biking trails makes properties as much as 80% easier to sell.

Job Creator

Of all transportation project types, bicycling infrastructure creates the most jobs for every $1 million spent. In 2011, a Political Economy Research Institute study found that bicycle projects create an average of 11.4 jobs for every $1 million spent compared to 7.8 jobs created for road-only projects.[10] This conclusion is reinforced by a study commissioned by the American Association of State Highway and Transportation Officials (AASHTO), which found that transportation enhancement projects (trails, walking and biking infrastructure) from the American Recovery and Reinvestment Act created 17 jobs per $1 million spent, more than any other type of project.[11]

Reduces System Cost

Active transportation infrastructure can be an important way to reduce overall transportation infrastructure costs. Initial construction and maintenance costs of walkways and bikeways is a fraction of construction costs of urban freeways. Active transportation often requires less right-of-way than roadway projects, reducing the cost of acquisition and possibly preventing the need to use eminent domain. In addition, well-planned active transportation infrastructure can reduce the number of cars on the road, extending the lifespan of existing roadways by preventing additional wear-and-tear.

PLAN INGREDIENTS

The 2045 Active Transportation Plan incorporates a variety of information from several sources to develop a motivating vision for the region's active transportation network. Major components of the plan include:

DATA

Data on safety, health, active transportation usage, and demographics shed light on the state of our active transportation infrastructure and its users. This data analysis can be found throughout the ATP but is featured in detail in the Existing Conditions chapter on pages 24-30.

EXISTING PLANS

Previous planning efforts reveal active transportation preferences at the local level. The Plan takes these existing initiatives into account when describing regional needs and strategies. See more about completed local plans in the County Profiles starting on page 82.

PUBLIC INPUT

Public Meetings - Residents across the region shared their priorities for our region's active transportation infrastructure at 13 public meetings in spring 2018 and 6 meetings in winter 2019. Online Surveys - A set of open online surveys collected more than 650 responses from local partners and from residents in the region who walk, bike, and roll. See a summary of public comments on pages 18-23.

EXPERT INPUT

The H-GAC Pedestrian-Bicyclist Subcommittee and the 2045 Active Transportation Plan Advisory Workgroup offered expert feedback on the direction of the plan and its contents.

ACTIVE TRANSPORTATION GLOSSARY

Government Organizations

UNITED STATES DEPARTMENT OF TRANSPORTATION (DOT)

United States DOT is the federal agency responsible for construction and oversight of the national transportation system.

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

FHWA is an agency within the Department of Transportation that oversees the planning and construction of the national highway system. FHWA provides funding and technical assistance to the Texas Department of Transportation, H-GAC, and local governments in the region.

TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT)

TxDOT is a government agency responsible for construction and oversight of the state highway system in the State of Texas. TxDOT's responsibilities include oversight of transportation investments by regional and local governments.

TXDOT DISTRICT

A TxDOT District is a branch of TxDOT that oversees construction and maintenance of the state highway system in its designated counties. The eight-county H-GAC region spans two separate TxDOT Districts. The Beaumont District includes Chambers and Liberty counties while the Houston District includes Brazoria, Fort Bend, Galveston, Harris, Montgomery, and Waller counties.

METROPOLITAN PLANNING ORGANIZATION (MPO)

An MPO is a local decision-making body responsible for planning transportation infrastructure and selecting projects for Federal funding.

HOUSTON-GALVESTON AREA COUNCIL (H-GAC)

H-GAC is the designated MPO for the eight-county region, or Transportation Management Area, which includes Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties. Transportation investments and policies at H-GAC are determined by the **Technical Advisory Committee (TAC)** and the **Transportation Policy Council (TPC)**. TAC and TPC members represent local governments and transportation agencies.

PEDESTRIAN-BICYCLIST SUBCOMMITTEE

The Pedestrian-Bicyclist Subcommittee is an H-GAC subcommittee of experts selected by the TAC to advise H-GAC on issues related to active transportation. Members represent local governments, transportation agencies, TxDOT, advocacy groups, management districts, and non-profit organizations.

LOCAL GOVERNMENT

Local governments include cities, counties, and school districts.

MANAGEMENT DISTRICTS AND TAX INCREMENT REINVESTMENT ZONES (TIRZS)

A management district is an entity that provides services, infrastructure improvements, and economic development for the area within its boundaries – in addition to those services already provided by the local government. The activities of a management district are largely funded through taxes and fees on property owners within its boundaries. A TIRZ is a special area established by a city council that can use anticipated tax increases from new improvements (tax increments) to fund public improvements within its boundary.

GLOSSARY, CONTINUED

Programs and Policies

COMPLETE STREETS

Complete Streets are roadways designed to be safe and comfortable for all users – pedestrians, bicyclists, transit riders and motorists. Complete Streets improve quality of life by increasing access and safety for people with disabilities, older adults and children, by improving the streetscape to make it more appealing, and in many cases by reducing congestion and improving mobility. In the last several years, communities across the country have adopted Complete Streets policies as a commitment to consider all modes of transportation when designing and maintaining local streets.

FIRST-MILE/LAST-MILE

Since most transit users in the region walk, bike and roll to and from the bus or train, local governments and transit agencies often prioritize active transportation investments near transit stops. These investments are regularly referred to as first-mile/last-mile improvements because they represent the first and last segments of a transit rider's trip between their transit stop and their origin or destination.

INTELLIGENT TRANSPORTATION SYSTEMS

Intelligent transportation systems (ITS) incorporate communications technologies into the transportation network to improve safety and mobility and reduce fuel consumption. ITS include strategies such as prioritizing traffic signals to benefit transit and active transportation, coordinating traffic signals to reduce congestion, and incorporating pedestrian signals at intersections.

SAFE ROUTES TO SCHOOL

Safe Routes to School (SRTS) is a national campaign to make it safe and convenient for children to walk and bike to school through equitable and well-designed investments in walkways and bikeways, enforcement of traffic laws, encouragement and education for students, and evaluation of all strategies used. SRTS infrastructure projects enjoyed a dedicated funding source in the past, but the allocated funding has not been renewed as of spring 2019.

VISION ZERO

Vision Zero is a national campaign to eliminate all traffic-related deaths and serious injuries. Local governments can elect to become a Vision Zero community by setting clear goals for reducing traffic fatalities and serious injuries, committing resources to achieving those goals, developing a plan or strategy around those goals, and establishing a Vision Zero Task Force. There are currently no Vision Zero communities in the eight-county region.

WALK FRIENDLY & BIKE FRIENDLY COMMUNITIES

Communities can gain designation as a Walk Friendly Community (through the Walk Friendly Communities Program) or as a Bike Friendly Community (through the League for American Bicyclists). Both designations require communities to conduct a self-assessment about policies and programs that impact active transportation. In addition to recognition, communities also receive feedback and resources to improve their local active transportation network and culture.

GLOSSARY, CONTINUED

Funding Categories

LOCAL GOVERNMENTS, TIRZS, AND MANAGEMENT DISTRICTS

Local governments, TIRZs and management districts can use local funds to pay for active transportation infrastructure. These funds often come from the general operating budget or from an approved bond, in the case of a local government. Projects funded with local money are subject to local standards for design and maintenance.

TEXAS DEPARTMENT OF TRANSPORTATION

TxDOT funds active transportation projects through several funding categories, including the Transportation Alternatives program (TASA; TxDOT Category 9), Congestion Mitigation/Air Quality Improvement (CMAQ; TxDOT Category 5), and the Surface Transportation Block Grant (STBG). TxDOT districts, like the Houston District, also have discretionary funds that they can use for a range of projects. When partnering with local governments, TxDOT typically requires a 20% match of local funds and adherence to AASHTO (American Association of State Highway and Transportation Officials) design guidelines. TxDOT's budget is determined by fuel taxes, vehicle registration fees, and federal reimbursements. Occasionally, TxDOT also funds projects using bond proceeds or one-time Federal allocations like in a stimulus program.

TEXAS PARKS AND WILDLIFE

The Texas Parks and Wildlife Department oversees the National Recreational Trails Fund for Texas, a program of the Federal Highway Administration. The program funds new trails and improvements to existing trails.

PRIVATE GRANTS AND PHILANTHROPY

Competitive small grants are available from organizations like AARP, People for Bikes, AmericaWalks and the Rails-to-Trails Conservancy, among others. Some of these grants may not be enough to fund an entire infrastructure project, but they can help add programming and amenities to walkways and bikeways to improve their quality.

OTHER FEDERAL AND STATE SOURCES OF FUNDING AND TECHNICAL ASSISTANCE
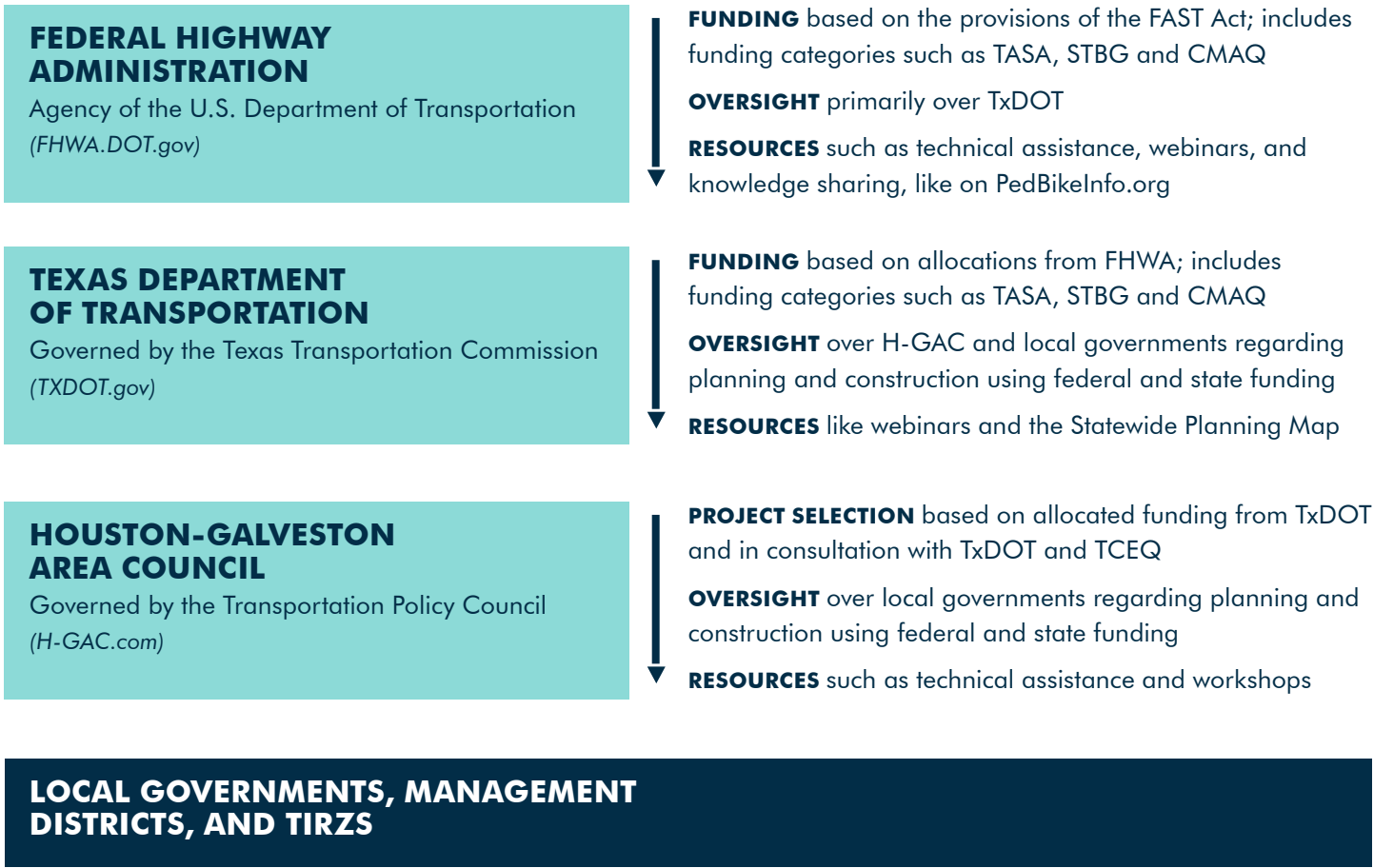
Federal Transit Administration www.transit.dot.gov

Centers for Disease Control www.cdc.gov

Department of Housing and Urban Development www.hud.gov

THE FLOW OF FEDERAL TRANSPORTATION FUNDS

A certain portion of Federal and TxDOT funding flows to local governments in the region each year. H-GAC uses its Transportation Improvement Program (TIP) process to select the local projects best suited for that funding. TxDOT also funds infrastructure in its right-of-way and, in some cases, directly funds local transportation infrastructure.

This diagram shows the basic flow of funding, oversight, and resources between the federal, state, and local levels for the communities within the eight-county Transportation Managment Area (TMA).

FEDERAL HIGHWAY ADMINISTRATION
Agency of the U.S. Department of Transportation
(FHWA.DOT.gov)

FUNDING based on the provisions of the FAST Act; includes funding categories such as TASA, STBG and CMAQ

OVERSIGHT primarily over TxDOT

RESOURCES such as technical assistance, webinars, and knowledge sharing, like on PedBikeInfo.org

TEXAS DEPARTMENT OF TRANSPORTATION
Governed by the Texas Transportation Commission
(TXDOT.gov)

FUNDING based on allocations from FHWA; includes funding categories such as TASA, STBG and CMAQ

OVERSIGHT over H-GAC and local governments regarding planning and construction using federal and state funding

RESOURCES like webinars and the Statewide Planning Map

HOUSTON-GALVESTON AREA COUNCIL
Governed by the Transportation Policy Council
(H-GAC.com)

PROJECT SELECTION based on allocated funding from TxDOT and in consultation with TxDOT and TCEQ

OVERSIGHT over local governments regarding planning and construction using federal and state funding

RESOURCES such as technical assistance and workshops

LOCAL GOVERNMENTS, MANAGEMENT DISTRICTS, AND TIRZS

Note: Transportation funding works differently outside of the eight-county TMA.

ACTIVE TRANSPORTATION INFRASTRUCTURE

Active transportation infrastructure includes any piece of infrastructure designed and built to accommodate active transportation uses. Sidewalks and bike lanes might come to mind as the most common infrastructure types, but our regional transportation system includes many different facility types like shared-use paths, wide shoulders, bridges, and shared roadways.
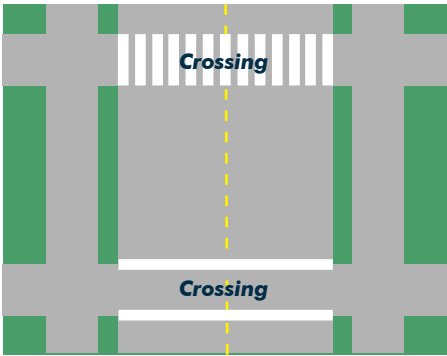
In places where walkways and bikeways do not exist or are not well connected, pedestrians and bicyclists are often forced into the roadway or along a grassy right-of-way, making their trip uncomfortable and dangerous. For people using wheelchairs and walkers, or pushing strollers, the lack of walkways may act as an outright barrier to essential daily activities. Active transportation infrastructure should be planned and built with the goal to make walkways and bikeways safer and more convenient for users.

The best solution for any local context requires understanding the range of design options for active transportation. The Pedestrian and Bicycle Information Center (pedbikeinfo.org) – funded by the U.S. Department of Transportation – offers detailed descriptions, examples, and cost estimates for a variety of active transportation infrastructure types. The FHWA also follows the design guidance of the American Association of State Highway and Transportation Officials (AASHTO). Find AASHTO design guidelines and publications at transportation.org.

The walkway and bikeway facilities listed below are among the most common in our region:
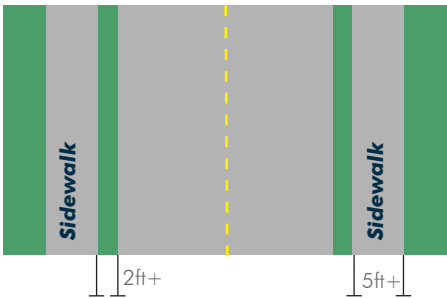

Sidewalks – the most common form of walkway infrastructure – are exclusively for pedestrians, although some communities allow bicyclists on sidewalks. Sidewalks run parallel to a roadway and are a good infrastructure choice in a variety of situations – from calm neighborhood streets to busy arterials and freeway frontage roads with speeds of 45 miles per hour or more. The FHWA recommends that sidewalks be at least 5 feet in width if they are set back from the curb. This allows two people to comfortably walk side-by-side. However, in many cases, a sidewalk 6-feet wide or wider is preferred, specifically when it touches the curb, or in locations with heavy pedestrian traffic like a school.


Crossings – Walkways and bikeways regularly intersect roadways, railroads, transit lines, and other barriers and are places where pedestrians and bicyclists engage with other road users, particularly motorists. Intersections can be a hot spot for crashes, but well-designed crossings reduce crash risk. Safe crossings at roadway intersections typically include a well-marked crosswalk, a functional pedestrian and/or bicycle signal head, and advanced stop lines for cars. Crosswalks may have other features to improve safety like a median that serves as a pedestrian island, restrictions for right turns on red, leading signals for pedestrians and bicyclists, and extensions of the curb to reduce the crossing distance.

INFRASTRUCTURE, CONTINUED
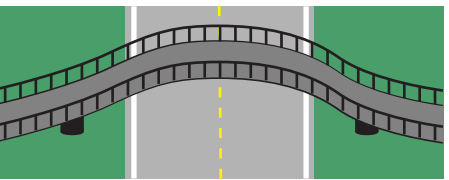
Bridges – Pedestrian and bicycle bridges are a type of crossing for special situations where the only safe option to cross a busy roadway, railroad, waterway, or other barrier is to travel over it. These bridges completely separate the people walking, biking, and rolling from vehicular traffic.
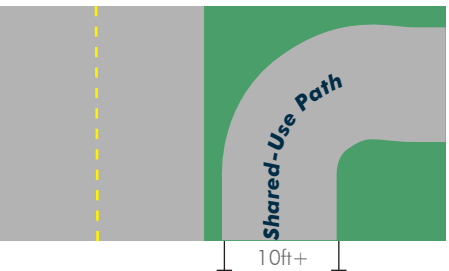
Shared-use paths – Shared-use paths, often referred to as shared-use trails or sidepaths, are built for all types of users – people walking, biking, and rolling. To accommodate different users, shared-use paths are wider than a standard sidewalk – usually 10 feet or more. Shared-use paths also tend to be set farther away from the roadway than a standard sidewalk. Shared-use paths make a great choice for higher-speed roadways or trails in recreational areas. These paths are often along waterways and green spaces, not adjacent to a roadway.
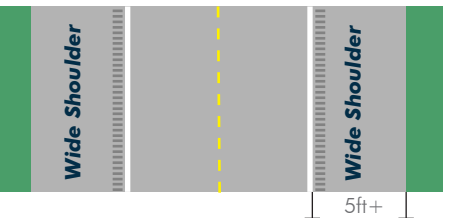
Wide shoulders – On streets with higher speeds, particularly in suburban or rural communities, bicyclists can ride on a roadway's paved shoulder to stay out of the vehicular travel lanes. Shoulders should be at least 5 feet wide or wider depending on the roadway speed and usage. Additional signage can indicate that the shoulder is a shared space for bicyclists.
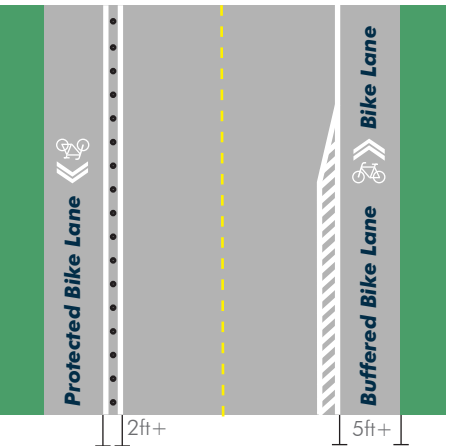
Bike lanes – A bike lane is a designated portion of the roadway for bicyclists and is marked – at a minimum – by a white stripe and signage that indicates it is for bicyclist use. Bike lanes come in many different configurations, but are typically 4-6 feet wide. Depending on the roadway speed, traffic volumes, number of vehicle lanes, and other roadway factors, bike lanes may be **buffered** or **protected** from the vehicle travel lanes, parked cars, transit stops, or other potential conflicts.

> **Buffered bike lanes** have additional striping that further separates the bike lane from potential conflicts.
>
> **Protected bike lanes** include a physical barrier like flexible posts, parked cars, or planters that separate the bike lane and the roadway.

Bike boulevards – A bike boulevard is a local street with low speed limits and traffic volumes that provide safe connections for bicyclists. Bike boulevards often include signage and traffic calming measures, like narrow lane widths and speed bumps, to encourage safe speeds by motorists.

Existing Conditions

2045 Active Transportation Plan

EXISTING CONDITIONS

Data points related to active transportation can sharpen our understanding of regional walkways and bikeways, and the people who use them. We can map the physical extent of our active transportation network and measure safety with data on crashes involving people walking, biking, and rolling. We also learn a lot about the impact of active transportation on our communities through health data and feedback from surveys and public meetings.

This chapter paints a picture of our region's existing conditions through an analysis of:

PUBLIC INPUT
PAGES 18-23

H-GAC hosted 19 public meetings in 2018 and 2019 and gathered responses from three distinct online surveys to gather feedback from residents across the region about their preferences for active transportation infrastructure. The responses are summarized on pages 18-23.

USE
PAGES 24-27

Although it is difficult to gather an exact count of people walking, biking, and rolling, a few sources of data can help us understand broad trends across the region. An analysis of the region's active transportation use can be found on pages 24-27.

SAFETY
PAGES 28-29

TxDOT tracks data for all crashes on the state's transportation system, including those involving people walking, biking, and rolling. An analysis of the geography and severity of recent crash data can be found on pages 28-29

HEALTH
PAGE 30

Active transportation offers an outlet for physical activity, which can minimize the risk of preventable diseases such as heart disease and diabetes. See a summary of the region's health data on page 30.

NETWORK
PAGES 31-33

The region's active transportation infrastructure is constantly expanding to meet the needs of a growing population and a resurgence in demand for walking and biking. Up-to-date maps of walkways and bikeways in the region can be found on pages 31-33.

PUBLIC INPUT

Throughout the planning process, H-GAC sought feedback from regional residents through public meetings and online surveys. The input shows a reluctance to walk, bike, or roll in unsafe conditions due to high speeds, lack of lighting, or poor infrastructure condition. Residents expressed strong support for well-maintained walkways and bikeways that separate cars from people who walk, bike, and roll.

PUBLIC MEETINGS

In Spring 2018, H-GAC organized thirteen public meetings and attended the Houston Bike Summit to gather feedback regarding walking and biking in the region.[12]

At each meeting, attendees answered questions about their comfort level walking and biking and preferred improvements to infrastructure in their community.

ONLINE SURVEY

H-GAC also conducted online surveys to collect information about why people walk and bike, how far they walk or bike, why they don't walk or bike more often, and what improvements they prefer.[13] Most respondents walk or bike daily or weekly for exercise/health or recreation/fun, see Figure 1 on page 20. Around 40% of respondents bike daily or weekly for school or work and 20% walk for the same reasons.

PARTNER SURVEY

H-GAC conducted a partner survey of local government officials, management district and TIRZ representatives, and local advocacy and non-profit organizations working on transportation issues. The partners support several types of improvements but cited a lack of funding and project prioritization as roadblocks. As it stands, road projects take priority over bicycle-pedestrian projects, leaving partners with little funding for these improvements.

Improved signals for pedestrians and bicyclists, safer road crossings, and off-street trails/paths were the unanimous improvements partners preferred to build in their communities, and again showed a community preference for a safety focus.

H-GAC asked what policies or programs should be prioritized, and most partners supported engineering and infrastructure. This category is diverse and included sidewalk infill, bicycle parking, pop-up projects, bike share, context-sensitive facilities, and roadway safety audits. Safe Routes to School was also suggested as a top priority for H-GAC.

H-GAC 8-County Transportation Planning Area
Map 1
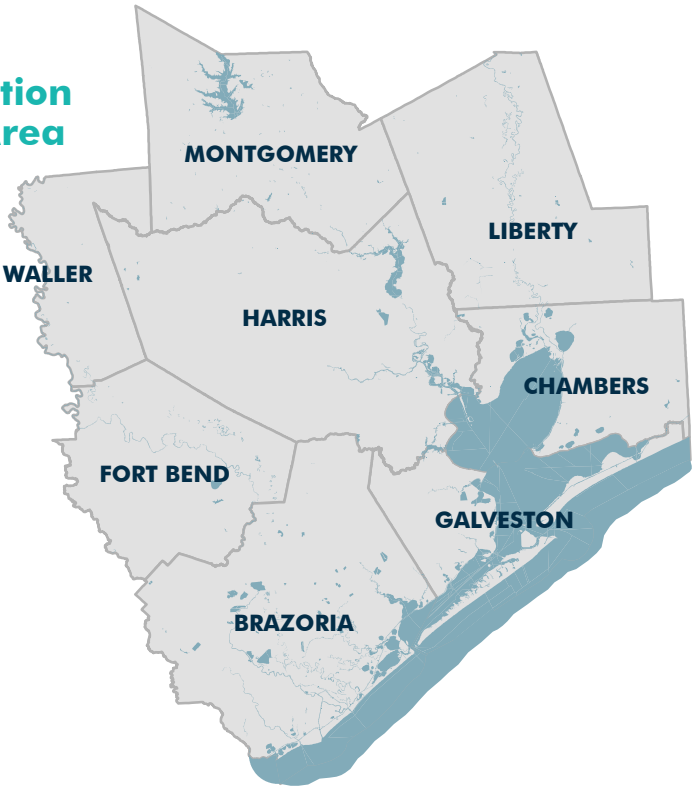
PUBLIC INPUT

H-GAC sought input from people across the region. The maps below show responses to our online I Walk Here and I Bike Here surveys depending on the respondents' home and work ZIP codes. It is important for us to gain input from all communities, including in rural counties; these maps shows that we need more input from people in Brazoria, Chambers and Liberty counties to get a complete picture of the region's needs.

Online Survey Respondent Geography
Map 2

I WALK HERE SURVEY
Home Zip Code (n=311)
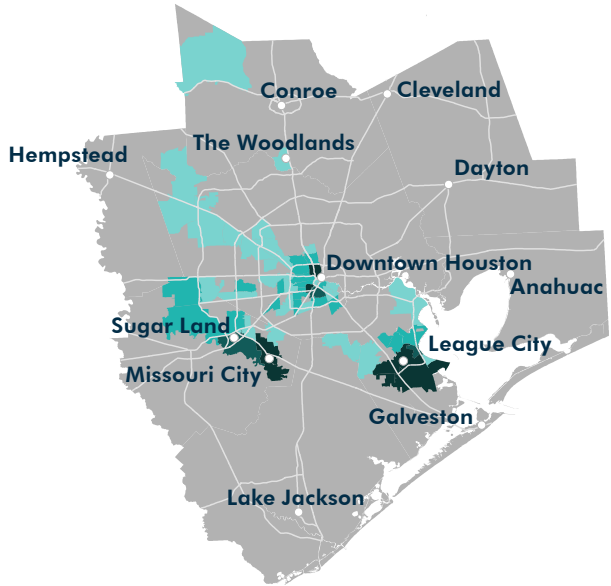
I WALK HERE SURVEY
Work Zip Code (n=265)
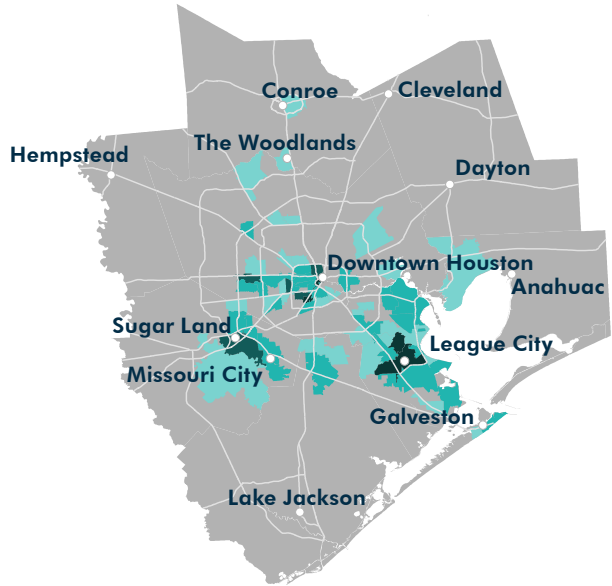
I BIKE HERE SURVEY
Home Zip Code (n=307)
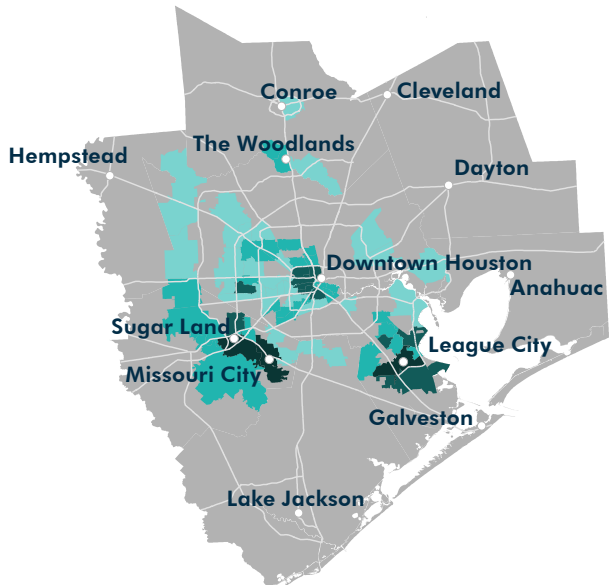
I BIKE HERE SURVEY
Work Zip Code (n=271)

>10 respondents
6-10 respondents
2-5 respondents
1 respondent
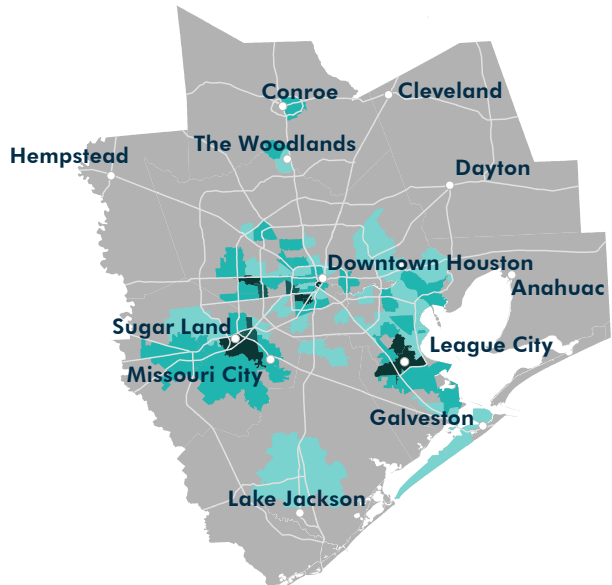
PUBLIC INPUT: USER BEHAVIOR

Most survey respondents walk or bike daily or weekly for exercise/health or recreation/fun, see Figure 1. Around 40% of respondents bike daily or weekly for school or work and 20% walk for the same reasons.

Reasons for Walking/Biking Daily or Weekly
Figure 1

Reason	Walking	Biking
Exercise/Health	89%	80%
Recreation/Fun	84%	77%
Visit friends or family	44%	36%
Do errands	40%	38%
Travel to Bus/Rail	17%	10%
Work	15%	31%
School	11%	11%

Participants in the public meetings selected what type of bicyclist they were based on four categories, see Figure 2. Most people self-identified as Confident or Interested/Concerned bicyclists. Participants were then asked which type of walkway/bikeway they would prefer on four different road types: major rural roads, major urban roads, small town main streets and neighborhood street.

Type of Bicyclist
Figure 2

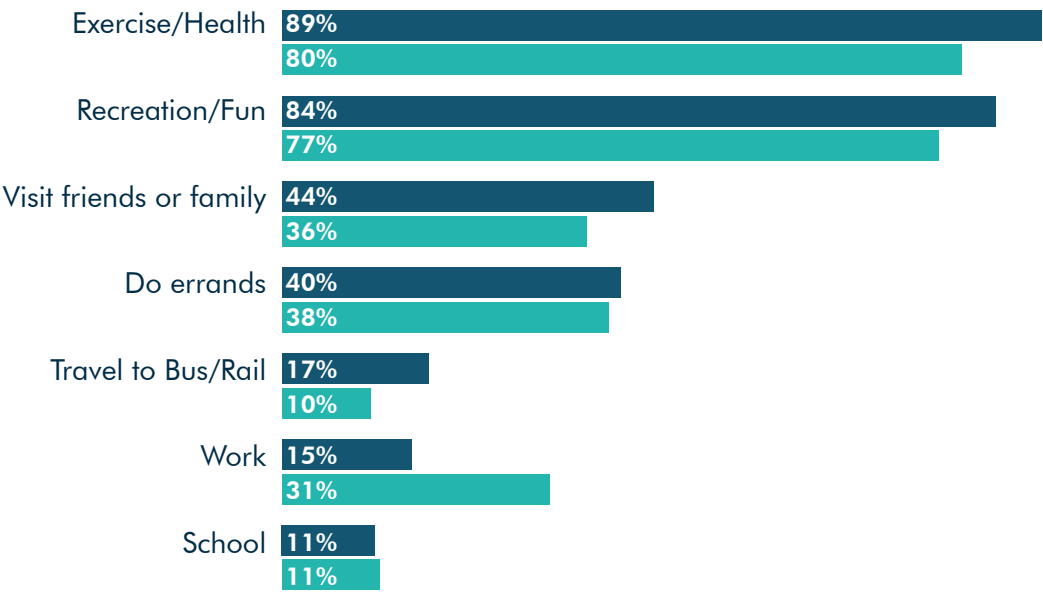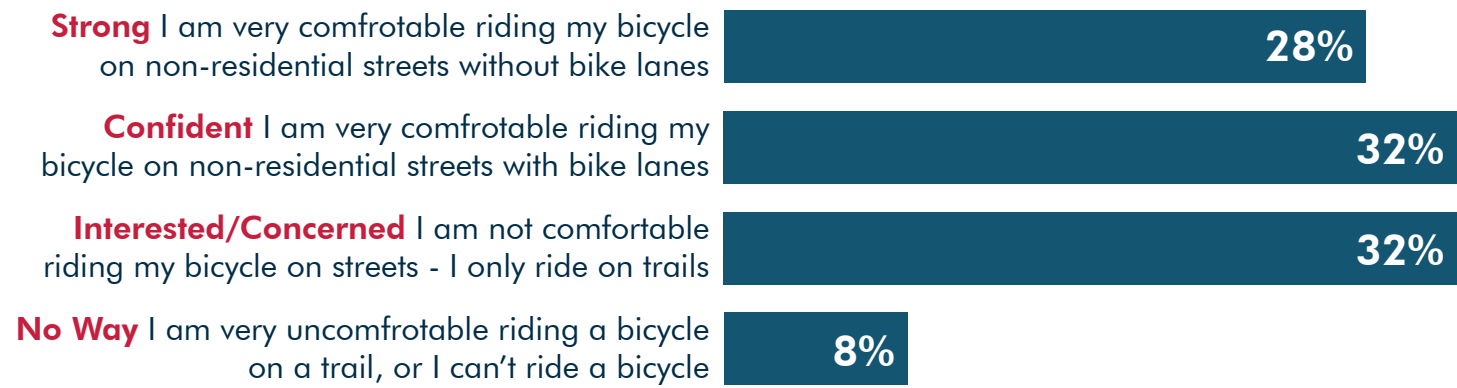| Type	%
Strong I am very comfrotable riding my bicycle on non-residential streets without bike lanes	28%
Confident I am very comfrotable riding my bicycle on non-residential streets with bike lanes	32%
Interested/Concerned I am not comfortable riding my bicycle on streets - I only ride on trails	32%
No Way I am very uncomfrotable riding a bicycle on a trail, or I can't ride a bicycle	8%

PUBLIC INPUT: BARRIERS

Survey respondents offered safety concerns and lack of infrastructure as major reasons for not walking and biking. Most respondents walk less frequently because of fast traffic, insufficient lighting at night, and unsafe street crossings, see Table 1.

Table 1

REASON PEOPLE DON'T WALK	%	Safety	Connectivity	Other
1. FAST TRAFFIC	59%	●		
2. NOT ENOUGH LIGHT AT NIGHT	58%	●		
3. UNSAFE STREET CROSSINGS	57%	●	●	
4. TOO MANY CARS	53%	●		
5. DISTANCES TOO FAR	50%		●	
6. SIDEWALKS/PATHS IN POOR CONDITION	50%	●	●	
7. NO NEARBY PATHS OR TRAILS	44%		●	
8. WEATHER	33%			●
9. NO SHOPS OR INTERESTING PLACES TO GO	32%		●	
10. POOR ROAD CONDITIONS	28%	●		

For people biking, 86% of respondents do not bike more often due to the lack of quality, protected bike lanes, see Table 2. Fast traffic, too many cars, and unsafe street crossings were also popular answers, each receiving over 60% support.

Table 2

REASON PEOPLE DON'T BIKE	%	Safety	Connectivity	Other
1. NOT ENOUGH QUALITY BIKE LANES, PROTECTED BIKE LANES	86%	●	●	
2. FAST TRAFFIC	71%	●		
3. TOO MANY CARS	66%	●		
4. UNSAFE STREET CROSSINGS	63%	●	●	
5. BIKEWAY INFRASTRUCTURE IN POOR CONDITION	54%	●	●	
6. POOR ROAD CONDITIONS	50%	●		
7. NOT ENOUGH LIGHT AT NIGHT	48%	●		
8. NO NEARBY PATHS OR TRAILS	46%		●	
9. NOT ENOUGH BIKE RACKS/BIKE STORAGE	41%		●	●
10. DEBRIS	32%	●		●

The responses collected at the public meetings show that people prefer infrastructure that fits the context of the street and keeps all users safe, see Figure 3. The results indicate that most bicyclists want more physical separation from cars as the speed and number of lanes increases on a roadway. This follows national best practices on safe bikeway design. For pedestrians, most prefer sidewalks when walking along roadways, except for major rural roads where a trail/path is the preferred infrastructure.

Infrastructure Preferences
Figure 3

Walkway Infrastructure Preferences

	Sidewalk	Trail/Path	Wide Shoulder	
Major Rural Road	29%	59%	11%	
Major Urban Road	77%	23%	0%	
Small Town Main Street	87%	7%	6%	
Neighborhood Street	85%	9%	6%	

Bikeway Infrastructure Preferences

	Trail/Path	Protected Bikeway	Bike Lane	Wide Shoulder	
Major Rural Road	53%	17%	6%	24%	
Major Urban Road	20%	67%	7%	4%	
Small Town Main Street	13%	35%	36%	14%	
Neighborhood Street	10%	14%	32%	41%	

Major Rural Roads *2+ lanes with speeds at 45 mph or more*
A majority of pedestrians (59%) and bicyclists (53%) prefer a separate trail or path for major rural roads and an additional 24% of bicyclists want a wide shoulder. Traditional bike lanes do not register as a preference for this type of roadway.

Major Urban Roads *4+ lanes, a high number of cars, and speeds at 35 mph or more*
Bicyclists overwhelmingly prefer a protected or buffered bikeway while pedestrians would prefer a sidewalk for major urban roads. Around 20% of each group said a trail/path would be acceptable.

Small Town Main Streets *2+ lanes with speeds of 35 mph or more*
Nearly 90% of pedestrians prefer a sidewalk along small town main streets while bicyclists are split between a standard bike lane (36%) and a protected bike lane (35%).
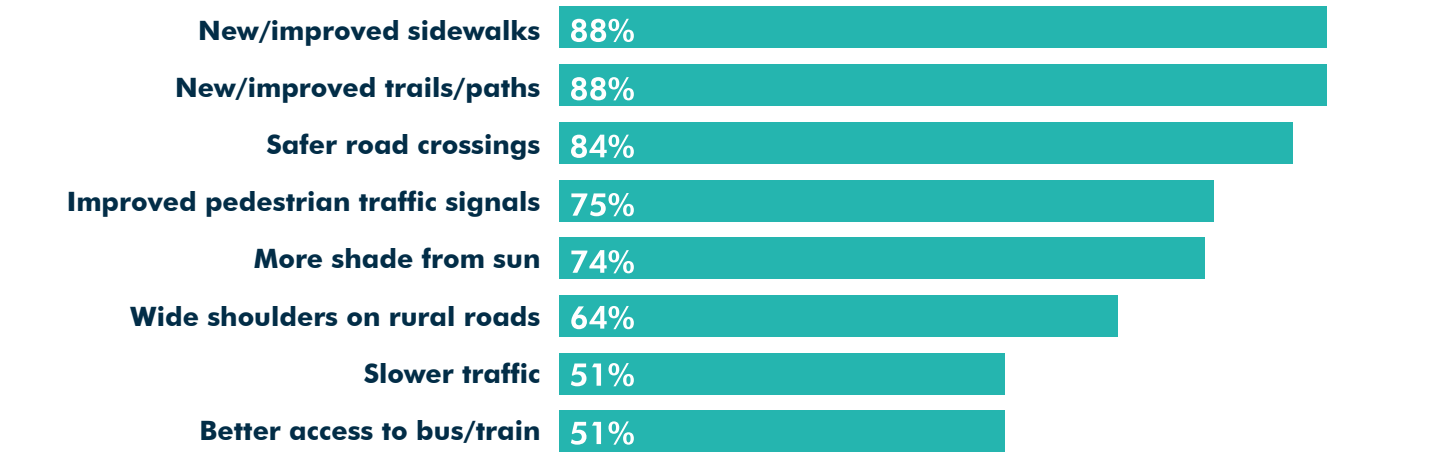
Neighborhood Streets *2 lanes with a small number of cars and speeds of 30 mph or less*
On neighborhood streets, 41% of bicyclists said a shoulder or no bicycle infrastructure was necessary for them to feel safe. Most who chose the shoulder option indicated that they did not need any specific type of infrastructure on this street type. A sidewalk was again the preferred infrastructure type for pedestrians (85%).

Input from the online surveys mirrors the results from public meetings when respondents were asked about preferred improvements, see Figures 4 and 5. Most want new or improved sidewalks and trails/paths, safer road crossings, and improved signals for pedestrians.

Preferred Walkway Improvements
Figure 4 (Strongly Agree/Agree)

New/improved sidewalks	88%
New/improved trails/paths	88%
Safer road crossings	84%
Improved pedestrian traffic signals	75%
More shade from sun	74%
Wide shoulders on rural roads	64%
Slower traffic	51%
Better access to bus/train	51%

90% of respondents to the bicycling survey prefer separated bikeways and 84% prefer off-street trails/paths. Bicycle boulevards, buffered bike lanes, and bicycle racks also received strong support.

Preferred Bikeway Improvements
Figure 5 (Strongly Agree/Agree)

Separated bikeways	90%
Off-street trails/paths	84%
Buffered bike lanes	78%
Bicycle boulevards	69%
Bicycle racks	66%
Bicycle corrals	53%
Wider shoulders	50%
Bicycle fixit stations	42%
Bicycle shelters/lockers	40%
Traditional bike lanes	40%
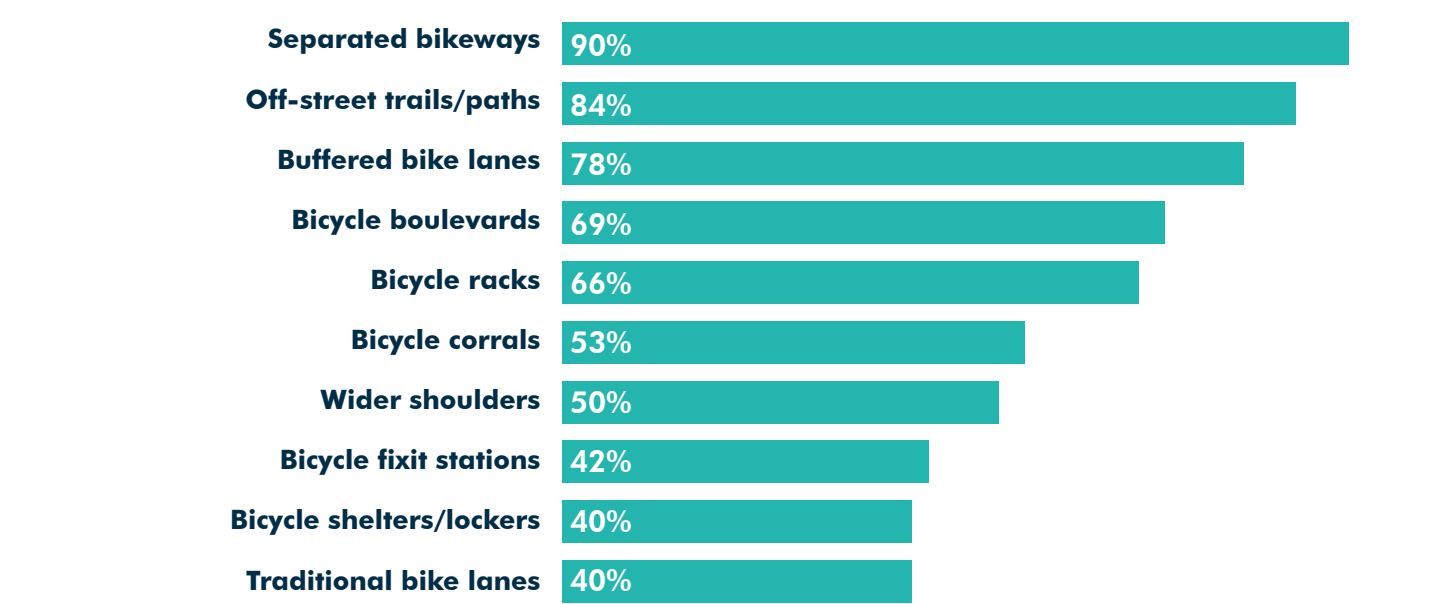
TRANSIT + ACTIVE TRANSPORTATION

Public transit and active transportation support each other as modes of transportation. A strong network of walkways and bikeways is necessary to get transit users safely to their stops. At the same time, a healthy transit system with many users encourages more people to walk, bike, and roll. Local transit providers have recognized the important relationship between active transportation and transit, and are investing resources and funding to improving walkway and bikeway connections to their stops.

A region-wide transit origin/destination survey conducted in 2018 revealed that over 80% of transit riders in the region walk, bike or roll to get to a transit stop and 92% walk, bike, or roll once they get off the bus or rail, see Figure 6.
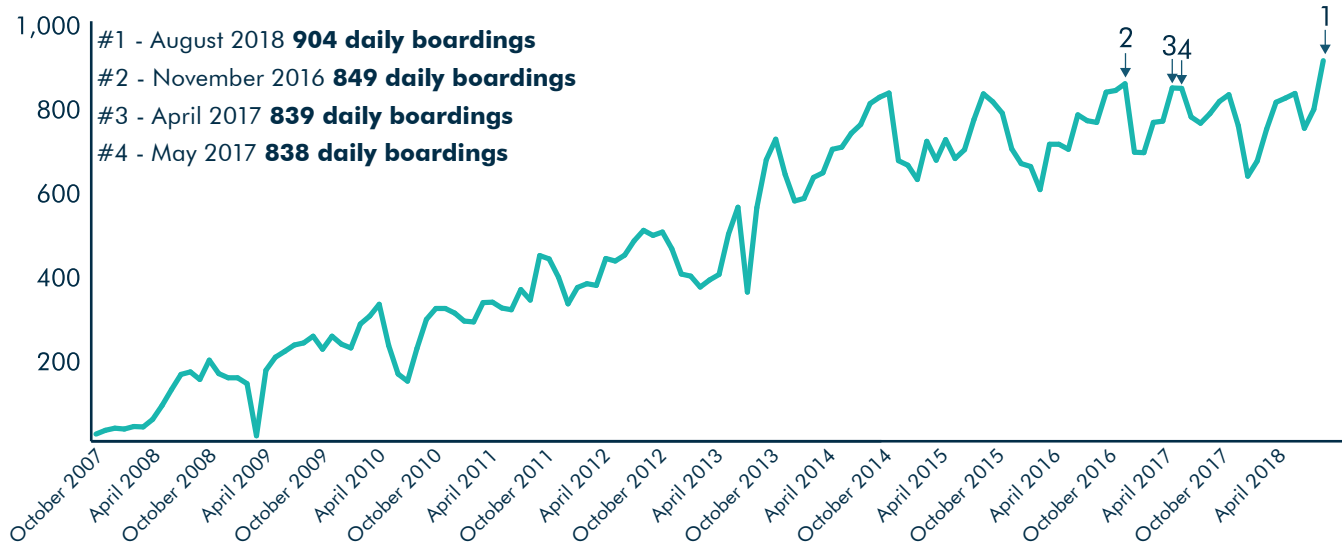
Mode of Access to Transit
Figure 6 Source: 2018 H-GAC Transit Origin-Destination Survey

In 2007, the Metropolitan Transportation Authority of Harris County (METRO) began retrofitting their local buses with racks that can hold up to two bikes. As part of this program, they track the use of the racks and have seen a steady increase in bicyclists riding the bus, see Figure 7. In August 2018, METRO counted an average of 904 bike boardings per day, or more than 28,000 total boardings for the entire month. This data demonstrates how active transportation and transit infrastructure support one another. In recent years, bike boardings jumped in April and October, indicating a higher rate of bicycling in those months.

METRO Average Daily Bike Boardings
Figure 7 October 2007-August 2018 Source: 2018 METRO

#1 - August 2018 **904 daily boardings**
#2 - November 2016 **849 daily boardings**
#3 - April 2017 **839 daily boardings**
#4 - May 2017 **838 daily boardings**

BIKE SHARE

Houston Bike Share (HBS) has managed the City of Houston's BCycle system and its docks of for-rent bicycles since 2011. HBS started with three stations and 18 bikes and is on pace to reach more than 100 stations within the next few years. Data from the BCycle system, like METRO's Bikes on Buses program, is one of the region's only existing indicators of increasing bicycle use. HBS has seen a 308% growth in riders from 2013 to 2017 and a 209% growth in total checkouts over the same period, see Figure 8.

In 2018, The Woodlands Township had a bike share partnership with Mobike. In a span of seven months – between January and July – the number of monthly riders jumped from 1,000 to 2,135, a 114% increase. Mobike pulled its services from many U.S. cities, including The Woodlands in the summer of 2018 and the service is no longer available.

Houston BCycle Usage
Figure 8, 2013-2017 Source: 2018 Houston Bike Share
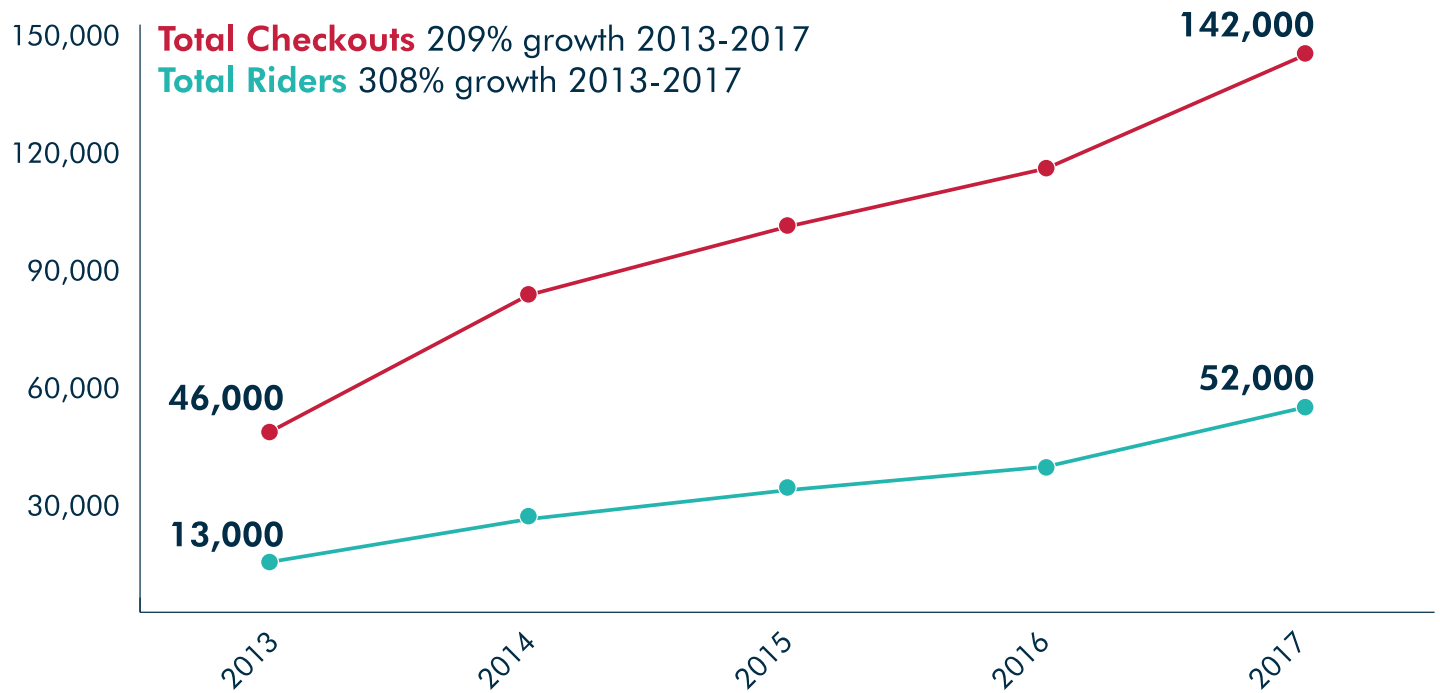
COMMUTE PATTERNS: PEER REGIONS

The Census Bureau tracks how people get to work. Census estimates show normal daily commute patterns for workers 16 years old and older, and shed some light on the use of active transportation in our region. Four percent of workers in H-GAC's eight counties walk, bike, and use transit – that's around 120,000 people.[14] Transit is included alongside active transportation because most transit users walk, bike, or roll to get to their transit stop (see Figure 6 on page 24).

Compared to MPOs in similar regions, workers in H-GAC's eight counties walk, bike, roll, and use transit less frequently, see Figure 9. Of the regions selected for comparison, only Dallas-Fort Worth has a smaller percentage of workers using active transportation or transit. Regions like Atlanta, Austin, and San Diego all have higher rates, but not by much.
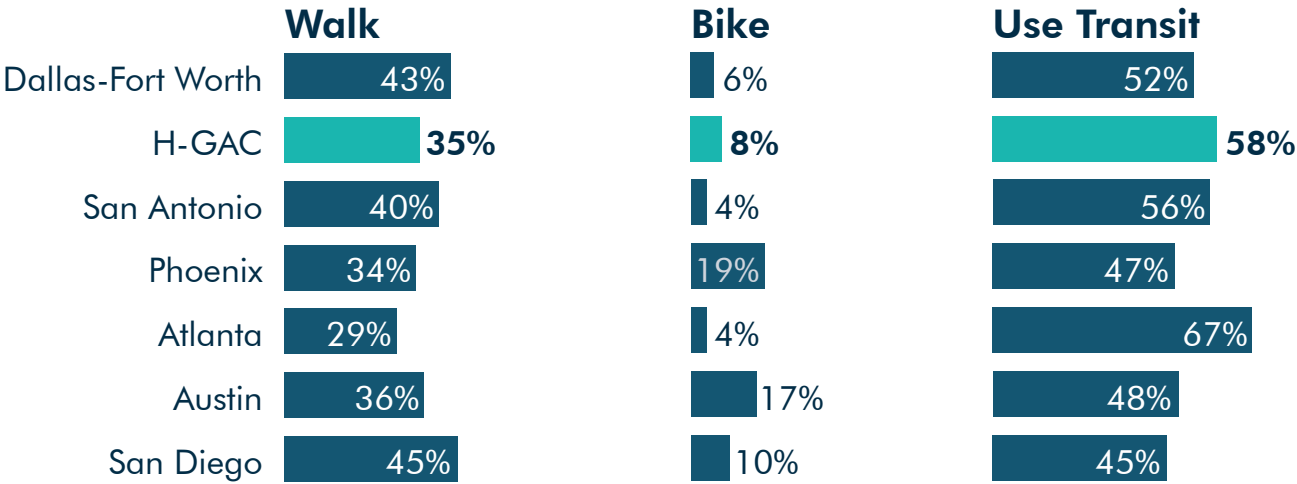
Workers Commuting by Active Transportation and Transit in Peer MPOs
Figure 9 Source: U.S. Census Bureau American Community Survey 2012-2016 5-year estimates

- Dallas-Fort Worth: 3%
- H-GAC: 4%
- San Antonio: 4.5%
- Phoenix: 4.5%
- Atlanta: 5%
- Austin: 5%
- San Diego: 7%
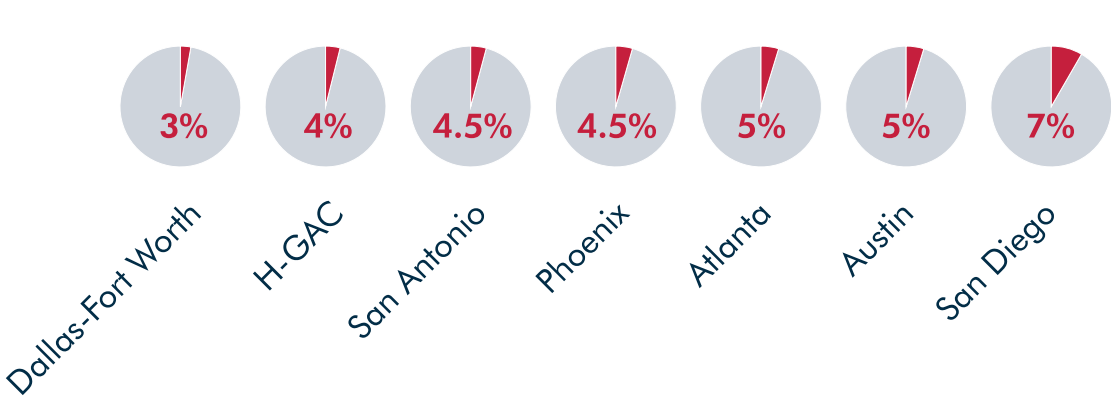
Commute Mode for Non-Driving Workers in Peer MPOs
Figure 10 Source: U.S. Census Bureau American Community Survey 2012-2016 5-year estimates

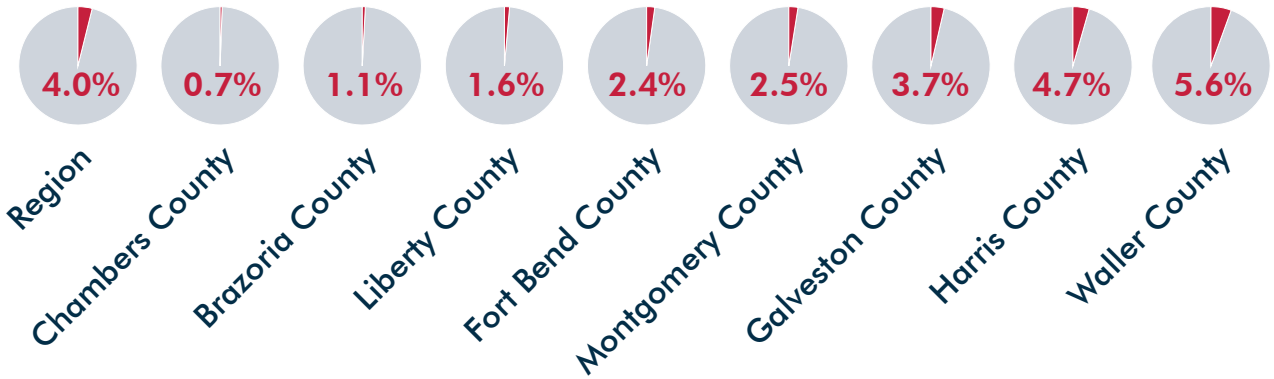|	Walk	Bike	Use Transit
Dallas-Fort Worth	43%	6%	52%
H-GAC	35%	8%	58%
San Antonio	40%	4%	56%
Phoenix	34%	19%	47%
Atlanta	29%	4%	67%
Austin	36%	17%	48%
San Diego	45%	10%	45%

COMMUTE PATTERNS: EIGHT COUNTIES

Commute type differs by county, too. Chambers, Waller and Brazoria counties show higher rates of walking – possibly due to insufficient bicycle infrastructure and limited transit service. Meanwhile, counties like Fort Bend, Montgomery, and Harris have higher transit usage in part due to regular transit service to major regional employment centers. Counties within our region also show differences in the share of workers walking, biking, and taking transit as their commute. Active transportation and transit usage is higher in places like Galveston, Harris, and Waller counties and lower in Chambers, Brazoria, and Liberty counties.

While the Census commute pattern dataset is one of the only national sources with active transportation trip data, it has its limits. According to the U.S. Bureau of Transportation Statistics, commuting only accounts for 15% of all daily trips.[15] Commute patterns are important for making transportation investment decisions, but they cannot tell us how many people are using active transportation to run errands, get to school, visit friends and family, or exercise.

Workers Commuting by Active Transportation and Transit in Eight Counties
Figure 11 Source: U.S. Census Bureau American Community Survey 2012-2016 5-year estimates

- Region: 4.0%
- Chambers County: 0.7%
- Brazoria County: 1.1%
- Liberty County: 1.6%
- Fort Bend County: 2.4%
- Montgomery County: 2.5%
- Galveston County: 3.7%
- Harris County: 4.7%
- Waller County: 5.6%

Commute Mode for Non-Driving Workers in Eight Counties
Figure 12 Source: U.S. Census Bureau American Community Survey 2012-2016 5-year estimates

	Walk	Bike	Use Transit
Region	35%	8%	58%
Chambers County	95%	0%	5%
Brazoria County	75%	8%	17%
Liberty County	64%	20%	15%
Fort Bend County	26%	3%	71%
Montgomery County	40%	9%	51%
Galveston County	55%	16%	30%
Harris County	32%	8%	60%
Waller County	84%	4%	11%
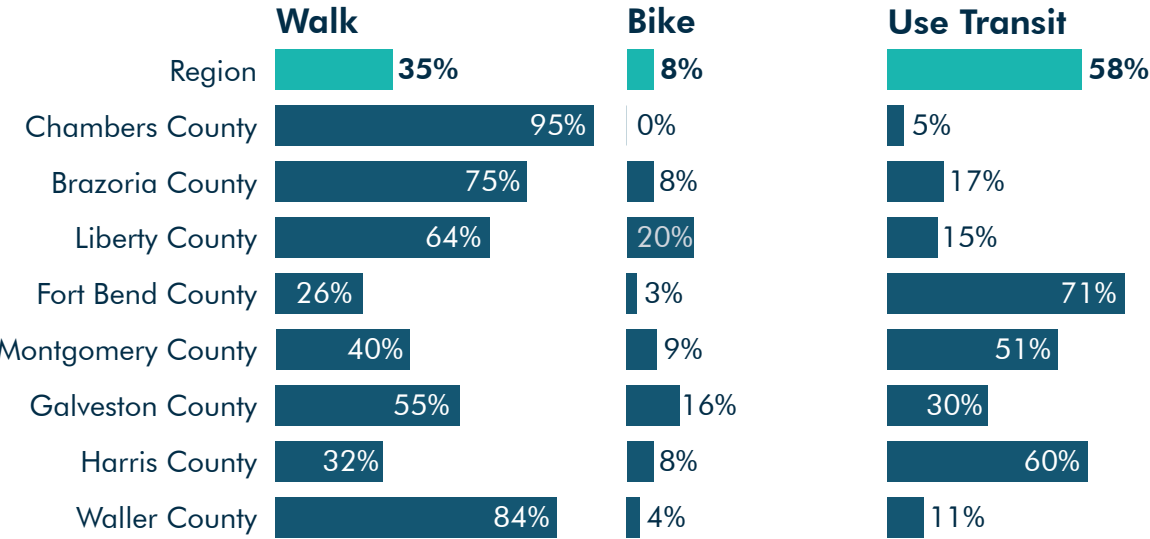
SAFETY

In 2016, the eight county region recorded 1,983 pedestrian crashes and 889 bicycle crashes. Although only two percent of the region's crashes between 2012 and 2016 involved people walking and biking, those crashes accounted for more than one-quarter of all crash fatalities, see Figure 13.[16]

To help address this issue, H-GAC's 2018 Regional Safety Plan identifies Bicycle & Pedestrian Safety as one of its five Focus Areas. The FHWA also named the City of Houston a Pedestrian-Bicycle Focus City and the State of Texas a Pedestrian-Bicycle Focus State in 2015, eligible for targeted technical assistance from the agency. For a detailed look at regional crash data, see the 2018 Regional Safety Plan (h-gac.com/transportation-safety) starting on page 20.

TxDOT's crash data tells us that men are more likely to be involved in a crash as either a pedestrian or bicyclist than women. We also know that although Black residents represent 17% of the region's population, Black pedestrians and bicyclists account for 27% and 23% of all pedestrian and bicycle crashes, respectively, likely because they are more likely to walk and bike than the population as a whole.[17]

Crashes involving pedestrians and bicyclists happen on all types of roadways, with the largest percentage on city streets, as shown in Figure 14. Non-trafficways (private driveways, parking lots, etc.), highways, and county roads also account for a high percentage of crashes. Although we do not have accurate counts for pedestrian and bicycle traffic volumes, the higher number of crashes on city streets may due to people walking, biking, and rolling on city streets more often than other types of roadways.
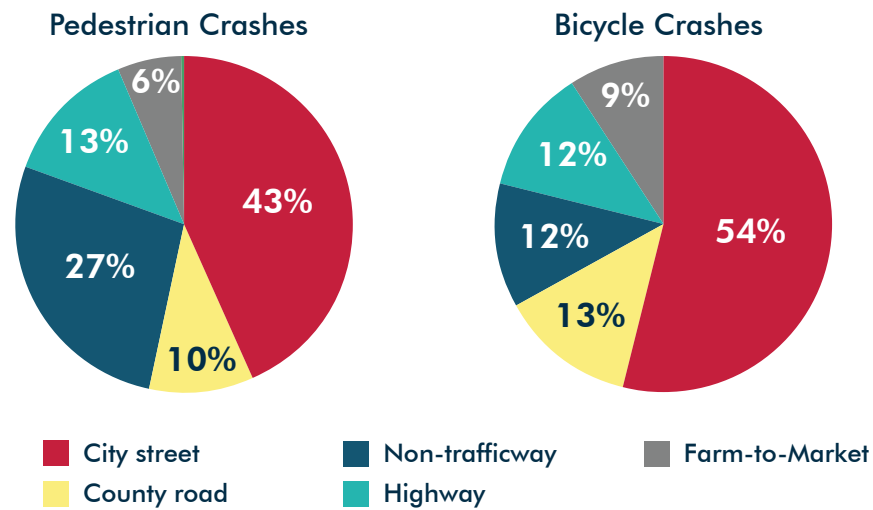
Pedestrian and Bicycle Crash Rates
Figure 13, 2012-2016 Source: TxDOT Crash Records Information System, 2012-2016

All Crashes — 2%
Fatal Crashes — 26%

■ Involved a pedestrian or bicyclist
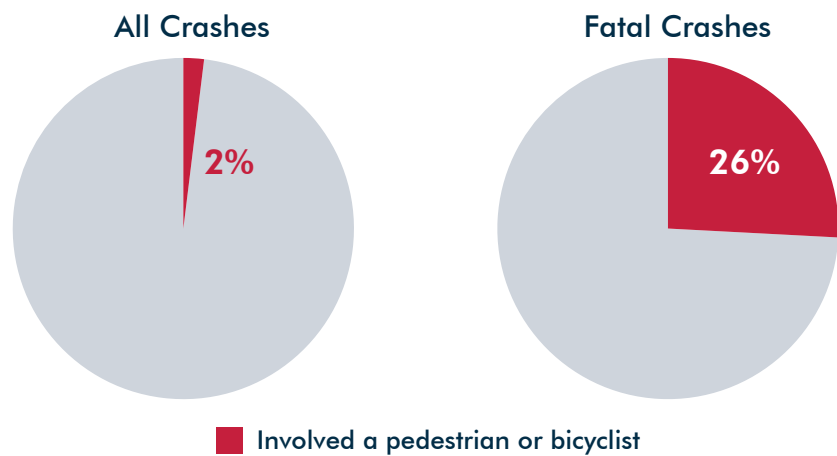
Pedestrian and Bicycle Crash Locations
Figure 14, 2012-2016 Source: TxDOT Crash Records Information System, 2012-2016

Pedestrian Crashes: 43%, 27%, 10%, 13%, 6%
Bicycle Crashes: 54%, 12%, 13%, 12%, 9%

■ City street ■ Non-trafficway ■ Farm-to-Market
■ County road ■ Highway

PUBLIC INPUT: PREFERENCES

Pedestrian and bicycle crashes are also more prevalent close to dusk, when visibility becomes limited for both motorists and pedestrians. For every month except April, the highest percentage of pedestrian crashes occur in the hour before or after sunset, see Figure 15. A similar pattern shows that the highest frequency of bicycle crashes occurs between 4pm and 7pm, as shown in Figure 16. The 2018 Regional Safety Plan names a set of actions to address the region's safety issues on our roadways, including specific strategies related to the Bicycle & Pedestrian Safety Focus Area. Find those actions on page 72 of this plan and page 48 of the 2018 Regional Safety Plan.

Most Common Hour of Pedestrian Crashes by Month - Eight Counties
Figure 15, 2007-2016 Source: TxDOT Crash Records Information System

● Hour with the most crashes that month   ■ Daylight Hours
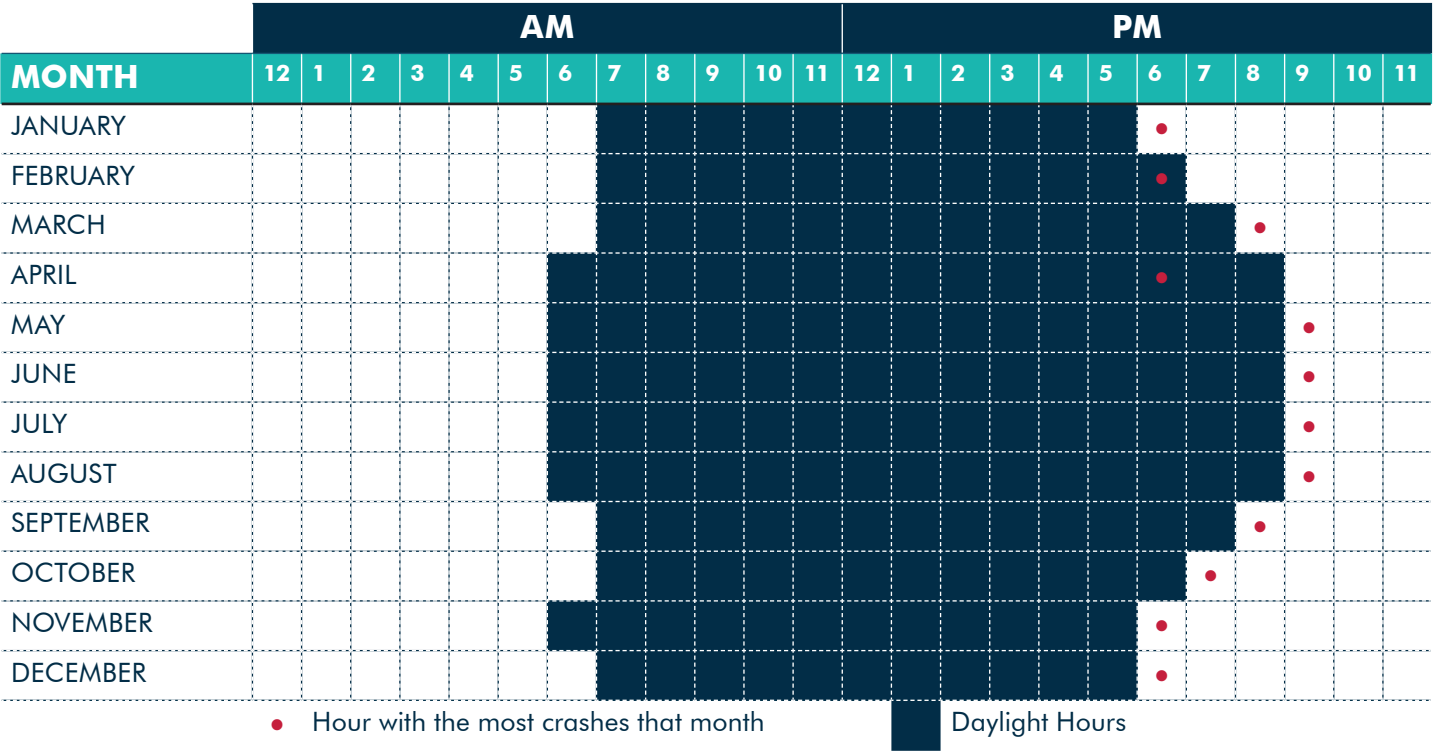
Bike Crashes by Hour of Day - Eight Counties
Figure 16, 2009-2016 Source: TxDOT Crash Records Information System

HEALTH

Physical activity, including that achieved through active transportation, is associated with a host of health benefits – physical and mental. Physical activity has been linked to reduced rates of obesity, cardiovascular disease, hypertension, diabetes, depression, and others – to the point that the risk of 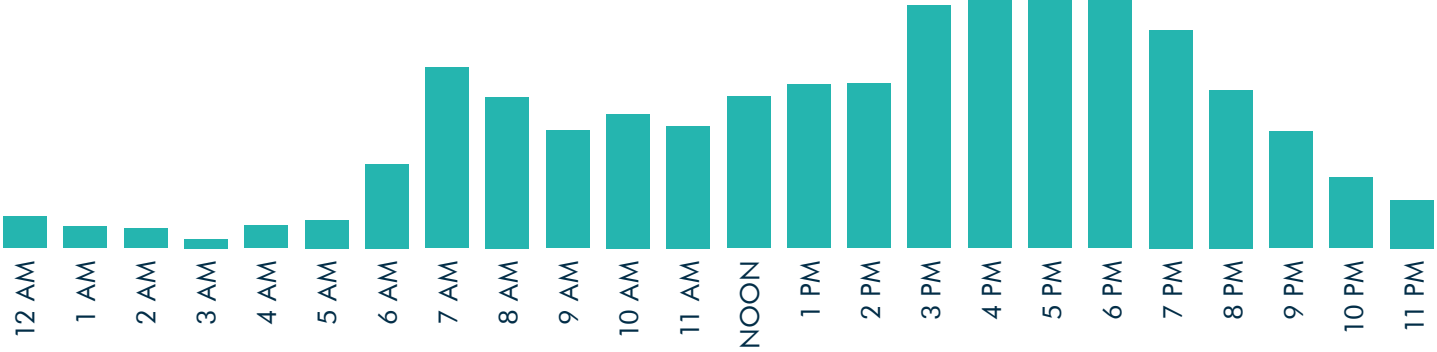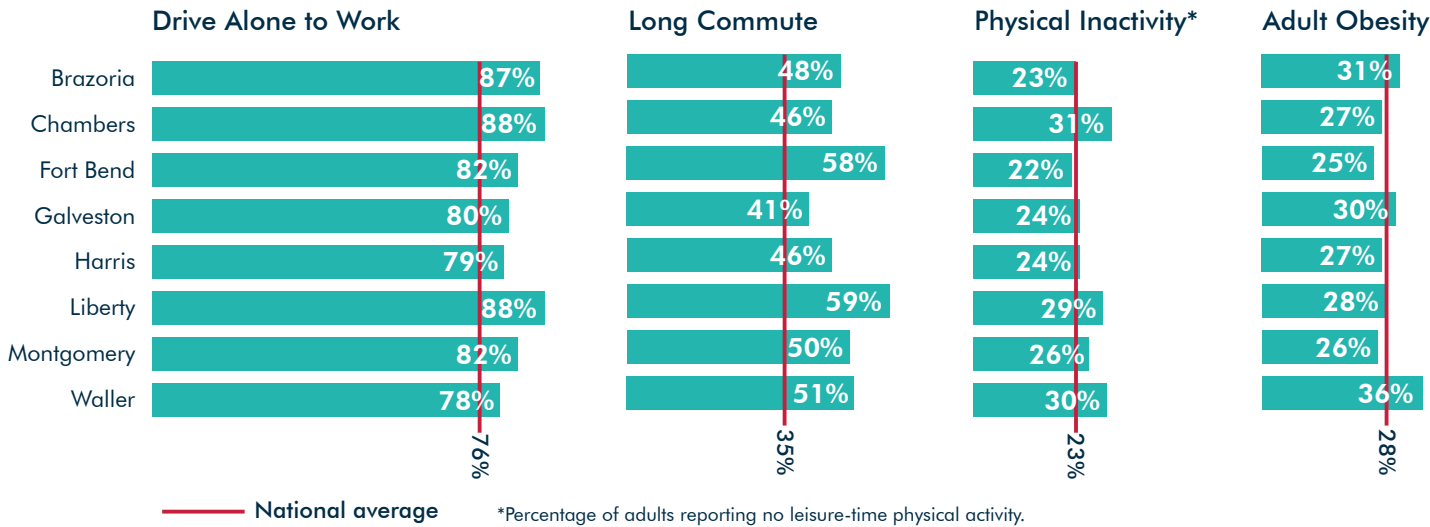negative health outcomes is 30% lower for active populations than for inactive populations.[3] To attain activity related health benefits, the Center for Disease Control recommends adults engage in a minimum of 30 minutes of exercise a day, or 150 minutes a week. Such exercise can take the form of walking or biking and can easily be achieved by active transportation in a daily commute.

Inactivity, on the other hand, is strongly associated with poor health outcomes. Driving is a major source of physical inactivity and is linked with overweight and obese populations.[5] Annually, the Robert Wood Johnson Foundation develops County Health Rankings & Roadmaps which provides a snapshot of a county's health. Two major factors contributing to a community's overall health score are the percent of the workforce that drives to work alone and the percent of commuters with long commutes.

Health outcomes are calculated based on a variety of factors ranging from socioeconomic, to access to clinical care, to environmental. The factors most closely related to active transportation are Adult Obesity, Physical Inactivity, Driving Alone to Work, and Long Commute. The Houston-Galveston region health rankings for these four factors are seen in Figure 17, in comparison to the national average.

Health Factors Related to Active Transportation
Figure 17, Source: 2018 Robert Wood Johnson County Health Rankings

	Drive Alone to Work	Long Commute	Physical Inactivity*	Adult Obesity
Brazoria	87%	48%	23%	31%
Chambers	88%	46%	31%	27%
Fort Bend	82%	58%	22%	25%
Galveston	80%	41%	24%	30%
Harris	79%	46%	24%	27%
Liberty	88%	59%	29%	28%
Montgomery	82%	50%	26%	26%
Waller	78%	51%	30%	36%
National average	76%	35%	23%	28%

*Percentage of adults reporting no leisure-time physical activity.

BIKEWAY NETWORK

The network of bikeways across the eight counties continues to grow. The last regional active transportation plan, completed in 2015, counted 1,215 miles of bikeways in the region. Using data provided by local governments, we estimate that there are now more than 1,478 miles of bicycle facilities. Most of the completed bikeways are in and around population centers. Places like The Woodlands, Sugar Land, Missouri City, Kingwood, Shadow Creek Ranch, and Cinco Ranch boast large networks of shared-use paths/trails. A few signed shoulder routes also cross parts of the region with lower population density like northern Waller County, western Montgomery County, northwest Harris County, and the southern portion of Galveston Island.

Regional Bikeway Infrastructure
Map 3 Source: H-GAC and local partners

Bike Lane
Dedicated lane marked off with painted lines for use by bicyclists

Shared-Use Path/Trail
Dedicated trail completely separated from auto traffic and used by both pedestrians and bicyclists

Signed Shared Roadway
Route with signs indicating cars and bicyclists share the travel lanes

Signed Shoulder Route
Route with signs indicating that bicyclists are permitted to use the shoulder as a travel lane

WALKWAY NETWORK

H-GAC completed the first regional sidewalk layer in 2018, offering a new look at the connectivity of more than 19,300 linear miles of sidewalks in the eight counties. Map 4 shows the sidewalk layer. While it's difficult to see the individual lines, the map indicates which parts of the region have a density of sidewalks: neighborhoods inside the 610 Loop like Downtown, the Heights, Montrose, and the Near Northside. Some suburban communities outside of Beltway 8, like Cinco Ranch and Clear Lake, show relatively high sidewalk density while much of the rest of the region shows a relative lack of density.

For a more detailed look at the sidewalk infrastructure in each county, see the county profiles starting on page 82.

Regional Sidewalks
Map 4 Source: 2018 H-GAC 2018 Aerial Imagery

Legend:
— Existing Sidewalk
— Highway
○ City
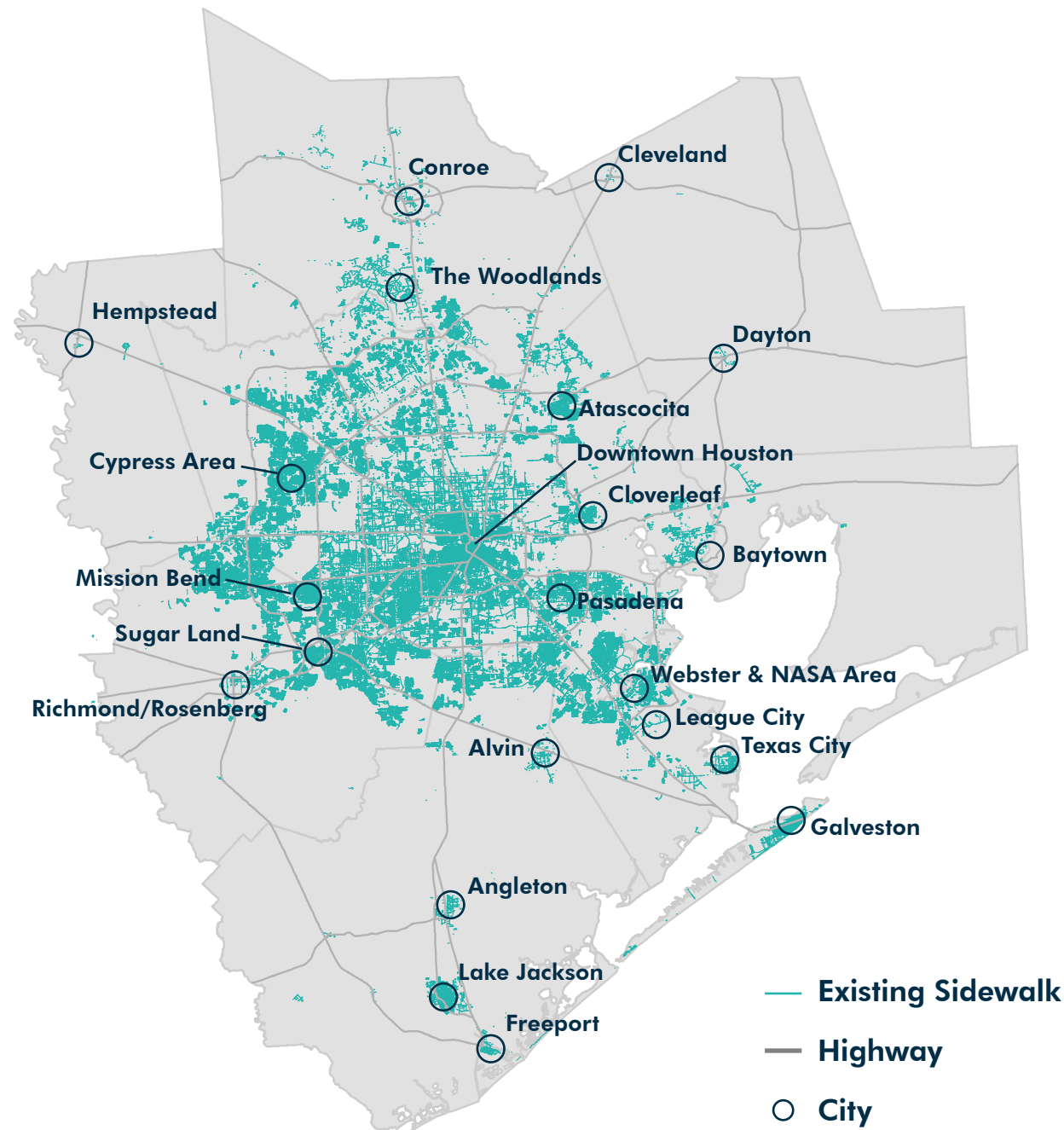
WALKWAY NEED

The new sidewalk layer allows us to investigate the need for new walkways. Map 5 highlights the places in the region without a sufficient network of sidewalks. To calculate this, we reviewed roadway centerlines in the region (except for private driveways, highways, and parking lots) to identify any accompanying sidewalks on both sides of the centerline. We then estimated the need by subtracting the roadway miles by the sidewalk miles. The darkest hexagons show places where no local streets have sidewalks, while the lighter hexagons show places with more sidewalks (to understand why we used hexagons for our analysis, see Step 2 of Appendix A). The map shows a high need for sidewalks in many of our small towns like Hempstead, Cleveland and Alvin, as well as larger communities like Conroe and Rosenberg. Unincorporated Harris County has several locations with a lack of sidewalks, particularly around FM 1960 and between IH 610 and BW 8.

Based on this analysis, the region still needs an estimated 43,900 miles of sidewalks. FHWA estimates construction cost at $35 per linear foot for a 5-foot concrete sidewalk, bringing the total needed investment to $8 billion, or $9.6 billion with a 20% contingency for construction.[18] This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

Sidewalk Need
Map 5 Source: 2018 H-GAC 2018 Aerial Imagery; 2017 H-GAC STAR*Map

Legend:
- 100% of roadways need sidewalks
- 75-99%
- 50-74%
- 25-49%
- 0-25%
— Highway
○ City
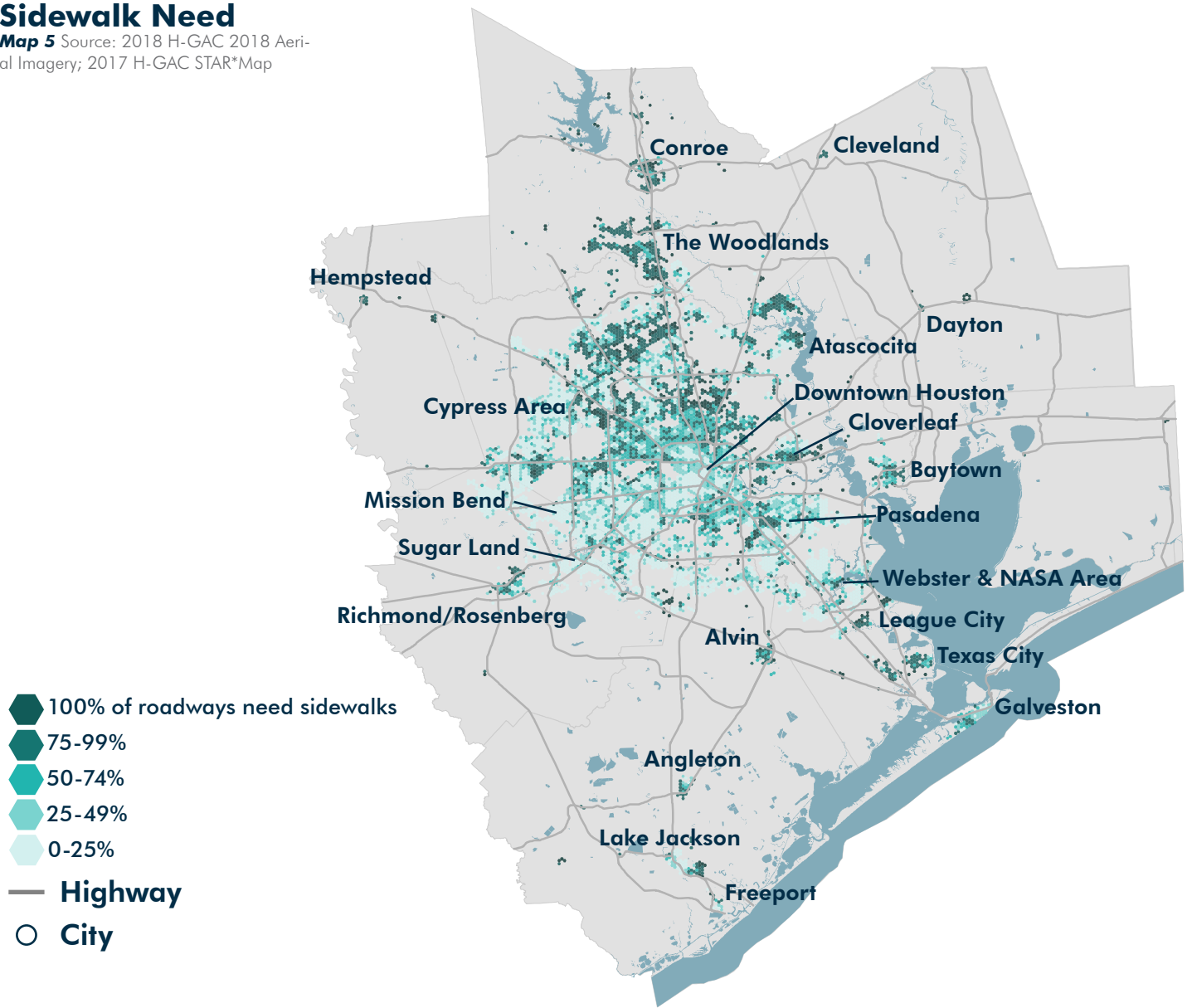
Pedestrian and Bicycle Focus Area Analysis

2045 Active Transportation Plan

PEDESTRIAN AND BICYCLE FOCUS AREAS

We know that some parts of the region have a higher need for active transportation for a number of different reasons. We have identified those places in our region as Pedestrian and Bicycle Focus Areas. For a full description of the methodology used to conduct the Focus Area analysis, see Appendix A.

HOW WILL THE FOCUS AREAS BE USED?

This analysis will serve primarily as a tool for local planning projects as a way to understand areas of high need. The methodology described here is a start and will be revisited and refined by the Pedestrian-Bicyclist Subcommittee and other local partners that represent the diversity of geography in our region.

Once finalized by the subcommittee, this analysis may also be used to determine where to invest H-GAC staff time, and resources. Eventually, this analysis may inform the decisions of the Transportation Policy Council (TPC) and the Technical Advisory Committee (TAC). Focus Areas may be used as a potential criteria, or factor in determining TIP funding. However, the final decision on funding criteria lies with the TAC and TPC.

In any case, Focus Areas are not intended to be used in a vacuum, but instead should be considered alongside local planning efforts, community input, and other data.

IMPROVING THE FOCUS AREAS ANALYSIS

Although this Focus Area analysis is a great start, we know that there are deeper, more nuanced ways to look at the data. The analysis of our region's pedestrian and bicycle network should be an ongoing exercise to better understand the context and need of local communities As you will see in our Connect recommendations on page 75, we intend to revisit the Focus Area analysis throughout 2019 and beyond. Initial questions for our analysis include:

1. Can we develop a geographic split that better represents the different community typologies in the region (instead of Harris County and non-Harris County)?

2. Can we include a criteria related to infrastructure need that shows areas with a lack of current walkways and bikeways?

3. Can we add more nuance to the transit criteria in a way that prioritizes high-frequency transit stops and doesn't punish areas without transit?

4. Can we adjust the weight of criteria as a way of prioritizing equity?

5. Can we add nuance to the crash criteria by prioritizing areas with severe or fatal crashes and by updating the analysis to reflect recent years' data?

6. How does the analysis consider a community's desirability for infrastructure?
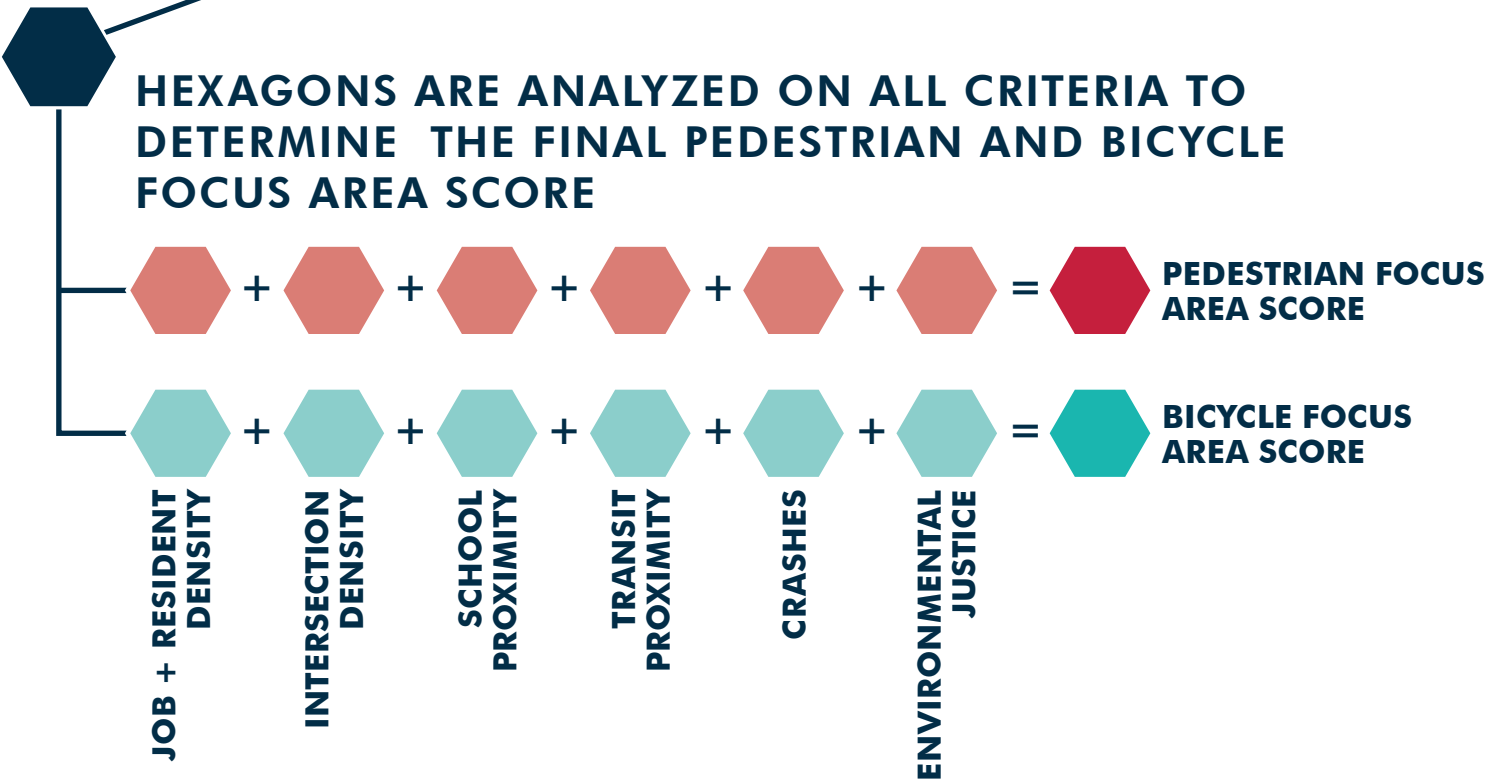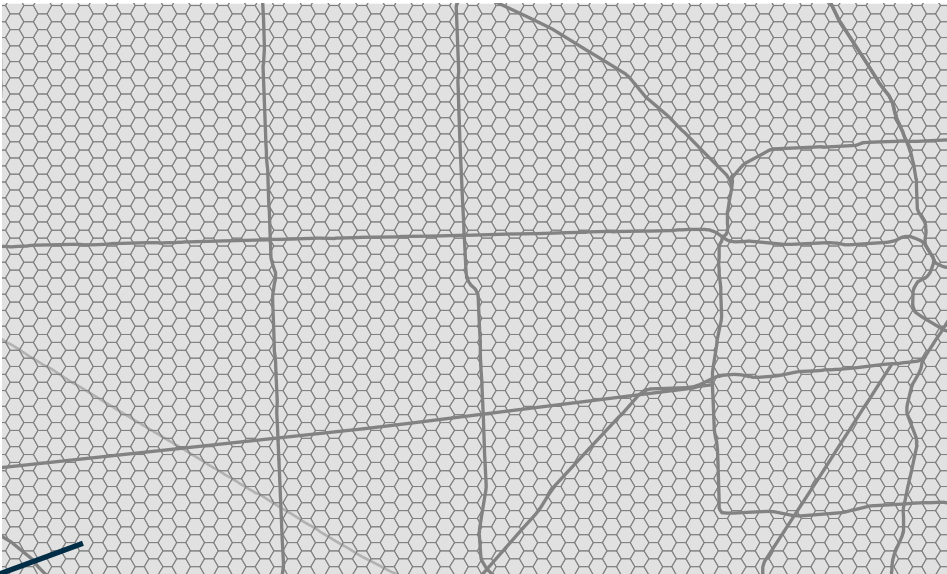
FOCUS AREA CRITERIA

Focus Areas were identified using six criteria: Job + Resident Density, Intersection Density, School Proximity, Transit Proximity, Crashes, and Environmental Justice. Each criteria identifies a different type of need for active transportation.

CRITERIA AND HEXAGONS

Each criteria identifies a different type of need for active transportation. All six criteria are used for both the Pedestrian and Bicycle Focus Area analyses.

In order to remain uniform across the region, we imposed a hexagonal grid across the entire region. Each hexagon received 12 scores: six criteria scores for the Pedestrian Focus Area analysis and six criteria scores for the Bicycle Focus Area analysis. For detailed methodology, see Appendix A.

HEXAGONS ARE ANALYZED ON ALL CRITERIA TO DETERMINE THE FINAL PEDESTRIAN AND BICYCLE FOCUS AREA SCORE

⬡ + ⬡ + ⬡ + ⬡ + ⬡ + ⬡ = ⬡ **PEDESTRIAN FOCUS AREA SCORE**

⬡ + ⬡ + ⬡ + ⬡ + ⬡ + ⬡ = ⬡ **BICYCLE FOCUS AREA SCORE**

JOB + RESIDENT DENSITY · INTERSECTION DENSITY · SCHOOL PROXIMITY · TRANSIT PROXIMITY · CRASHES · ENVIRONMENTAL JUSTICE

JOB + RESIDENT DENSITY FOCUS AREA CRITERIA#1

Job + Resident Density (also known as Activity Population Density) is the total number of jobs and residents per square mile. A high Job + Resident Density defines places where the population gathers throughout the day – areas of high traffic for pedestrians, bicyclists, cars, and transit. Walkway and bikeway investments in these areas can reduce overall congestion and improve safety for all road users.

Source: H-GAC Regional Growth Forecast, 2017

CALCULATION EXAMPLE

To calculate the Job + Resident Density, we referred to H-GAC's Activity-Connectivity Explorer (ACE) Tool, which can be found at h-gac.com/go/apps.

The ACE Tool calculates the total number of jobs and residents in each hexagon using data from H-GAC's 2017 Regional Growth Forecast.

As an example, a hexagon with 2,000 jobs per square mile and 5,859 residents per square mile has a Job + Resident Density of 7,859 per square mile. That number is higher than 76% of all other pedestrian hexagons, giving it a pedestrian Job + Resident Density score of 0.76. It is higher than 74% of all other bicycle hexagons, giving it a bicycle Job + Resident Density score of 0.74. Although the hexagon has the same numeric value (7,859) for the Job + Resident Denstiy, it has different scores for Pedestrians and Bicycles because there are fewer hexagons being analyzed in the Pedestrian Focus Area analysis than the Bicycle Focus Area analysis. For a more detailed explanation, see Appendix A.

⬡ **2,000 jobs per sq. mi.** + **5,859 residents per sq. mi.** = **JOBS + RESIDENT DENSITY OF 7,859**

⬡ **7,859 is higher than 76% of all pedestrian hexagons, so the pedestrian Job + Resident Density score is 0.76**

⬡ **7,859 is higher than 74% of all bicycle hexagons, so the bicycle Job + Resident Density score is 0.74**
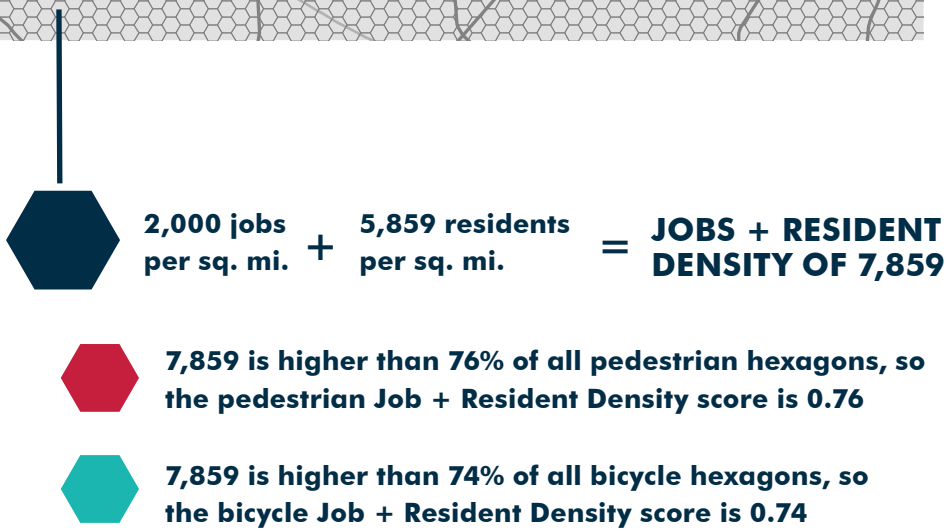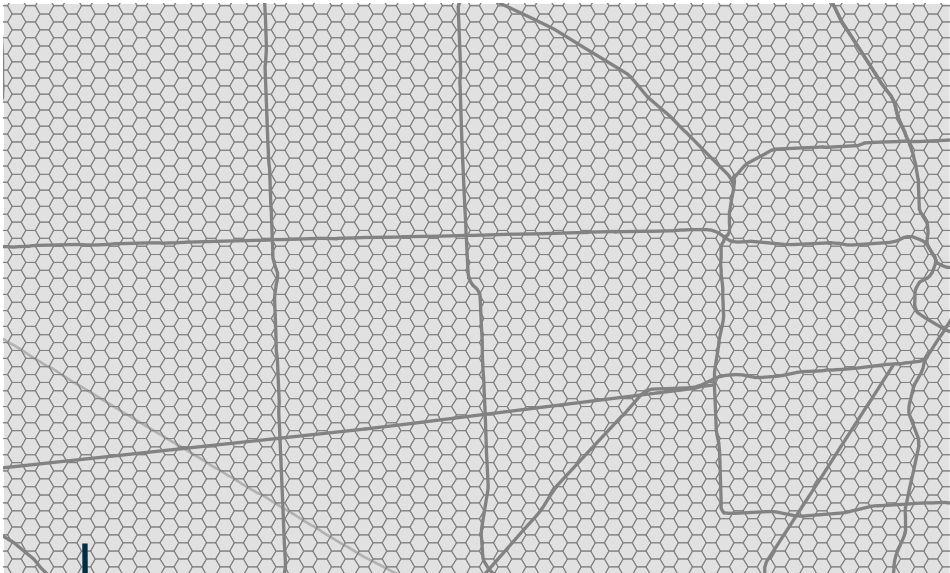
This calculation was completed across the region to determine a Job + Resident Density score for all pedestrian and bicycle hexagons.

JOB + RESIDENT DENSITY
PEDESTRIAN FOCUS AREA CRITERIA

The Pedestrian Job + Resident Density map reveals concentrations in central and western Harris County, eastern Fort Bend County, Galveston, Atascocita, Conroe, and The Woodlands, among others.

Job + Resident Density
Map 6 Source: H-GAC Regional Growth Forecast, 2017

Job + Resident Density

- **Top 10%** >8,018 jobs + residents per sq. mi.
- **Top 20%** 5,753 to 8,018 jobs + residents per sq. mi.
- **Top 30%** 4,413 to 5,752 jobs + residents per sq. mi.
- **Top 40%** 3,297 to 4,412 jobs + residents per sq. mi.
- **Top 50%** 2,233 to 3,296 jobs + residents per sq. mi.

JOB + RESIDENT DENSITY
BICYCLE FOCUS AREA CRITERIA

The Bicycle Job + Resident Density map shows concentrations in central and western Harris County, eastern Fort Bend County, Galveston, Atascocita, Conroe, Cloverleaf, and The Woodlands, among others.

Job + Resident Density
Map 7 Source: H-GAC Regional Growth Forecast, 2017

Job + Resident Density

- **Top 10%** >6,742 jobs + residents per sq. mi.
- **Top 20%** 4,505 to 6,742 jobs + residents per sq. mi.
- **Top 30%** 2,975 to 4,504 jobs + residents per sq. mi.
- **Top 40%** 1,738 to 2,974 jobs + residents per sq. mi.
- **Top 50%** 912 to 1,737 jobs + residents per sq. mi.
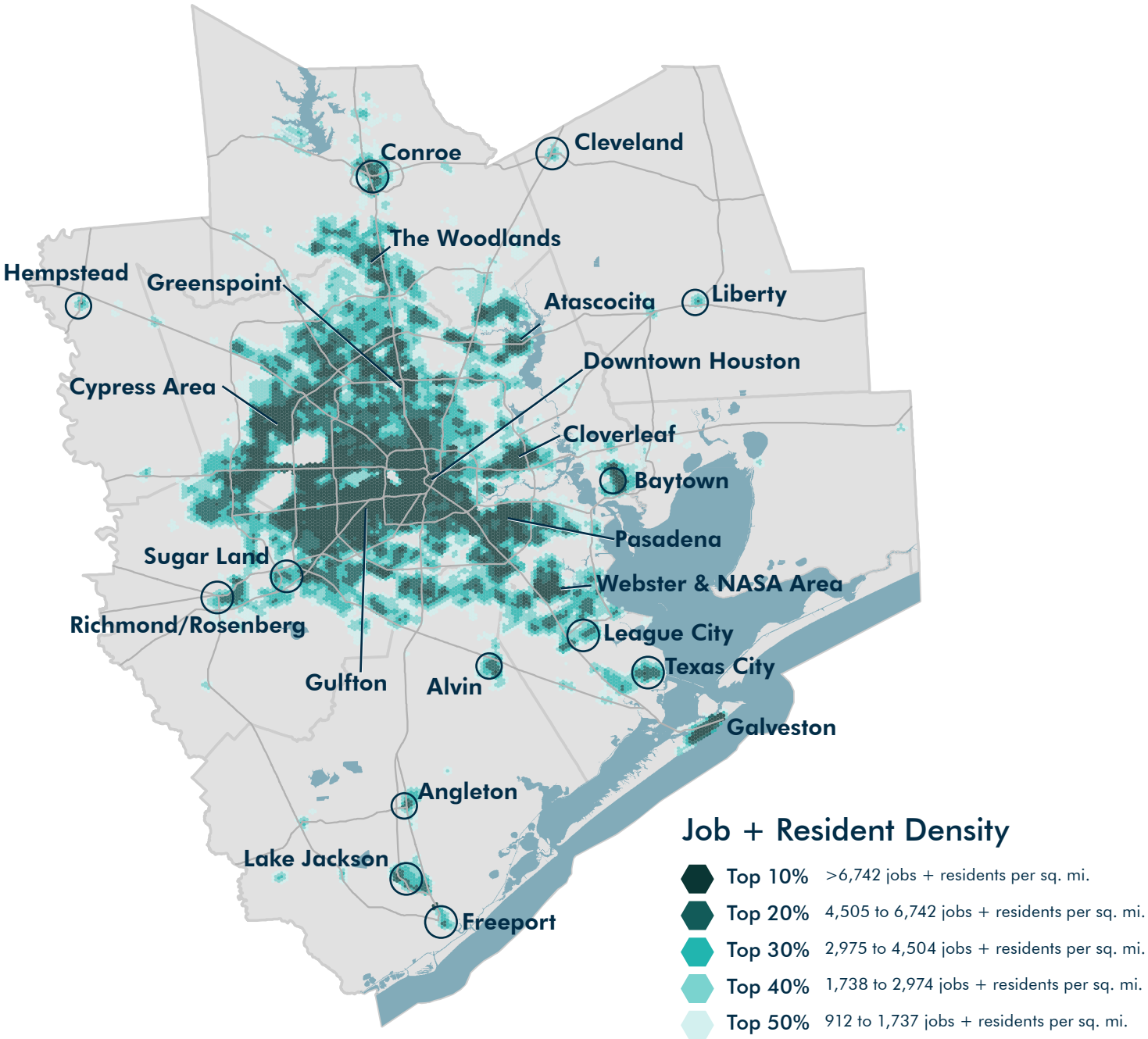
INTERSECTION DENSITY
FOCUS AREA CRITERIA#2

Intersection Density measures the number of times one roadway intersects another per square mile. As an indicator, intersection density reveals areas where people will have a higher propensity to walk, bike or roll. Areas with high intersection densities typically have more connected street networks, slower vehicle speeds and a larger number of destinations.

Source: Southeast Texas Addressing and Referencing Map (STAR*Map) 2017

CALCULATION EXAMPLE

Similar to Job + Resident Density, we calculated Intersection Density, using H-GAC's Activity-Connectivity Explorer (ACE) Tool, which can be found at h-gac.com/go/apps.

The ACE Tool calculates the total number of intersections in each hexagon using data from H-GAC's 2017 Southeast Texas Addressing and Referencing Map, or STAR*Map.

To use an example, one hexagon may have 34 intersections per square mile. That number is higher than 22% of all other pedestrian hexagons, giving it a pedestrian Intersection Density score of 0.22. It is higher than 26% of all other bicycle hexagons, giving it a bicycle Intersection Density score of 0.26. Although the hexagon has the same numeric value (34) for the Intersection Denstiy, it has different scores for Pedestrians and Bicycles because there are fewer hexagons being analyzed in the Pedestrian Focus Area analysis than the Bicycle Focus Area analysis. For a more detailed explanation, see Appendix A.
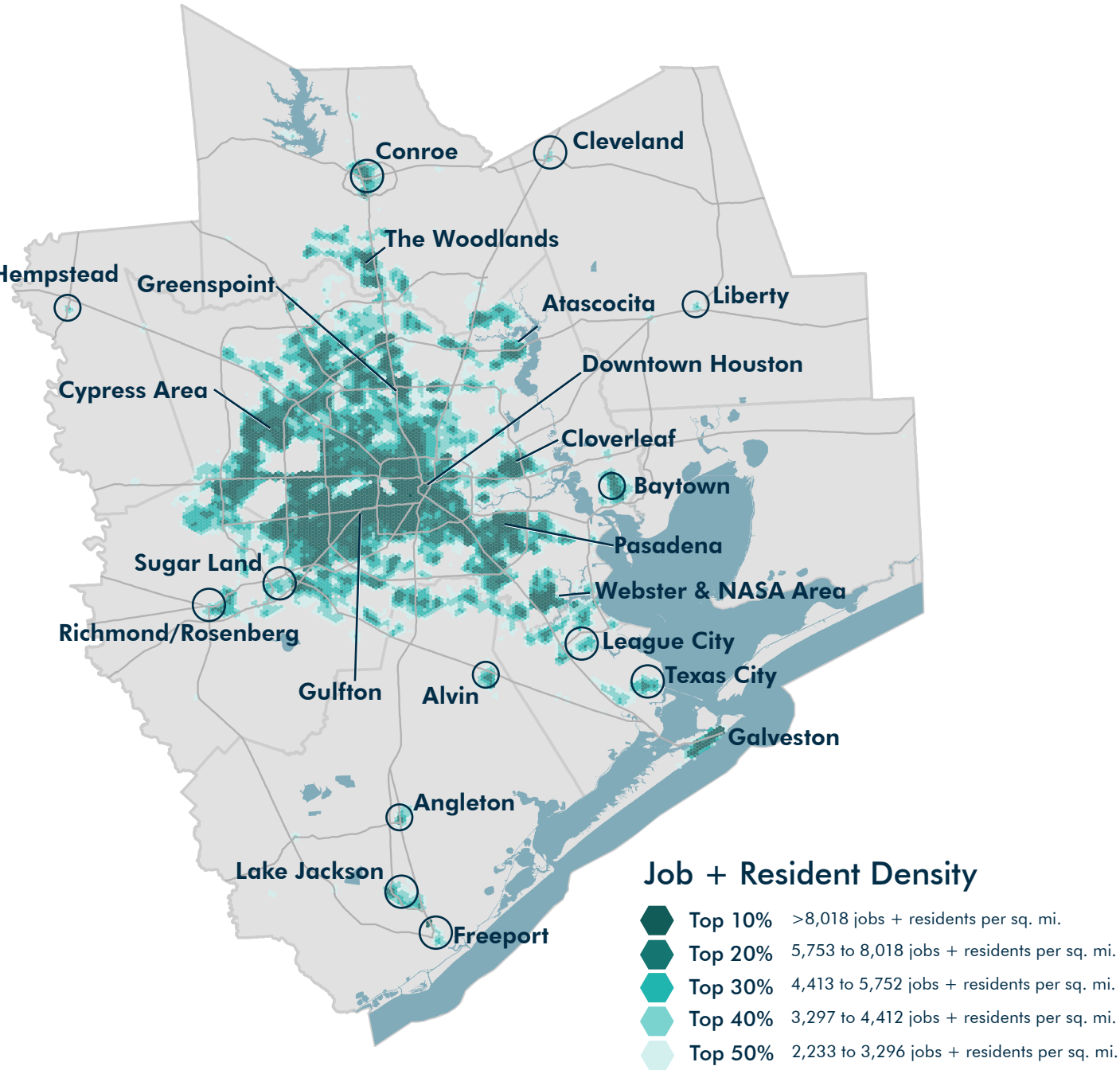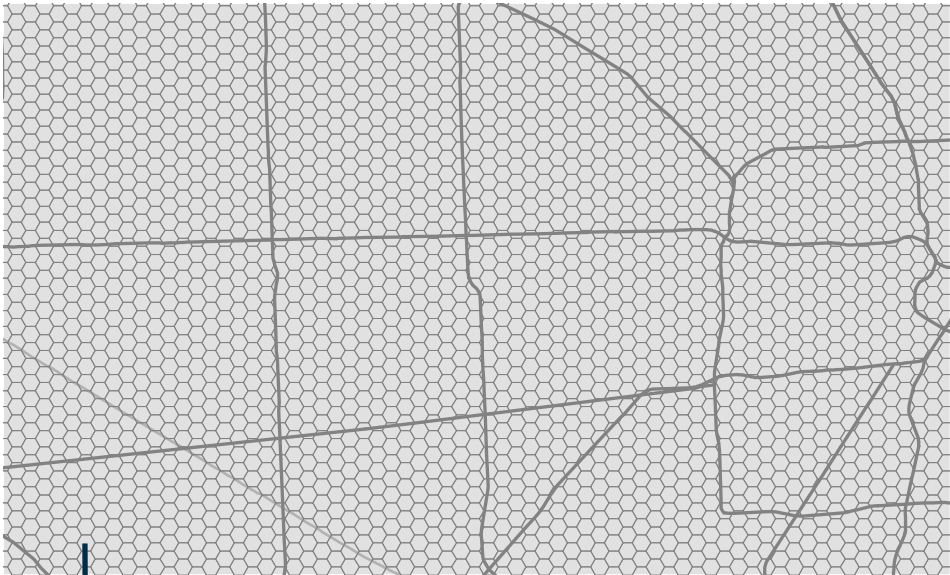
ONE HEXAGON WITH 34 INTERSECTIONS PER SQUARE MILE

34 is higher than 22% of all pedestrian hexagons, so the pedestrian Intersection Density score is 0.22

34 is higher than 26% of all bicycle hexagons, so the bicycle Intersection Density score is 0.26

This calculation was completed across the region to determine an Intersection Density score for all pedestrian and bicycle hexagons.

INTERSECTION DENSITY
PEDESTRIAN FOCUS AREA CRITERIA

The Pedestrian Intersection Density map shows concentrations inside the 610 Loop in Houston, and in the downtown areas of large cities like Pasadena, Galveston, Texas City, and Conroe. It also highlights smaller communities like Cleveland, Hempstead, Freeport, Alvin and many others with historic and well-connected town centers.

Intersection Density
Map 8 Source: Southeast Texas Addressing and Referencing Map (STAR*Map) 2017

Intersection Density

Top 10%	>92 intersections per sq. mi.
Top 20%	76 to 92 intersections per sq. mi.
Top 30%	62 to 75 intersections per sq. mi.
Top 40%	48 to 61 intersections per sq. mi.
Top 50%	34 to 47 intersections per sq. mi.

INTERSECTION DENSITY
BICYCLE FOCUS AREA CRITERIA

The Bicycle Intersection Density map, similar to the pedestrian map, shows concentrations inside the 610 Loop in Houston and in the downtown areas of cities like Pasadena, Galveston, Texas City, and Conroe. It also highlights those smaller communities with historic street grids like Cleveland, Hempstead, Freeport, Alvin and many others.

Intersection Density
Map 9 Source: Southeast Texas Addressing and Referencing Map (STAR*Map) 2017

Conroe
Cleveland
The Woodlands
Hempstead
Greenspoint
Liberty
Atascocita
Cypress Area
Downtown Houston
Cloverleaf
Baytown
Sugar Land
Pasadena
Webster & NASA Area
Richmond/Rosenberg
League City
Gulfton
Alvin
Texas City
Angleton
Galveston
Lake Jackson
Freeport

Intersection Density

Top 10%	>83 intersections per sq. mi.
Top 20%	63 to 83 intersections per sq. mi.
Top 30%	45 to 62 intersections per sq. mi.
Top 40%	29 to 44 intersections per sq. mi.
Top 50%	18 to 28 intersections per sq. mi.

SCHOOL PROXIMITY
FOCUS AREA CRITERIA#3

The State of Texas does not require school districts to provide bus service to children living within two miles of their school, meaning many children walk and bike to class. Students living within two miles of a grade school, technical school, college or university have a higher propensity to walk, bike or roll to class.

Sources: Texas Education Agency 2018; Integrated Post-Secondary Education System 2018; National Center for Education Statistics 2018

CALCULATION EXAMPLE

To measure School Proximity, we mapped public and private grade schools using data from the Texas Education Agency and technical schools, colleges and universities using data from the Integrated Post-Seconday Education System and the National Center for Education Statistics.

We counted the number of schools within a half-mile buffer and within a two-mile buffer from the hexagon. A half mile represents about a ten minute walk and two miles is about the distance of a ten-minute bike ride.

To use an example, a hexagon may have one school within a half mile and four schools within two miles. This hexagon has more schools within a half mile than 57% of all hexagons, giving it a pedestrian School Proximity Score of 0.57. It has more schools within two miles than 54% of all hexagons, giving it a bicycle School Proximity Score of 0.54. For a more detailed explanation, see Appendix A.

0.5 miles   2 miles
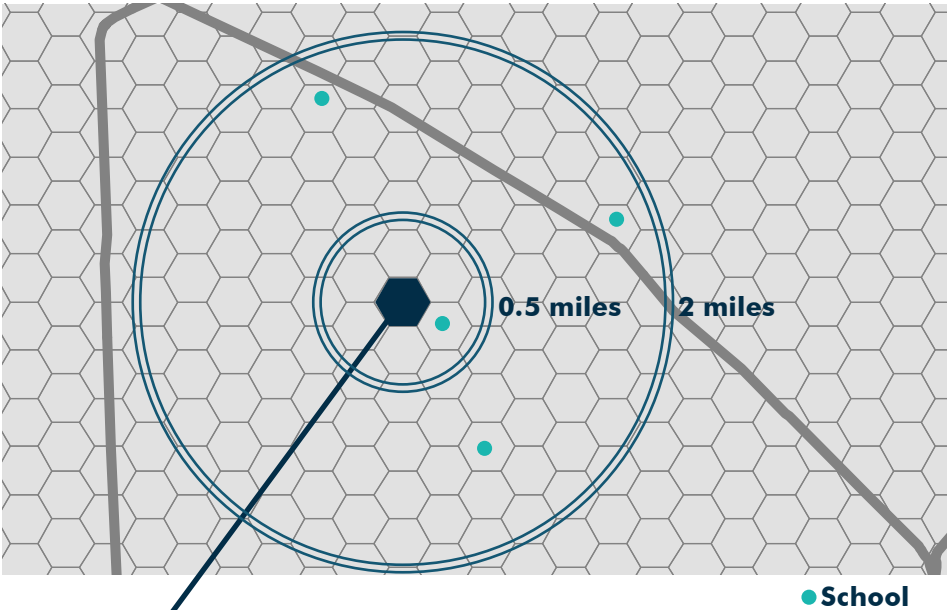
School

1 SCHOOL WITHIN 0.5 MILES

4 SCHOOLS WITHIN 2 MILES

1 is higher than 57% of all pedestrian hexagons, so the pedestrian School Proximity score is 0.57

4 is higher than 54% of all bicycle hexagons, so the bicycle School Proximity score is 0.54

This calculation was completed across the region to determine a School Proximity score for all pedestrian and bicycle hexagons.
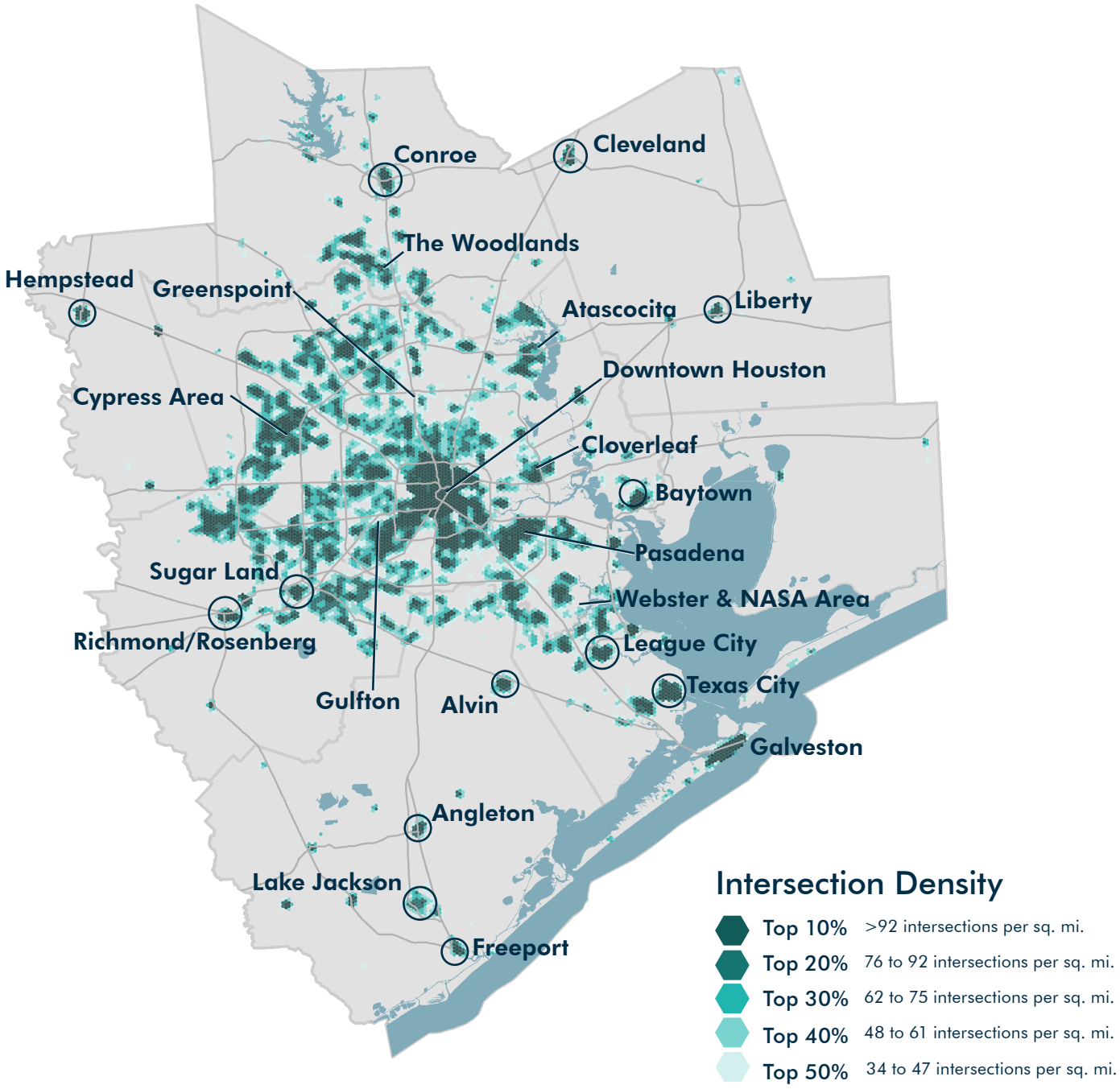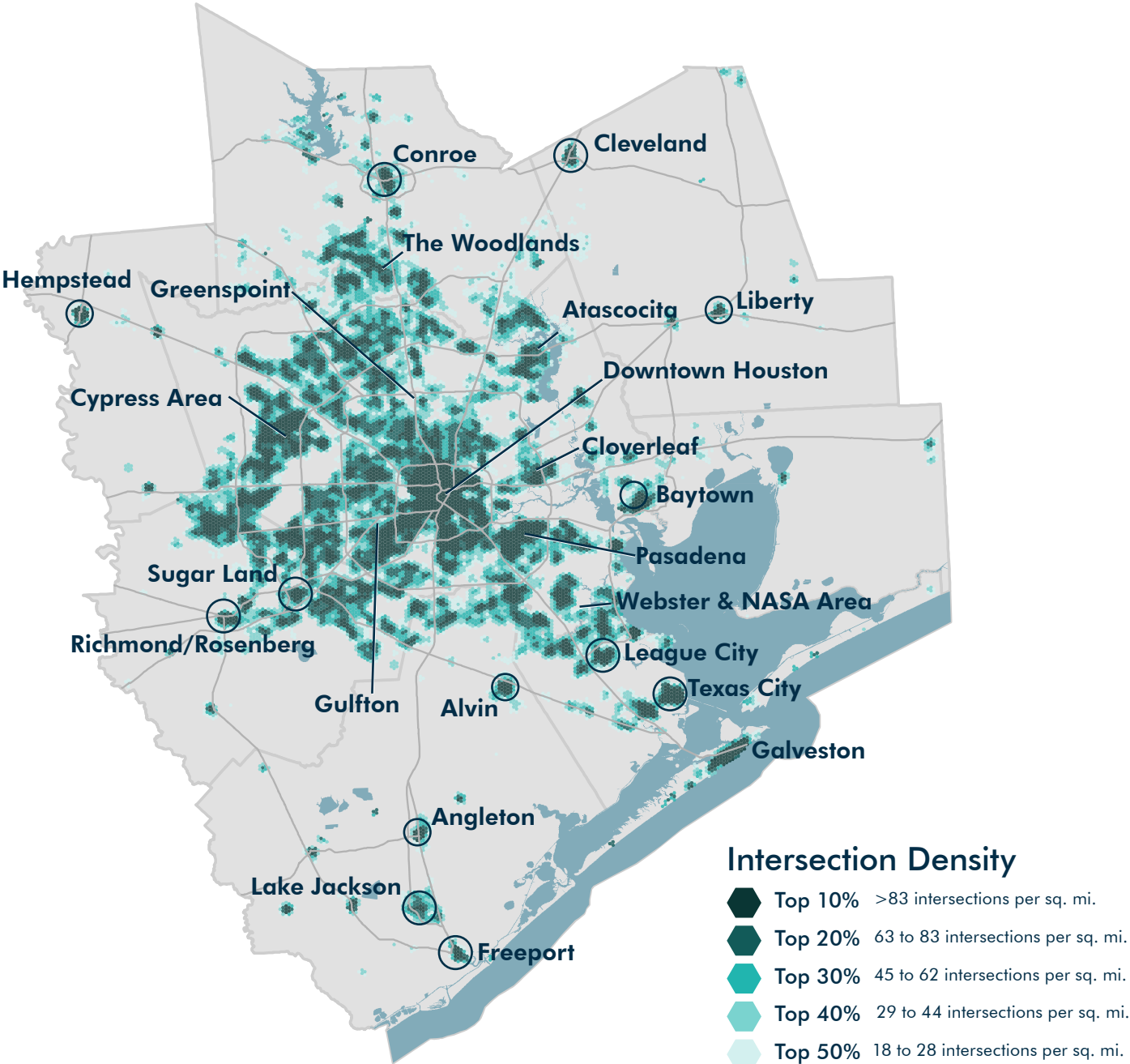
SCHOOL PROXIMITY
PEDESTRIAN FOCUS AREA CRITERIA

Since schools tend to be located in population centers, the Pedestrian School Proximity map shows need across the region, particularly in places with high population density and in small rural communities.

School Proximity

Map 10 Sources: Texas Education Agency 2018 (grade schools include all regular, charter, and alternative schools in the region); Integrated Post-Secondary Education System 2018 and National Center for Education Statistics 2018 (colleges, universities, and technical schools).

School Proximity

- ⬢ **Top 10%** >3 schools within 0.5 miles
- ⬢ **Top 20%** 3 schools within 0.5 miles
- ⬢ **Top 30%** 2 schools within 0.5 miles

SCHOOL PROXIMITY
BICYCLE FOCUS AREA CRITERIA

Since schools tend to be located in population centers, the Bicycle School Proximity map shows need in places with high population density and in suburban and rural communities that have larger school districts.

School Proximity

Map 11 Sources: Texas Education Agency 2018 (grade schools include all regular, charter, and alternative schools in the region); Integrated Post-Secondary Education System 2018 and National Center for Education Statistics 2018 (colleges, universities, and technical schools).

School Proximity

- ⬢ **Top 10%** >16 schools within 2 miles
- ⬢ **Top 20%** 11 to 16 schools within 2 miles
- ⬢ **Top 30%** 9 or 10 schools within 2 miles
- ⬢ **Top 40%** 7 or 8 schools within 2 miles
- ⬢ **Top 50%** 5 or 6 schools within 2 miles

TRANSIT PROXIMITY
FOCUS AREA CRITERIA#4

The recent origin-destination survey for regional transit users clearly shows that most transit users walk or bike to get to and from transit stops (see Figure 6 on page 24). Places near transit stops have a higher need for active transportation infrastructure that is safe and convenient for transit users.

Sources: Transit stop data were gathered from the eight regional transit providers who have fixed-route service: Brazos Transit District, City of Conroe, Fort Bend County Transit, City of Galveston, Gulf Coast Center (Connect Transit), Harris County Transit, METRO (Metropolitan Transit Authority of Harris County), and The Woodlands Township.

CALCULATION EXAMPLE

To measure Transit Proximity, we mapped stops from the region's eight transit providers with fixed-route services.

We counted the number of transit stops within a half-mile buffer and within a two-mile buffer from the hexagon. A half mile represents about a ten minute walk and two miles is about the distance of a ten-minute bike ride.

To use an example, a hexagon may have three transit stops within a half mile and 18 stops within two miles. This hexagon has more stops within a half mile than 75% of all hexagons, giving it a pedestrian Transit Proximity Score of 0.75. It has more stops within two miles than 78% of all hexagons, giving it a bicycle Transit Proximity Score of 0.78. For a more detailed explanation, see Appendix A.

0.5 miles   2 miles

● Transit Stop

3 TRANSIT STOPS WITHIN 0.5 MILES

18 TRANSIT STOPS WITHIN 2 MILES

3 is higher than 75% of all pedestrian hexagons, so the pedestrian Transit Proximity score is 0.75

4 is higher than 78% of all bicycle hexagons, so the bicycle Transit Proximity score is 0.78

This calculation was completed across the region to determine a Transit Proximity score for all pedestrian and bicycle hexagons.
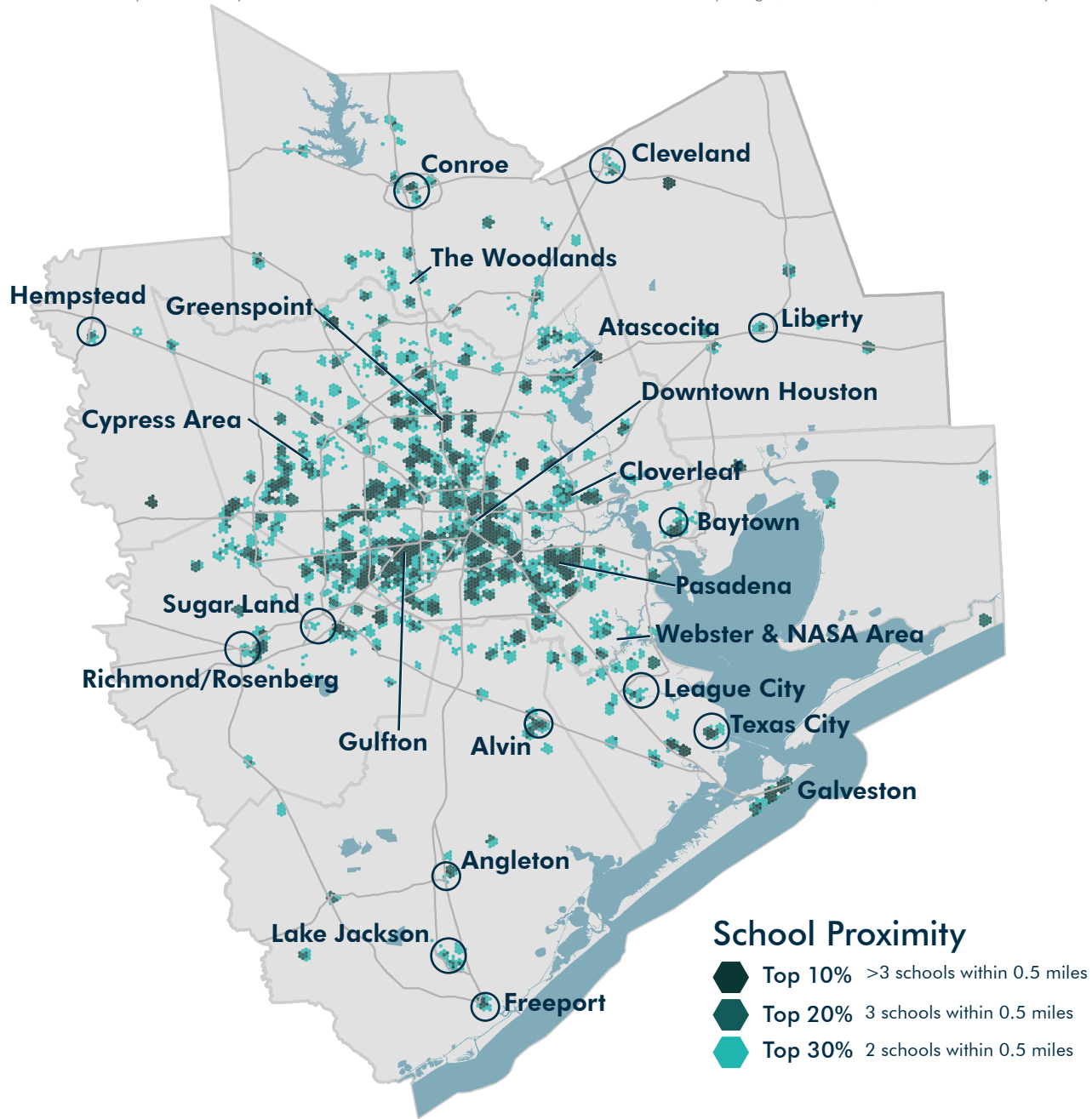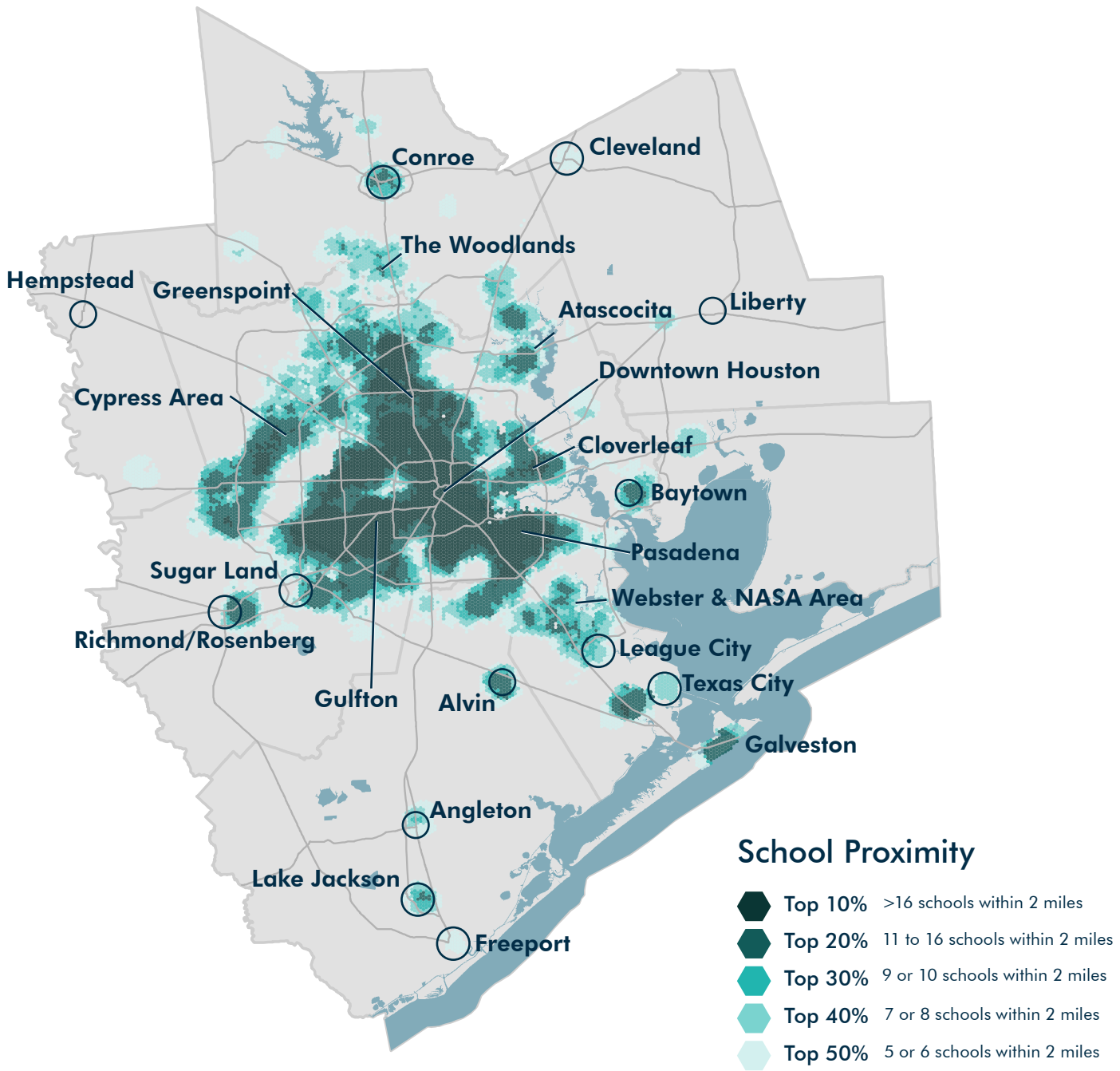
TRANSIT PROXIMITY
PEDESTRIAN FOCUS AREA CRITERIA

The Pedestrian Transit Proximity map closely mirrors the service areas for the fixed-route transit providers with concentrations in the middle of Harris County (METRO's service area), eastern Harris County (Harris County Transit), Galveston (City of Galveston's Island Transit), Conroe (City of Conroe's Conroe Connect), and southern Brazoria County (Gulf Coast Center's Connect Transit).

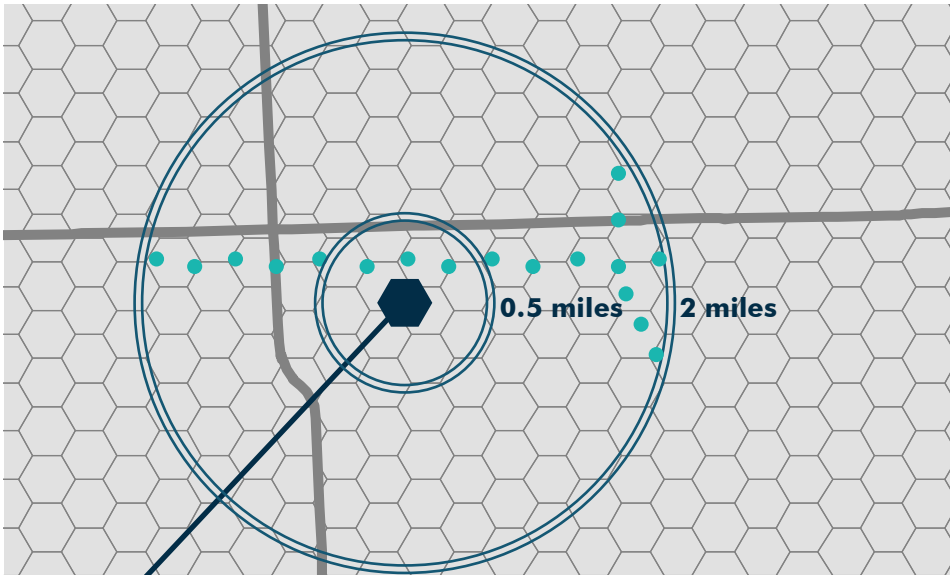### Transit Proximity

Map 12 Sources: Transit stop data were gathered from the eight regional transit providers who have fixed-route service: Brazos Transit District, City of Conroe, Fort Bend County Transit, City of Galveston, Gulf Coast Center (Connect Transit), Harris County Transit, METRO, and The Woodlands Township.

Transit Proximity

- Top 10% >24 transit stops within 0.5 miles
- Top 20% 8 to 24 transit stops within 0.5 miles
- Top 30% 2 to 8 transit stops within 0.5 miles
- Top 40% 1 transit stop within 0.5 miles

TRANSIT PROXIMITY
BICYCLE FOCUS AREA CRITERIA

The Bicycle Transit Proximity map closely mirrors the service areas for the fixed-route transit providers with concentrations in the middle of Harris County (METRO's service area), eastern Harris County (Harris County Transit), Galveston (City of Galveston's Island Transit), Conroe (City of Conroe's Conroe Connect), and southern Brazoria County (Golf Coast Center's Connect Transit).

Transit Proximity - Bicycle Focus Area Analysis
Map 13 Sources: Transit stop data were gathered from the eight regional transit providers who have fixed-route service: Brazos Transit District, City of Conroe, Fort Bend County Transit, City of Galveston, Gulf Coast Center (Connect Transit), Harris County Transit, METRO, and The Woodlands Township.

Transit Proximity

- **Top 10%** >121 transit stops within 2 miles
- **Top 20%** 29 to 121 transit stops within 2 miles
- **Top 30%** 6 to 28 transit stops within 2 miles
- **Top 40%** 2 to 5 transit stops within 2 miles
- **Top 50%** 1 transit stop within 2 miles

CRASHES
FOCUS AREA CRITERIA#5

Crash locations involving pedestrians and bicyclists help us identify unsafe or insufficient active transportation infrastructure. The crashes used for this analysis do not include crashes in which one of the parties (motorist, bicyclist, or pedestrian) was intoxicated. Crashes where all parties were sober are more likely to occur because of issues that can be solved through design or policy.

Source: TxDOT Crash Records Information System, 2009-2017; future analysis will use updated data

CALCULATION EXAMPLE

To measure crashes, we used data on crashes that did not involve drugs or alcohol from TxDOT's Crash Records Information System for the years 2009 to 2017.

We counted the number of crashes in each hexagon to determine the Crash score.

To use an example, one hexagon may have 3 pedestrian-involved crashes and 1 bicycle-involved crash between 2009 and 2017. The number of pedestrian crashes is higher than 86% of all other pedestrian hexagons, giving it a pedestrian Crash score of 0.86. The number of bicycle crashes is higher than 66% of all other bicycle hexagons, giving it a bicycle Crash score of 0.66. For a more detailed explanation, see Appendix A.

- Pedestrian-involved crash
- Bicycle-involved crash
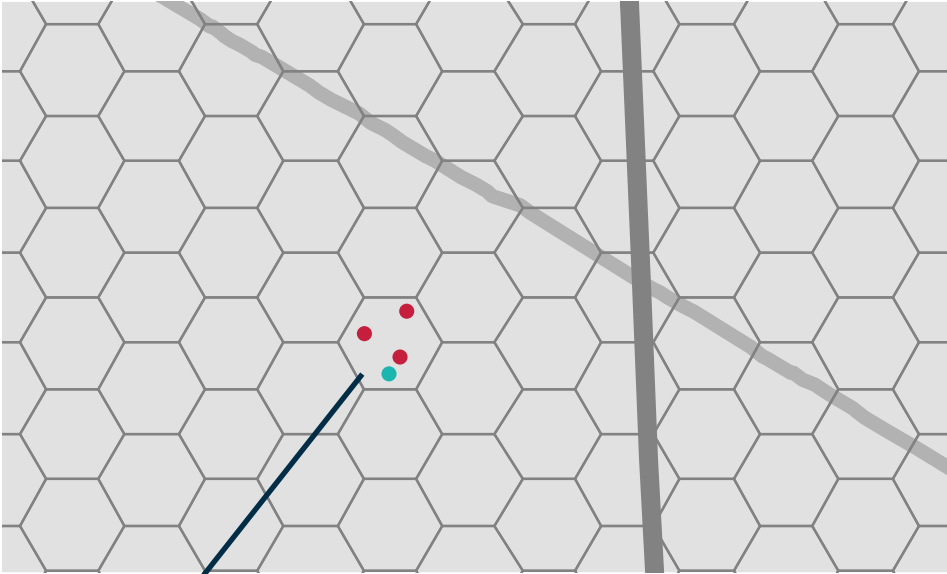
ONE HEXAGON WITH 3 PEDESTRIAN CRASHES AND 1 BICYCLE CRASH

3 is higher than 86% of all pedestrian hexagons, so the pedestrian Crash score is 0.86

1 is higher than 66% of all bicycle hexagons, so the bicycle Crash score is 0.66

This calculation was completed across the region to determine a Crash score for all pedestrian and bicycle hexagons.

CRASHES
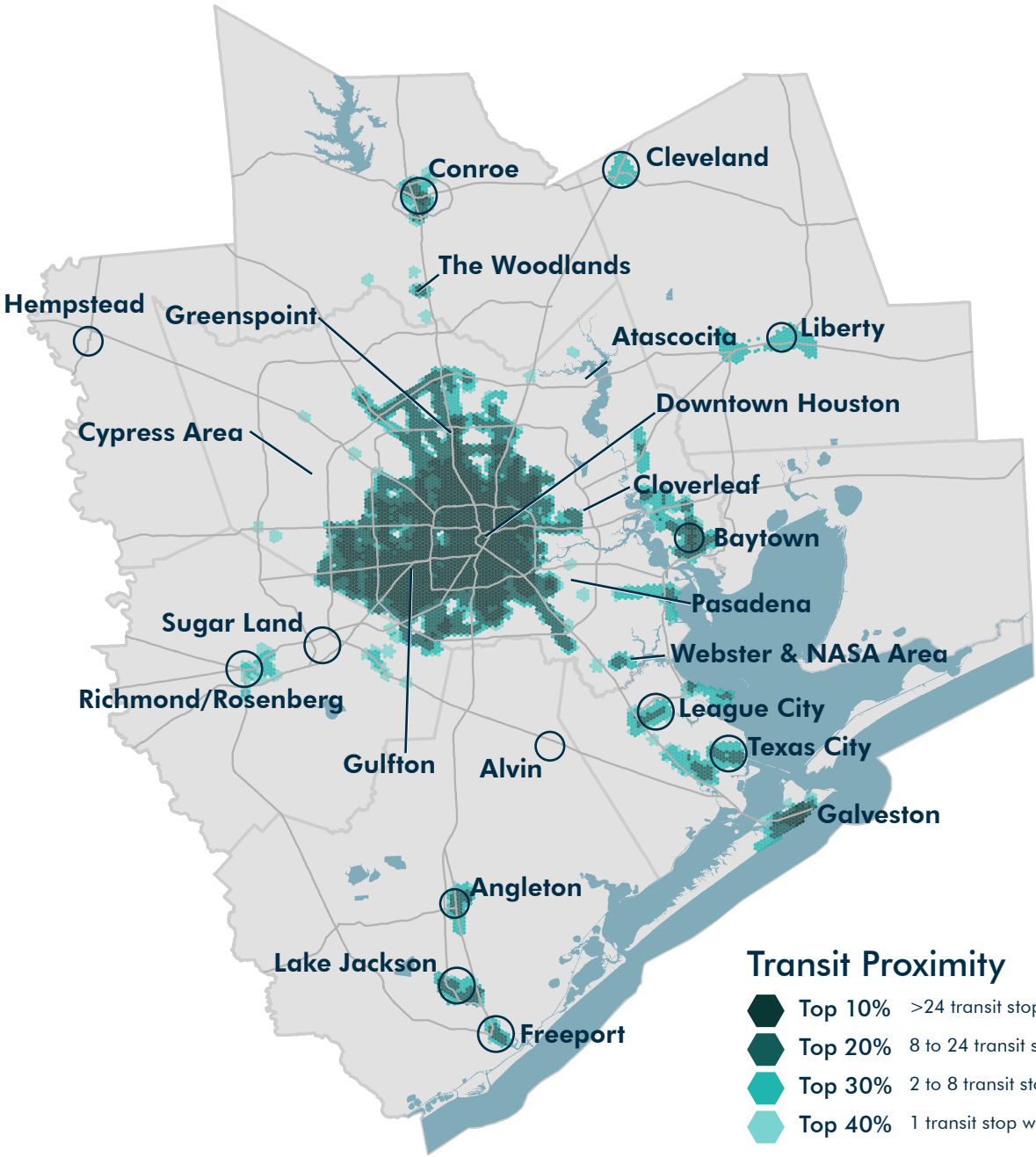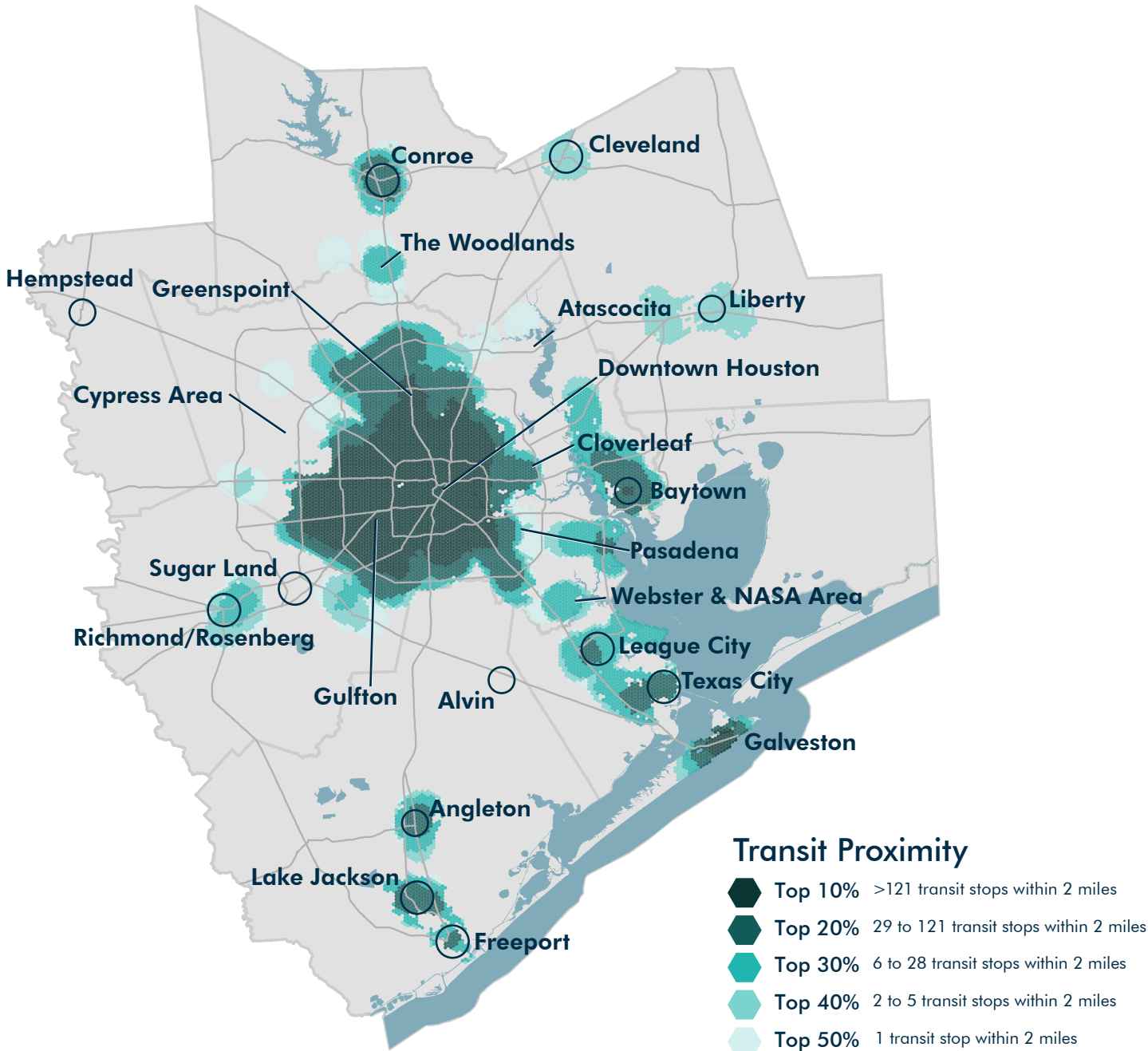# PEDESTRIAN FOCUS AREA CRITERIA

The Pedestrian Crash map reveals a concentration of crashes inside the 610 Loop, just south of the 610 Loop, along the Westheimer corridor, and along the IH 45 corridor. Conroe, Galveston, Texas City, Rosenberg/Richmond, Pasadena, and Cloverleaf also contain clusters of crashes.

Crashes
Map 14 Source: TxDOT Crash Records Information System, 2009-2017; does not include crashes where a party was impaired

Crashes Involving Pedestrians

- **Top 10%** >3 crashes
- **Top 20%** 2 or 3 crashes
- **Top 30%** 1 crash
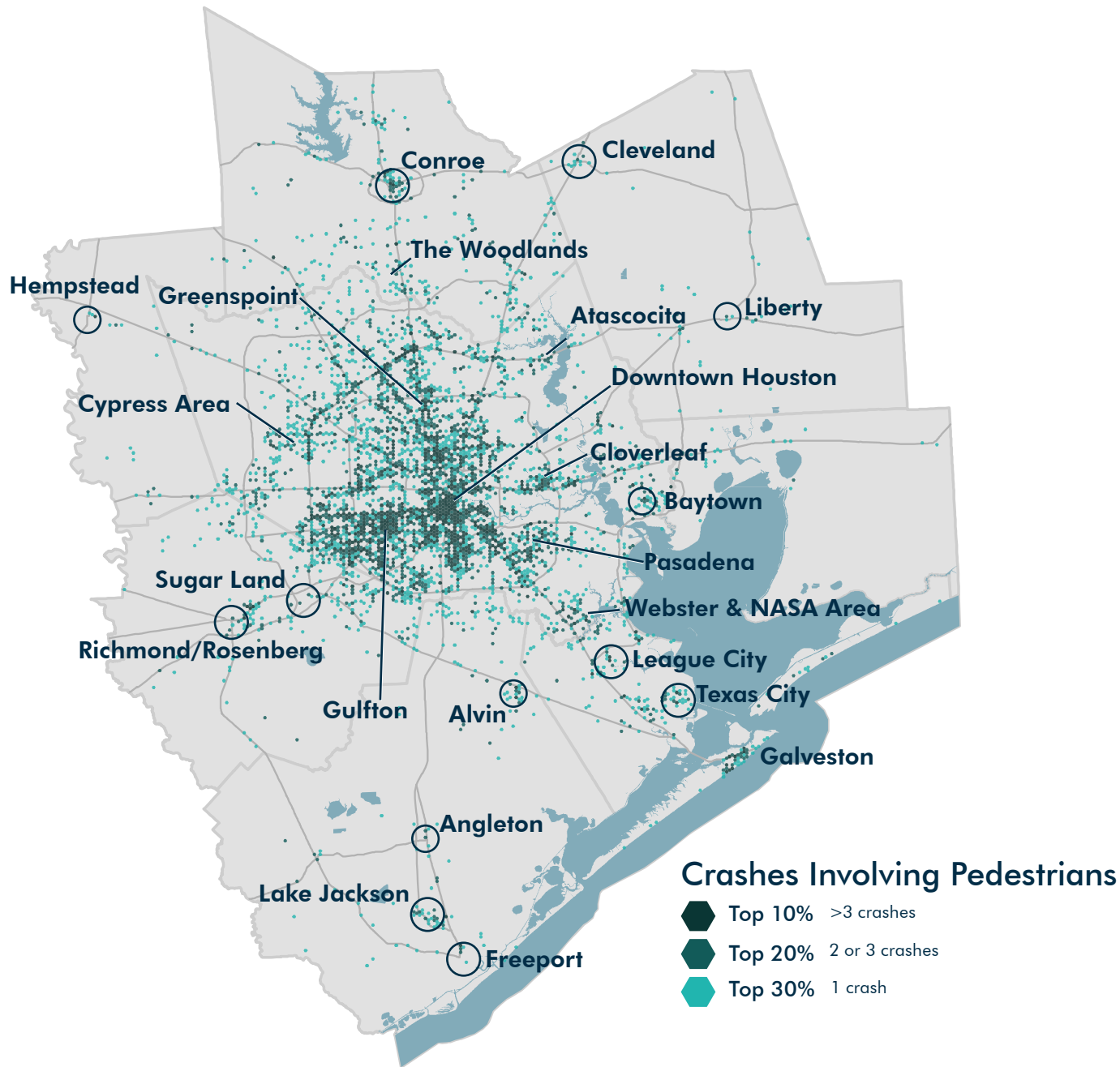
CRASHES
BICYCLE FOCUS AREA CRITERIA

The Bicycle Crash map reveals a concentration of crashes inside the 610 Loop in Downtown Houston, Midtown, Montrose, and the Heights. Kingwood, Conroe, Galveston, Texas City, and the NASA Area also contain clusters of crashes.

Crashes - Bicycle Focus Area Analysis
Map 15 Source: TxDOT Crash Records Information System, 2009-2017

Crashes Involving Bicyclists

- **Top 10%** >3 crashes
- **Top 20%** 2 or 3 crashes
- **Top 40%** 1 crash
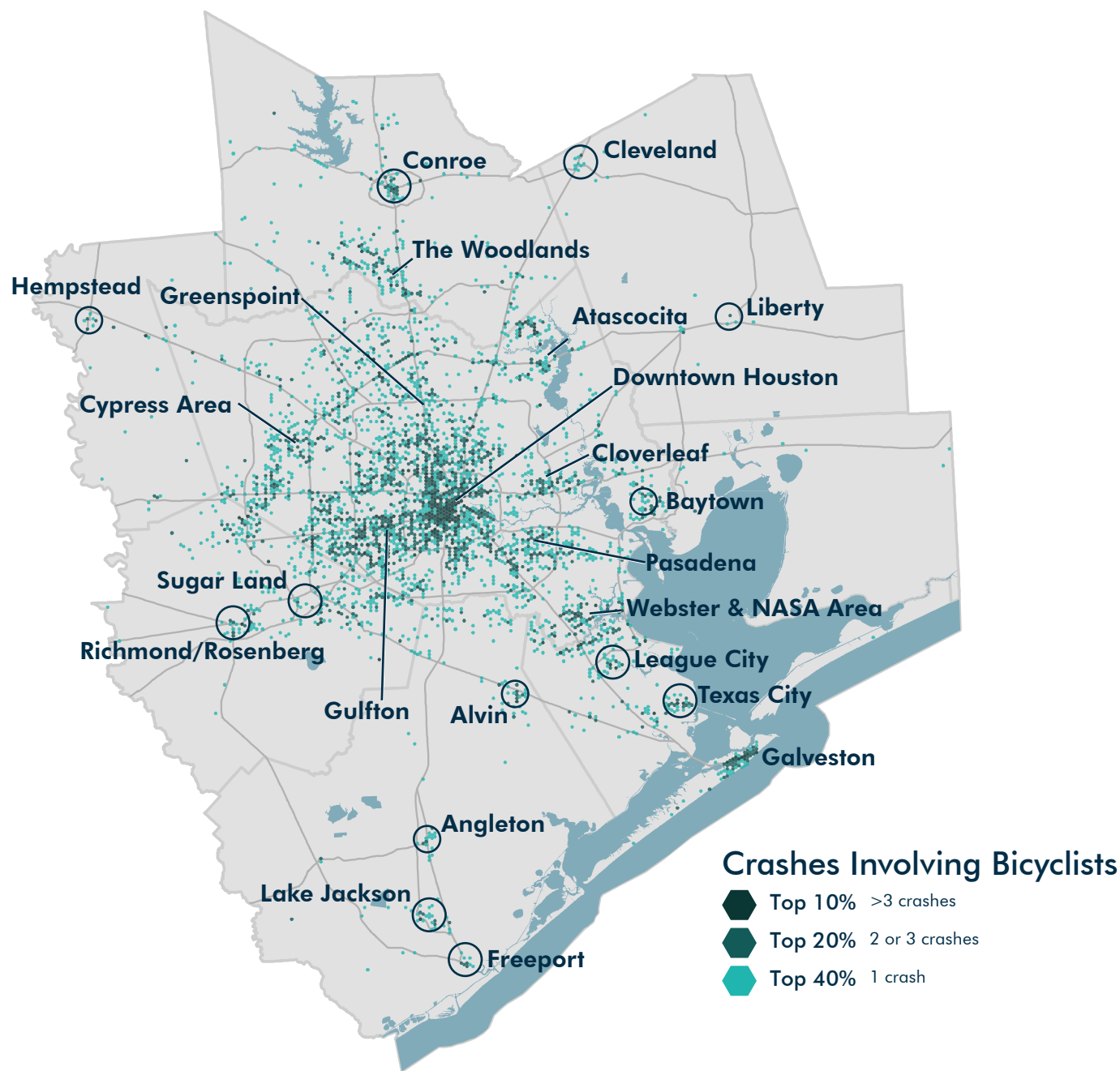
ENVIRONMENTAL JUSTICE
FOCUS AREA CRITERIA#6

Environmental Justice (EJ) Areas are defined as Census block groups in which the average population in a protected class is greater than the average across all eight counties.* Protected classes include racial and ethnic minorities, households with low-income, low educational attainment, limited English proficiency, no cars, and a female head of household. These areas indicate need for active transportation because people in these protected classes are more likely to walk, bike, roll or use transit than non-protected classes.

Source: Environmental Justice - H-GAC's Strategy for the Fair Treatment and Meaningful Involvement of All People, 2017

*For all protected classes except racial and ethnic minorities, EJ Areas are determined by a greater than regional average plus one standard deviation.

CALCULATION EXAMPLE

We calculated Environmental Justice using H-GAC's 2017 Strategy for the Fair Treatment and Meaningful Involvement of All People. That document identifies six protected classes and measures the population of those classes in every Census block group in the region.

We assigned Environmental Justice scores based on the protected classes in each hexagon's Census block group.

To use an example, a hexagon in a Census block group may have a higher-than-regional average of three protected classes. That number is higher than 60% of all other pedestrian hexagons, giving it a pedestrian Environmental Justicee score of 0.60. It is higher than 58% of all other bicycle hexagons, giving it a bicycle Environmental Justice score of 0.58. For a more detailed explanation, see Appendix A.

ONE HEXAGON IS IN A CENSUS BLOCK GROUP WITH A HIGHER AVERAGE POPULATION THAN THE REGION OF THREE PROTECTED CLASSES

3 is higher than 60% of all pedestrian hexagons, so the pedestrian Environmental Justice score is 0.60

3 is higher than 58% of all bicycle hexagons, so the bicycle Environmental Justice score is 0.58
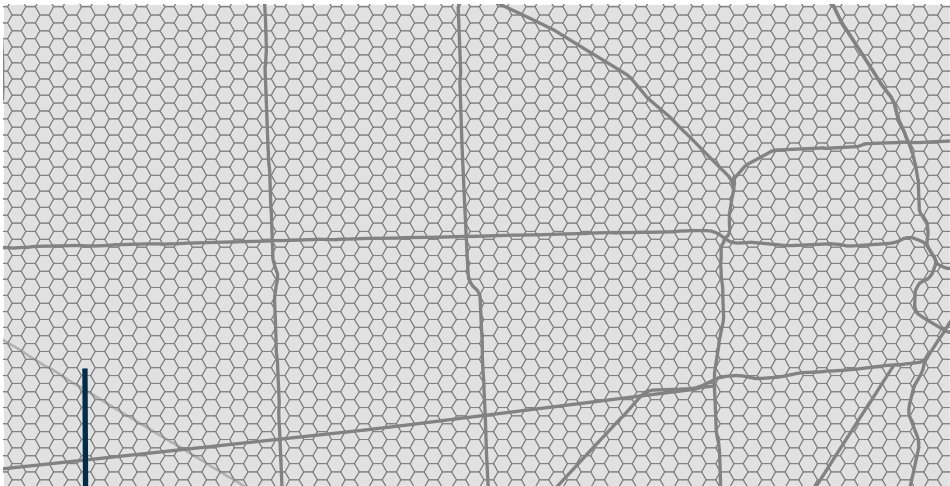
This calculation was completed across the region to determine an Environmental Justice score for all pedestrian and bicycle hexagons.

ENVIRONMENTAL JUSTICE
PEDESTRIAN FOCUS AREA CRITERIA

The Pedestrian Environmental Justice Area map shows concentrations within the eastern half of the 610 Loop, inside Beltway 8, to the south of the Westpark Tollway, in the City of Conroe, and in southwest Chambers County.

Environmental Justice Areas

Map 16 Source: Environmental Justice - H-GAC's Strategy for the Fair Treatment and Meaningful Involvement of All People, 2017

Conroe · Cleveland · The Woodlands · Hempstead · Greenspoint · Atascocita · Liberty · Cypress Area · Downtown Houston · Cloverleaf · Baytown · Pasadena · Sugar Land · Webster & NASA Area · Richmond/Rosenberg · League City · Texas City · Gulfton · Alvin · Galveston · Angleton · Lake Jackson · Freeport

Environmental Justice Areas

Places with a higher than average population of:

- 6 protected classes*
- 5 protected classes
- 4 protected classes
- 3 protected classes
- 2 protected classes

*Note: Protected classes include racial and ethnic minorities and households with low-income, limited English proficiency, low educational attainment, no car, and a single female head of household.
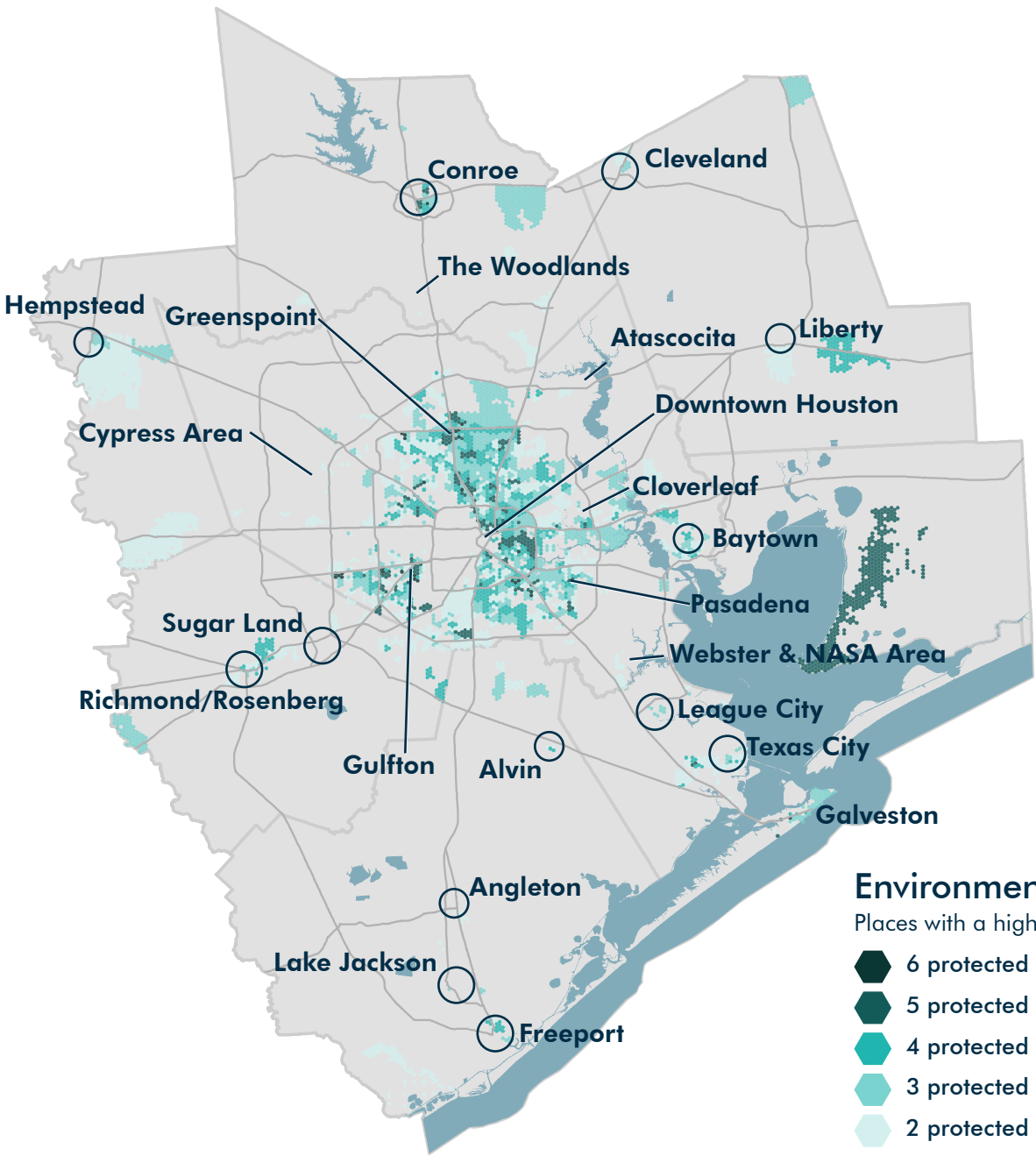
ENVIRONMENTAL JUSTICE
BICYCLE FOCUS AREA CRITERIA

The Bicycle Environmental Justice Area map shows concentrations within the eastern half of the 610 Loop, inside Beltway 8, to the south of the Westpark Tollway, in the City of Conroe, and in southwest Chambers County.

Environmental Justice - Pedestrian Focus Area Analysis
Map 17 Source: Environmental Justice - H-GAC's Strategy for the Fair Treatment and Meaningful Involvement of All People, 2017

Environmental Justice Areas
Places with a higher than average population of:

- 6 protected classes*
- 5 protected classes
- 4 protected classes
- 3 protected classes
- 2 protected classes
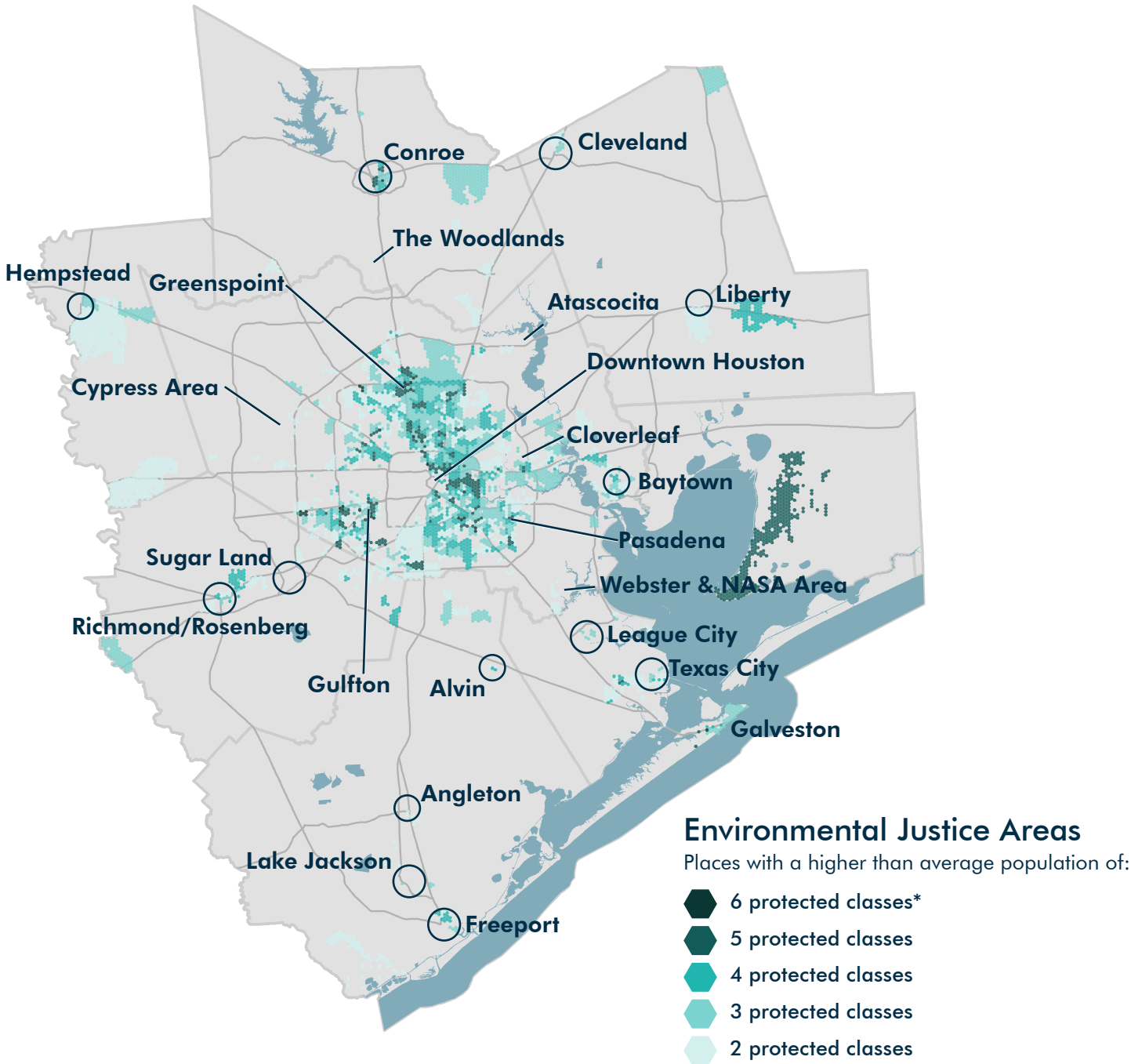
Note: Protected classes include racial and ethnic minorities and households with low-income, limited English proficiency, low educational attainment, no car, and a single female head of household.

PEDESTRIAN FOCUS AREA TIERS

When we add the six pedestrian criteria scores for each hexagon, then calculate them on a scale of 0-100, we are able to show the areas of highest need across the entire region.

Job + Resident Density + Intersection Density + School Proximity + Transit Proximity + Crashes + Environmental Justice = **PEDESTRIAN FOCUS AREA SCORE**

Pedestrian Focus Area Tiers
Map 18
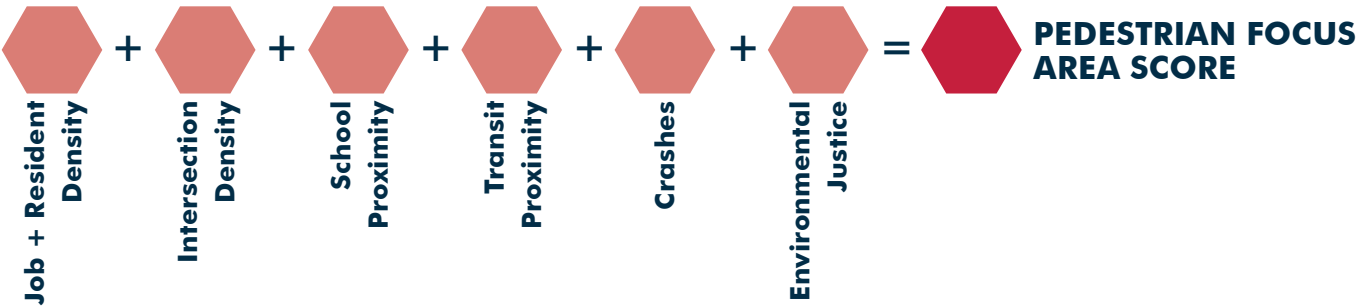
- Top 10% of Pedestrian Focus Area Scores
- Top 25%
- Top 50%

BICYCLE FOCUS AREA TIERS

When we add the six bicycle criteria scores for each hexagon, then calculate them on a scale of 0-100, we are able to show the areas of highest need across the entire region.

Job + Resident Density + Intersection Density + School Proximity + Transit Proximity + Crashes + Environmental Justice = **BICYCLE FOCUS AREA SCORE**

Bicycle Focus Area Tiers
Map 19

- Top 10% of Bicycle Focus Area Scores
- Top 25%
- Top 50%
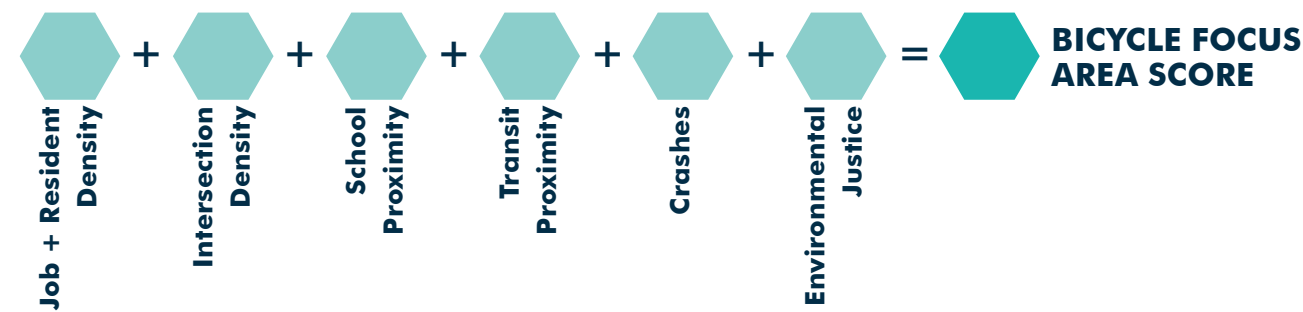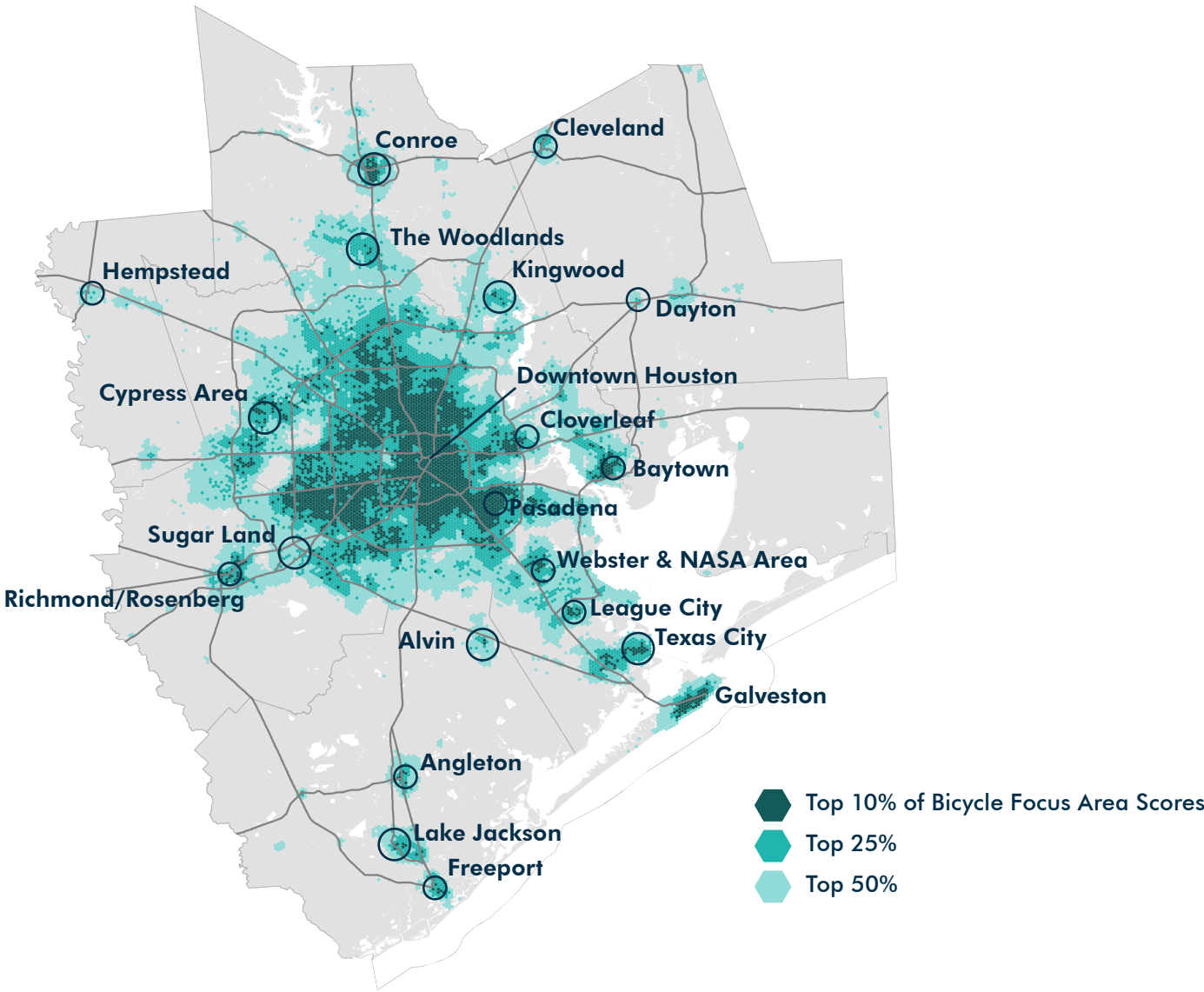
FOCUS AREA ANALYSIS

With the new Focus Areas as a tool, we are able to understand regional need in new ways. As an exercise for this plan, we used the Focus Areas to split the region into smaller areas with the highest need. Each area is between 1 and 5 square miles. Maps 20 and 21 show the outcome of this analysis. For a detailed description of this methodology, see Appendix A.

HARRIS COUNTY VS OUTSIDE HARRIS COUNTY

In the initial stages of our Focus Area analysis, we analyzed the entire region together and found that the majority of Focus Areas fell within Harris County. Although Harris County has a noted need for walkways and bikeways and is home to nearly 70% of the po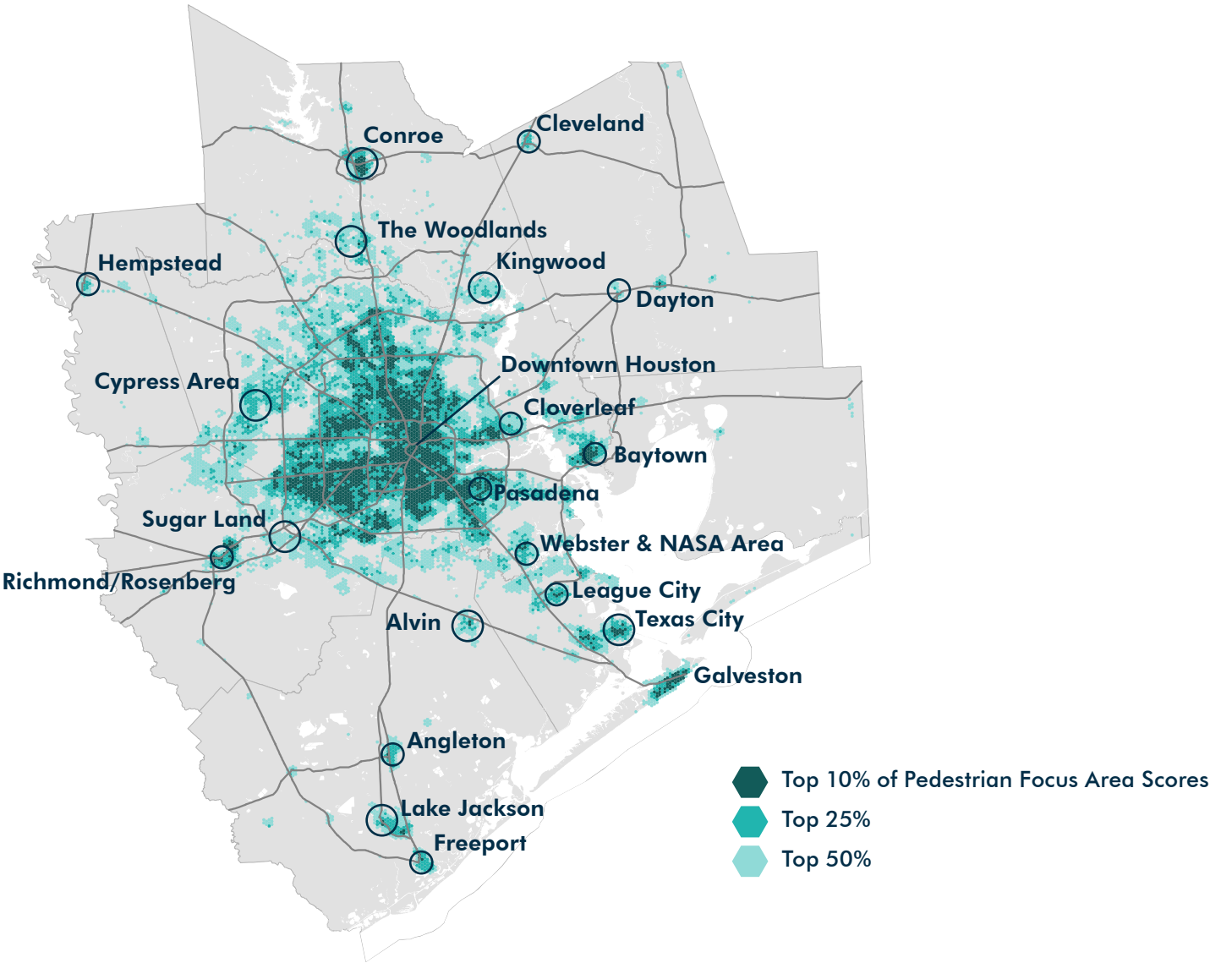pulation and 80% of the jobs in the eight-county region, the other seven counties and their communities also demonstrate a need for active transportation. For that reason, we identified four distinct groups with 40 Focus Areas each: Pedestrian and Bicycle Focus Areas within Harris County and Pedestrian and Bicycle Focus Areas outside of Harris County.

Pedestrian Focus Area Analysis
Map 20

Bicycle Focus Area Analysis
Map 21

Focus Areas   Additional Areas   ——— Highways
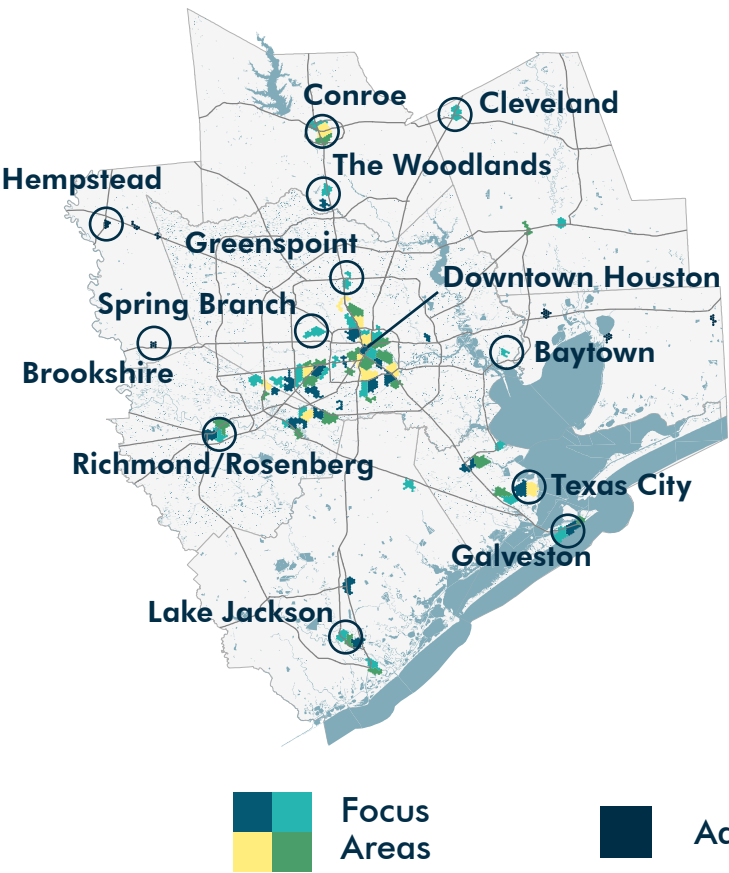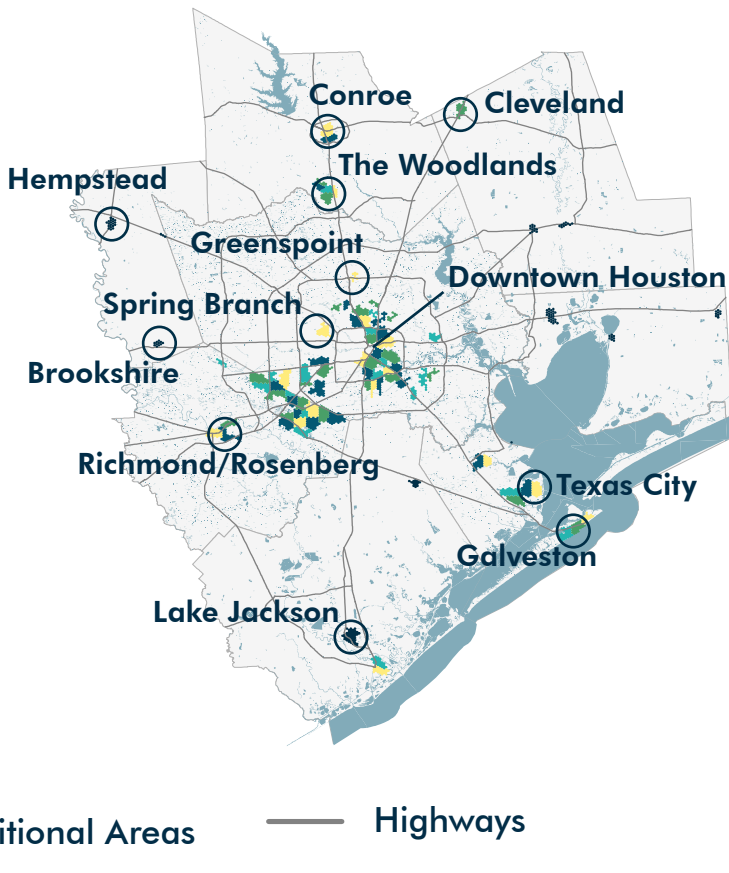
For detailed maps, see pages 58-65. Labeled cities are for reference only.

PEDESTRIAN FOCUS AREA ANALYSIS
HARRIS COUNTY

Map 22 shows Focus Areas based on the Pedestrian Focus Area analysis in Harris County. For a list of these Focus Areas, see the next page and Appendix B on page 150.

Pedestrian Focus Areas in Harris County
Map 22

Focus Area Inset

Pedestrian Focus Areas

— Highways

PEDESTRIAN FOCUS AREA ANALYSIS
HARRIS COUNTY *Table 3*

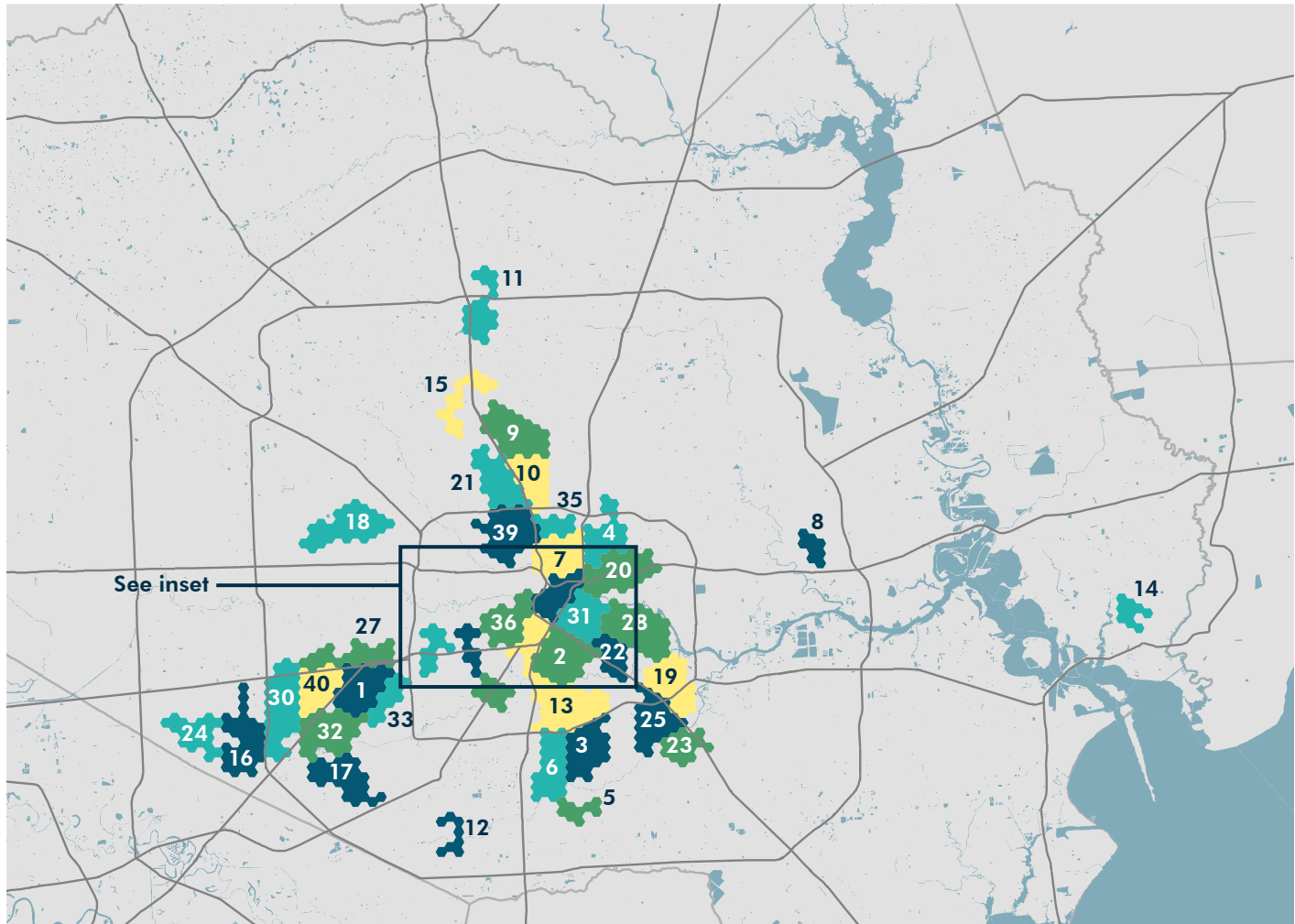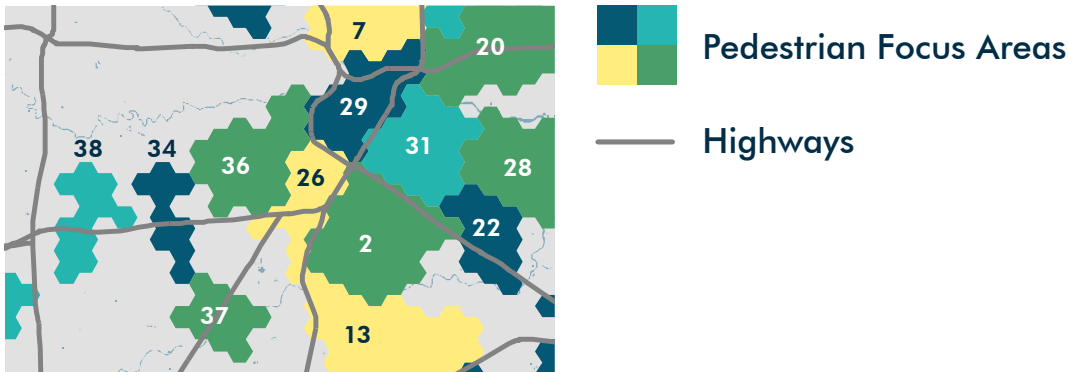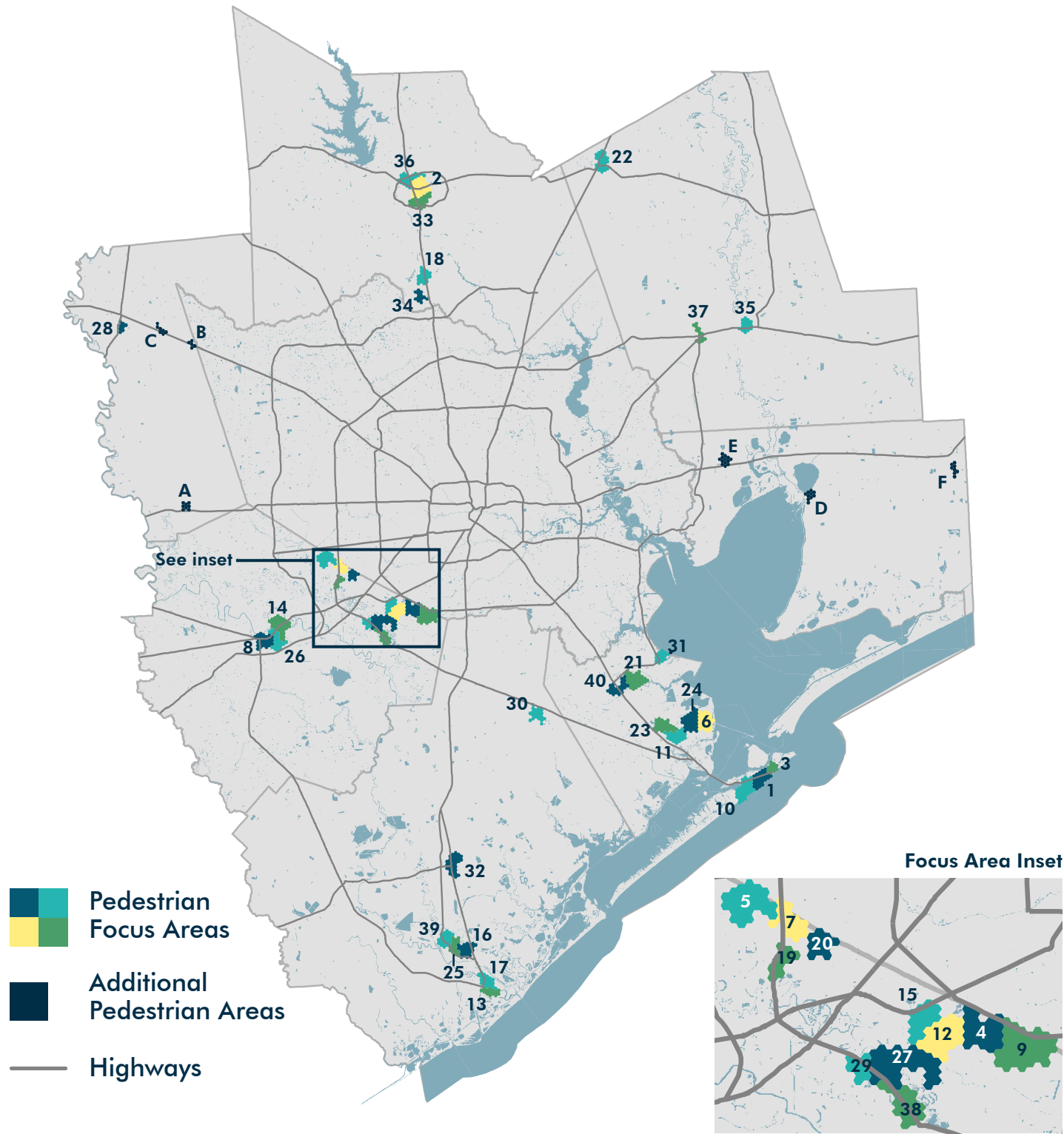| Label	Pedestrian Focus Areas	Location	Index*	Job + Res. Density Top 10	Intersection Density Top 10	School Proximity Top 10	Transit Proximity Top 10	Crashes Top 10	Enviro. Justice Top 10
1	Gulfton	Houston	98	■					■
2	Third Ward	Houston	98		■	■	■	■	■
3	South Park	Houston	98						■
4	Kashmere Gardens	Houston	98			■			■
5	Crestmont Park	Houston	98						■
6	Sunnyside	Houston	98						■
7	Near Northside - Quitman	Houston	97	■	■		■		■
8	Cloverleaf	Cloverleaf	97						
9	Northline - Parker	Houston	97						■
10	Northline - Commons	Houston	97						■
11	Greenspoint	Houston	97			■			■
12	SW - Buffalo Speedway	Houston	97						
13	Old Spanish Trail/South Union	Houston	97						
14	Baytown	Baytown	97	■					
15	Acres Home - Gulf Bank	Houston	97			■			
16	Alief - East	Houston	97			■			
17	SW - Fondren	Houston	97						
18	Spring Branch	Houston	97						
19	Pecan Park/Park Place	Houston	97			■			
20	Fifth Ward	Houston	96			■	■		■
21	Independence Heights	Houston	96						
22	Eastwood	Houston	96			■			
23	Hobby	Houston	96						
24	Alief - West	Houston	96						
25	Golfcrest	Houston	96						■
26	Midtown/Museum District	Houston	96	■	■		■	■	■
27	Uptown - Richmond	Houston	96	■	■		■	■	
28	Second Ward/Magnolia Park	Houston	96						■
29	Downtown	Houston	96	■	■		■	■	
30	Chinatown	Houston	96	■	■			■	
31	East Downtown	Houston	96		■				■
32	Beechnut at Bissonnet	Houston	95			■		■	
33	Bellaire	Bellaire	95						
34	Upper Kirby/Rice Village	Houston	95	■	■			■	
35	Near Northside - Cavalcade	Houston	95		■				■
36	Greater Montrose	Houston	95	■	■		■	■	■
37	Texas Medical Center	Houston	94	■	■			■	■
38	Greenway Plaza/Highland Village	Houston	94	■				■	■
39	Greater Heights	Houston	94		■				
40	Sharpstown	Houston	91	■					

*The Focus Area Index is an average of the Pedestrian Focus Area score for all hexagons within the Focus Area

PEDESTRIAN FOCUS AREA ANALYSIS
OUTSIDE HARRIS COUNTY

Map 23 shows Focus Areas based on the Pedestrian Focus Area analysis outside Harris County. For a list of these Focus Areas, see the next page and Appendix B on page 150.

Pedestrian Focus Areas outside of Harris County
Map 23

Legend:
- Pedestrian Focus Areas
- Additional Pedestrian Areas
- Highways

PEDESTRIAN FOCUS AREA ANALYSIS OUTSIDE HARRIS COUNTY *Table 4*

Label	Pedestrian Focus Area	County	Index*	Job + Res. Density Top 10	Intersection Density Top 10	School Proximity Top 10	Transit Proximity Top 10	Crashes Top 10	Enviro. Justice Top 10
1	Downtown Galveston	Galveston	95	■	■	■	■		■
2	Downtown Conroe	Montgomery	87	■	■	■		■	■
3	UTMB/East Galveston	Galveston	86	■	■	■	■		■
4	Briargate	Fort Bend	85	■	■		■		
5	Mission Bend	Fort Bend	84	■		■	■		
6	Downtown Texas City	Galveston	84		■	■			■
7	SH6 at Keegans Bayou	Fort Bend	84	■	■		■		■
8	Downtown Rosenberg	Fort Bend	83		■		■		■
9	Ridgegate/Ridgemont	Fort Bend	83				■		■
10	Stewart Rd at 61st	Galveston	83	■	■		■		
11	Downtown LaMarque	Galveston	82				■		■
12	Missouri City - North	Fort Bend	82						■
13	Freeport - South	Brazoria	81				■		■
14	Richmond	Fort Bend	81						■
15	Fifth Street	Fort Bend	81			■			■
16	Clute	Brazoria	81				■		■
17	Freeport - North	Brazoria	80						■
18	Downtown The Woodlands	Montgomery	80	■				■	
19	SH6 at Airport Blvd	Fort Bend	80	■					
20	Bellfort at Eldridge	Fort Bend	80	■		■			
21	Dickinson - East	Galveston	80		■				
22	Cleveland	Liberty	80		■				
23	Texas City - SH3	Galveston	79						■
24	Texas City - West	Galveston	79						
25	Lake Jackson - East	Brazoria	79						
26	Rosenberg - East	Fort Bend	79			■			
27	Quail Valley	Fort Bend	79						
28	Hempstead	Waller	79		■				■
29	Sugar Land - Southeast	Fort Bend	79	■	■		■		
30	Alvin	Brazoria	78		■	■		■	
31	Bacliff	Galveston	78		■			■	
32	Angleton	Brazoria	78	■					
33	Conroe - South	Montgomery	78		■				
34	Grogans Mill	Montgomery	78	■					
35	Liberty	Liberty	78						
36	Conroe - Northwest	Montgomery	78				■	■	
37	Dayton	Liberty	77				■		
38	Dewalt	Fort Bend	76						
39	Lake Jackson - West	Brazoria	76				■		
40	Dickinson - West	Galveston	76						

Additional Pedestrian Areas: A - Brookshire; B - Waller; C - Prairie View; D - Anahuac; E - Mont Belvieu; F - Winnie. These six Additional Pedestrian Areas represent the places in the region that did not score within the Top 40 highest focus areas, but still demonstrate need relative to other places in their county.
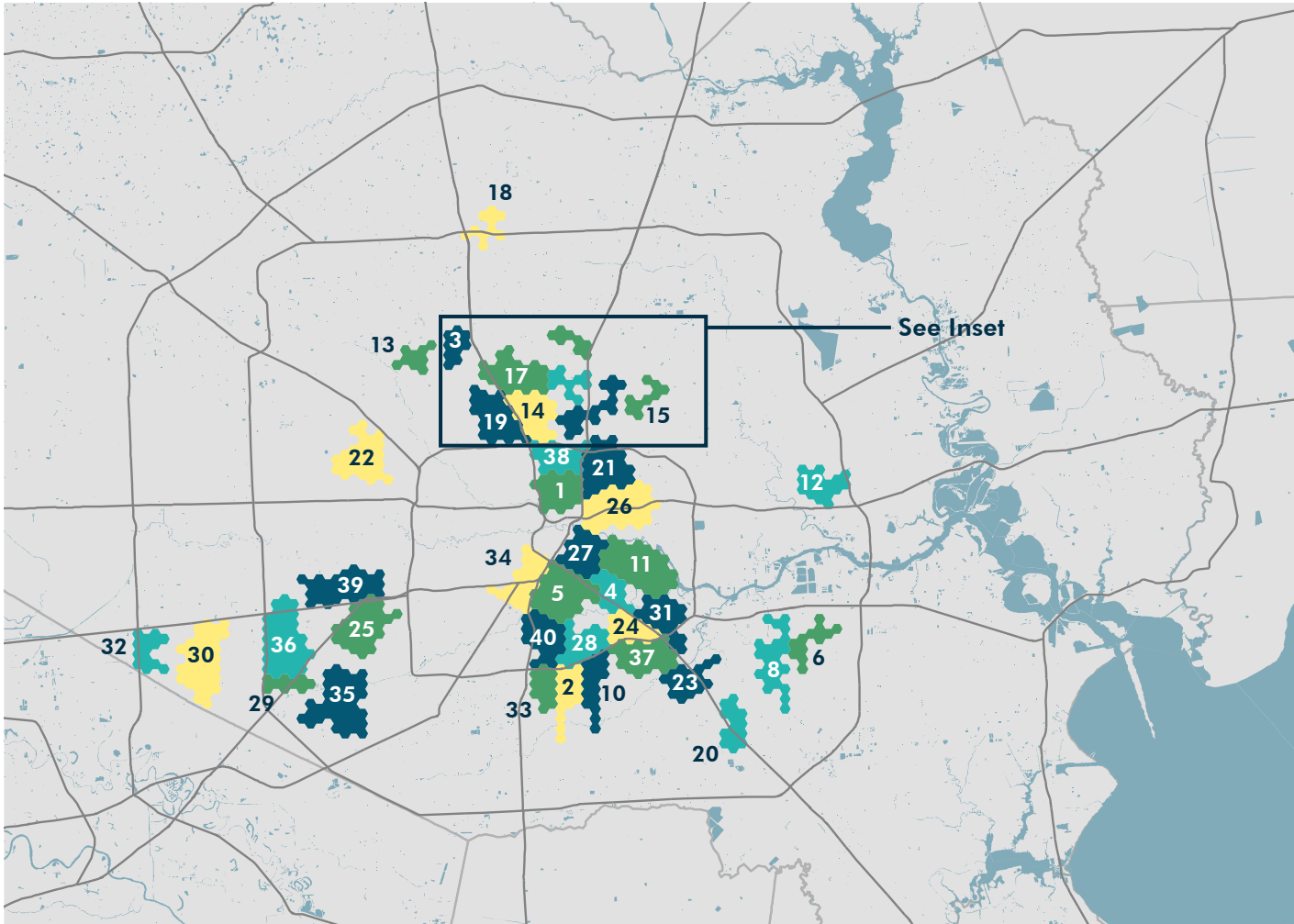
*The Focus Area Index is an average of the Pedestrian Focus Area score for all hexagons within the Focus Area
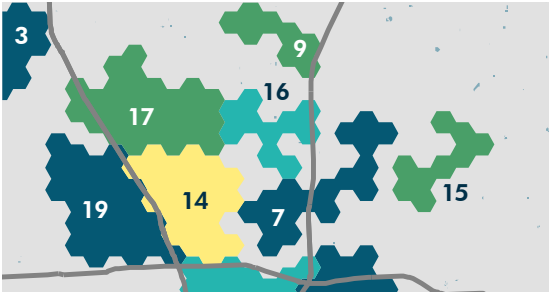
BICYCLE FOCUS AREA ANALYSIS
HARRIS COUNTY

Map 24 shows Focus Areas based on the Bicycle Focus Area analysis in Harris County. For a list of these Focus Areas, see the next page and Appendix C on page 153.

Bicycle Focus Areas in Harris County
Map 24

Focus Area Inset

Legend:
- Bicycle Focus Areas
- Highways

BICYCLE FOCUS AREA ANALYSIS
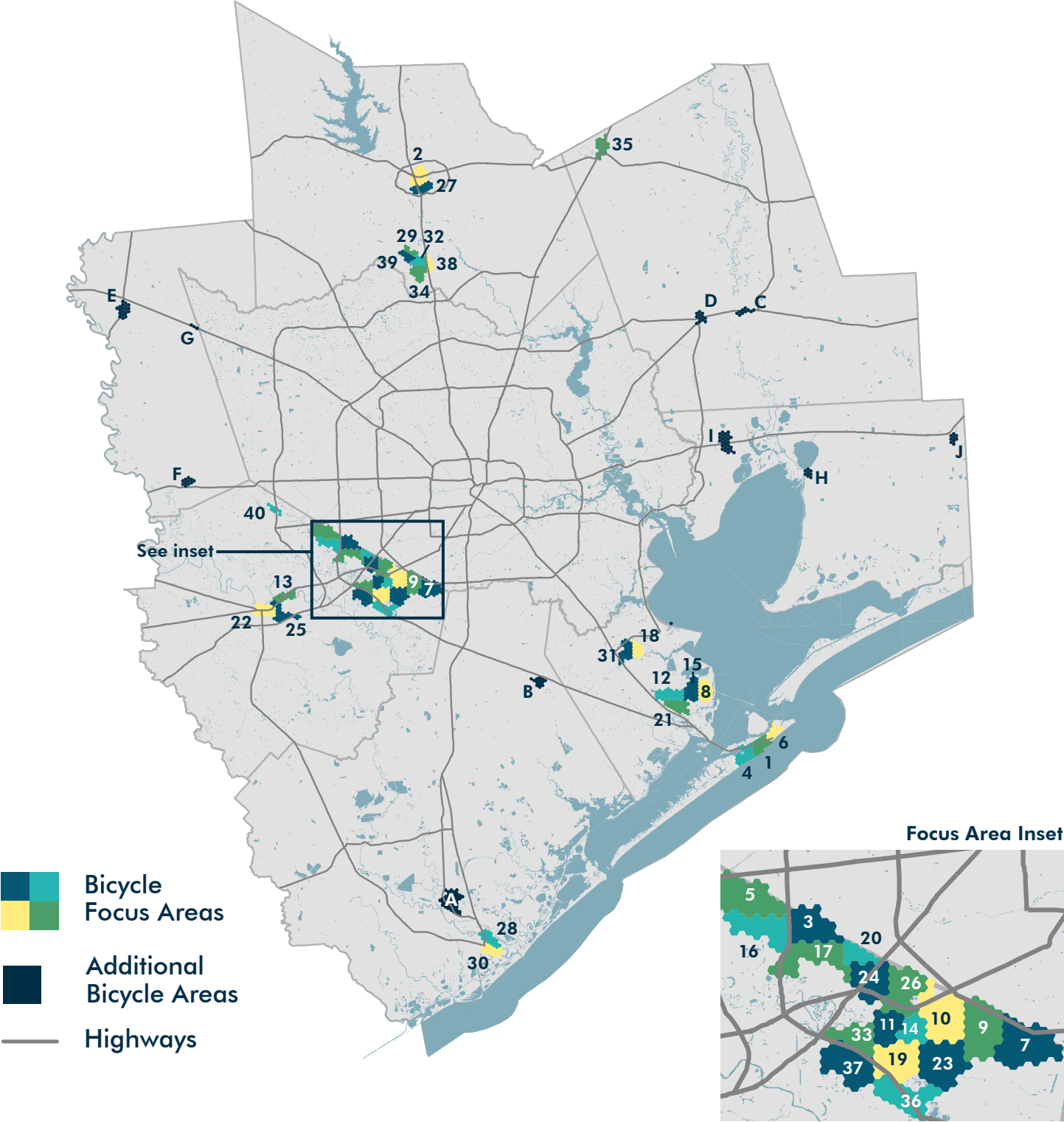## HARRIS COUNTY *Table 5*

Label	Bicycle Focus Area	Location	Index*	Job + Res. Density Top 10	Intersection Density Top 10	School Proximity Top 10	Transit Proximity Top 10	Crashes Top 10	Enviro. Justice Top 10
1	Near Northside - Quitman	Houston	99		■	■		■	■
2	Sunnyside - Cullen	Houston	99					■	
3	Acres Home - East	Houston	99						■
4	Eastwood	Houston	98		■	■			■
5	Third Ward	Houston	98		■	■			■
6	Southmore and Pasadena	Pasadena	98	■					
7	Crosstimbers and Lockwood	Houston	98						
8	Vince Bayou at Southmore	Pasadena	98						
9	Halls Bayou at Little York	Houston	98					■	
10	South Park - MLK	Houston	98						
11	Second Ward/Magnolia Park	Houston	98		■				■
12	Cloverleaf	Cloverleaf	98						
13	Acres Home - West	Houston	98						■
14	Northline - Commons	Houston	97						
15	Trinity Gardens	Houston	97						■
16	Aldine-Westfield at Jensen	Houston	97						■
17	Northline - Parker	Houston	97						
18	Greenspoint	Houston	97	■					■
19	Independence Heights	Houston	97						
20	Edgebrook	Houston	97	■					
21	Kashmere Gardens	Houston	97				■		■
22	Spring Branch	Houston	97						
23	Hobby	Houston	97						
24	Gulfgate	Houston	97	■		■			
25	Gulfton	Houston	97	■					
26	Fifth Ward	Houston	97		■	■			■
27	East Downtown	Houston	97		■				
28	Griggs at Cullen	Houston	97						
29	Bissonnet at BW8	Houston	97	■				■	
30	Alief - West	Houston	97						
31	Pecan Park/Park Place	Houston	97						
32	Westpark at SH6	Houston	96					■	■
33	Sunnyside - Scott	Houston	96		■		■		■
34	Midtown/Museum District	Houston	96	■	■				
35	SW - Fondren	Houston	96						■
36	Chinatown	Houston	96				■		■
37	Golfcrest	Houston	96						
38	Near Northside - Cavalcade	Houston	96		■				
39	Uptown - Richmond	Houston	96	■		■			
40	South Side - Scott	Houston	96				■		

*The Focus Area Index is an average of the Bicycle Focus Area score for all hexagons within the Focus Area

BICYCLE FOCUS AREA ANALYSIS
OUTSIDE HARRIS COUNTY

Map 25 shows Focus Areas based on the Bicycle Focus Area analysis outside Harris County. For a list of these Focus Areas, see the next page and Appendix C on page 153.

Bicycle Focus Areas outside Harris County
Map 25

Bicycle Focus Areas

Additional Bicycle Areas

— Highways

Focus Area Inset

BICYCLE FOCUS AREA ANALYSIS
OUTSIDE HARRIS COUNTY *Table 6*

Label	Bicycle Focus Area	County	Index*	Job + Res. Density Top 10	Intersection Density Top 10	School Proximity Top 10	Transit Proximity Top 10	Crashes Top 10	Enviro. Justice Top 10
1	Downtown Galveston	Galveston	95	■	■	■	■		■
2	Downtown Conroe	Montgomery	91	■	■		■		■
3	Keegans Bayou at Fort Bend Co. Line	Fort Bend	90	■		■	■		
4	Stewart Rd at 61st	Galveston	90	■	■				■
5	Mission Bend	Fort Bend	89	■	■		■		
6	UTMB - East	Galveston	87	■	■		■		■
7	Ridgegate/Ridgemont	Fort Bend	86				■		
8	Downtown Texas City	Galveston	86		■		■		■
9	Briargate	Fort Bend	86				■		
10	Missouri City - North	Fort Bend	86						
11	Brightwater	Fort Bend	86			■			
12	Texas City - SH3	Galveston	86						■
13	Downtown Richmond	Fort Bend	85				■		
14	Fifth Street	Fort Bend	85				■		■
15	Texas City - SH146	Galveston	85				■	■	
16	Four Corners	Fort Bend	85		■				
17	Sugar Land - North	Fort Bend	85						
18	Dickinson - East	Galveston	85						■
19	Quail Valley - West	Fort Bend	84						
20	Meadows Place	Fort Bend	84	■	■	■	■		
21	Downtown LaMarque	Galveston	84						
22	Downtown Rosenberg	Fort Bend	84	■					■
23	Quail Valley - East	Fort Bend	84						
24	Stafford - West	Fort Bend	84	■					
25	Rosenberg - East	Fort Bend	83						
26	Stafford - East	Fort Bend	83			■			
27	Conroe - South	Montgomery	82				■		■
28	Freeport - North	Brazoria	82						■
29	Research Forest	Montgomery	82	■				■	
30	Freeport - South	Brazoria	82						
31	Dickinson - West	Galveston	82						
32	Downtown The Woodlands	Montgomery	82	■					
33	Sugar Land - East	Fort Bend	82			■			
34	Grogans Mill	Montgomery	81						
35	Cleveland	Liberty	81						■
36	Dewalt	Fort Bend	81						
37	Sugar Land - Southeast	Fort Bend	81		■				
38	Oak Ridge North	Montgomery	81						
39	Lake Woodlands	Montgomery	81		■			■	
40	Cinco Ranch - Westheimer Pkwy	Fort Bend	80		■				

Additional Bicycle Areas: A - Lake Jackson; B - Alvin; C - Liberty; D - Dayton; E - Hempstead; F - Brookshire; G - Waller; H - Anahuac; I - Mont Belvieu; J - Winnie. These ten Additional Bicycle Areas represent the places in the region that did not score within the Top 40 highest focus areas, but still represent areas of need relative to other places in their county.   *The Focus Area Index is an average of the Bicycle Focus Area score for all hexagons within the Focus Area

CHAPTER FOUR

A Vision for 2045

2045 Active Transportation Plan

A VISION FOR 2045

PEDESTRIANS AND BICYCLISTS OF ALL AGES AND ABILITIES CAN TRAVEL CONVENIENTLY AND COMFORTABLY IN ALL COMMUNITIES USING CONNECTED, WELL-MAINTAINED NETWORKS OF WALKWAYS AND BIKEWAYS.

The 2045 vision describes where we aspire to be. To bridge the gap between the existing conditions and our vision, a set of recommendations serve as both rallying points and guideposts: Prioritize Safety, Ensure Equity, Connect, Maintain and Monitor, and Encourage. Each recommendation is followed by a set of strategies for H-GAC, our local government partners, TxDOT, FHWA, special purpose districts, and advocacy groups.

The vision for the Active Transportation Plan supports the RTP's vision: In the year 2045, our region will have a multimodal transportation system through coordinated investments that supports a desirable quality of life, enhanced economic vitality and increased safety, access and mobility.

PRIORITIZE SAFETY

IMPROVE SAFETY FOR PEOPLE WALKING, BIKING, AND ROLLING.

Two clear patterns emerge from the existing conditions: a growing number of people in our region are using walkways and bikeways as transportation and too many of those people are involved in crashes with vehicles every year. Public feedback showed safety as a serious concern for most respondents. By prioritizing safety in our investments, we are not only improving the quality of life for the people already using active transportation every day, but we also lower the barrier to entry for new users by creating a more comfortable and convenient trip. See pages 71-73 to find detailed strategies for this recommendation.

RELATED 2045 RTP GOAL: IMPROVE SAFETY

ENSURE EQUITY

ENSURE THAT ALL PEOPLE – REGARDLESS OF AGE, ABILITY, OR LOCATION WITHIN THE REGION – HAVE ACCESS TO WALKWAYS AND BIKEWAYS THAT ARE SAFE, CONVENIENT, AND COMFORTABLE.

As we see in the Focus Area analysis, people across the region have a clear need for active transportation infrastructure. We can meet much of that need by building for impact, but it is also important to think about the places and people that depend on walkways and bikeways daily, but may not live in areas with a high concentration of jobs and residents. To build for need means to build around schools, transit stops, and in environmental justice areas and rural population centers. See page 74 to find detailed strategies for this recommendation.

RELATED 2045 RTP GOAL: CONSERVE AND PROTECT NATURAL AND CULTURAL RESOURCES

CONNECT

BUILD INTERCONNECTED NETWORKS OF WALKWAYS AND BIKEWAYS IN THE REGION, ESPECIALLY IN PLACES OF HIGH NEED.

The Focus Area analysis gives us a new understanding of the region and allows us to think strategically about how to allocate resources for the greatest impact. Building for impact means investing limited funding and resources in infrastructure, programs, and planning in the places where new walkways and bikeways will make a marked improvement for the most number of people. Places with high jobs + resident density often have a higher number of trips, so building new infrastructure in those places can improve the quality of trip and quality of life for more people. See pages 75-79 to find detailed strategies for this recommendation.

RELATED 2045 RTP GOALS: MOVE PEOPLE AND GOODS EFFICIENTLY, STRENGTHEN REGIONAL ECONOMIC COMPETITIVENESS

MAINTAIN & MONITOR

MAINTAIN AND IMPROVE EXISTING WALKWAYS AND BIKEWAYS IN THE REGION AND COORDINATE REGIONAL DATA COLLECTION FOR ACTIVE TRANSPORTATION INFRASTRUCTURE.

Building for impact and need are critically important, but it will have a limited impact if we do not maintain our current walkways and bikeways. This maintenance requires collecting useful data on the state of our existing infrastructure that can be used to determine need and plan intelligently for future infrastructure. See page 80 to find detailed strategies for this recommendation.

RELATED 2045 RTP GOAL: ACHIEVE AND MAINTAIN A STATE OF GOOD REPAIR

ENCOURAGE

ENCOURAGE AND INCENTIVIZE THE USE OF WALKWAYS AND BIKEWAYS TO MITIGATE CONGESTION, IMPROVE AIR QUALITY, AND INCREASE PHYSICAL ACTIVITY.

Walkways and bikeways provide benefits to the people using them, and to the community at-large. When more people walk, bike, or roll as a means of transportation, there are fewer cars on the road. Fewer car trips mean less congestion and better air quality. Walking, biking, and rolling are also important for physical activity that can be less expensive and more accessible than a gym membership. Pursuing the other four recommendations will also go a long way in encouraging more people to use our active transportation network. When people have safe, reliable, and convenient walkways and bikeways from their home to key destinations, they will be more likely to use them. See page 81 to find detailed strategies for this recommendation.

RELATED 2045 RTP GOAL: CONSERVE AND PROTECT NATURAL AND CULTURAL RESOURCES

Strategies and Measures
2045 Regional Active Transportation Plan

ACTIVE TRANSPORTATION STRATEGIES

To achieve the vision for our regional active transportation network, we developed a set of strategies for each of the five recommendations. The strategies include implementing partners – either H-GAC or local governments – and have an assigned timeframe based on priority and the resources needed to complete it. Some strategies are labeled as "Ongoing" because they should be adopted as regular practice for H-GAC and our local partners.

MEASURING IMPACT

To guide infrastructure investments and better monitor the national transportation system, FHWA requires states and MPOs to use transportation performance measures.[19] These performance measures apply to different aspects of the transportation system: safety, infrastructure, and system performance. H-GAC and FHWA can track measures over time to understand (1) the performance of our transportation network relative to a national benchmark, and (2) where to focus resources to improve performance.

H-GAC currently has two performance measures included in its Regional Transportation Plan (RTP) related to active transportation[20] – one for safety and one for system performance:

- **H-GAC Performance Measure for Safety**
  Number of non-motorized fatalities and non-motorized serious injuries

- **H-GAC Performance Measure for System Performance**
  Percent of non-single occupancy vehicle travel

H-GAC's 2017 Mobility Report (found at h-gac.com/taq/regional-mobility-report) includes these and other performance measures and their annual progress.

RECOMMENDATION 1: PRIORITIZE SAFETY

Improve safety for people walking, biking, and rolling.

Performance Measures

1. Number of non-motorized fatalities (RTP performance measure)

2. Number of non-motorized serious injuries (RTP performance measure)

3. Number of total non-motorized crashes

4. Number of people reached through safety outreach (Regional Safety Campaign, bicycle safety classes, safety workshops, etc.)

Strategy		Timeline	Implementers
Safety 1	Launch a regional safety campaign focusing on safety for people walking, biking, and rolling (shared goal with H-GAC 2018 Regional Safety Plan).	Immediate	H-GAC
Safety 2	Create a regional Pedestrian/Bicycle Safety Action Plan.	Short	H-GAC
Safety 3	Provide data analysis and technical assistance to support the growing demand for Safe Routes to School programs and funding (see page 11 for a definition of Safe Routes to School).	Short	H-GAC
Safety 4	Conduct pedestrian and bicycle safety audits at high-frequency crash locations and near schools (shared goal with H-GAC 2018 Regional Safety Plan).	Short	H-GAC & local stakeholders
Safety 5	Conduct local safety action plans for walking and bicycling.	Medium	H-GAC & local stakeholders
Safety 6	Support local governments completing their Americans with Disabilities Act (ADA) Transition Plans.	Medium	H-GAC
Safety 7	Increase the number of Vision Zero communities in the region through technical assistance and sharing best practices (see page 11 for a definition of Vision Zero).	Long	H-GAC & local stakeholders
Safety 8	Build walkways compliant with the ADA.	Ongoing	H-GAC & local stakeholders
Safety 9	Conduct regular adult bicycle safety classes in the region (shared goal with H-GAC 2018 Regional Safety Plan).	Ongoing	H-GAC & local stakeholders
Safety 10	Collect, analyze, and share data on crashes involving people walking, biking and rolling.	Ongoing	H-GAC
Safety 11	Host workshops on policies, plans, and programs that improve the safety of walking, biking, and rolling like Vision Zero, Safe Routes to School, ADA Transition Plans, Safety Action Plans, and others (see page 11 for a definition of these programs).	Ongoing	H-GAC & local stakeholders
Safety 12	Continue to build partnerships with public health and law enforcement stakeholders to collaborate on funding, planning, and building safe walkways and bikeways.	Ongoing	H-GAC & local stakeholders
Safety 13	Support the strategies of the State Strategic Highway Safety Plan and the Regional Safety Plan.	Ongoing	H-GAC

Table 7

STATE AND REGIONAL SAFETY PLANS
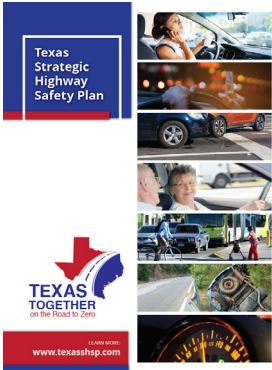
STATE STRATEGIC HIGHWAY SAFETY PLAN (TEXASSHSP.COM)

Pedestrian Emphasis Area Strategies (see pages 6-7 of the state safety plan)
1. Improve driver and pedestrian safety awareness and behavior.
2. Reduce pedestrian crashes on urban arterials and local roadways.
3. Improve pedestrians' visibility at crossing locations.
4. Improve pedestrian networks.
5. Improve pedestrian involved crash reporting.
6. Establish vehicle operating speeds to decrease crash severity.
7. Develop strategic pedestrian safety plans tailored to local conditions

2018 H-GAC REGIONAL SAFETY PLAN (H-GAC.COM/TRANSPORTATION-SAFETY)

Pedestrian Strategies (see pages 40-41 of the regional safety plan)

ENGINEERING
- Lane Reductions (Road Diet) Crash Reduction Factor (CRF): 19-47%
- Reduce Lane Width
- Intersection Crosswalk Enhancements for pedestrians
- Raised medians
- Pedestrian Crossing Islands
- School Zone Improvements
- Signal Timing/Optimization
- Pedestrian Signal/Timing
- Wayfinding
- Ensure best practices and countermeasures are incorporated into TIP/RTP projects, as well as local engineering projects as applicable
- Perform safety audits at high crash locations

ENFORCEMENT
- Enforce existing laws against pedestrians and drivers

EDUCATION
- Launch Regional Safety Campaign focusing on Pedestrian safety
- Support and expand existing bicycle/pedestrian safety programs

ENCOURAGEMENT AND EMPOWERMENT
- Conduct bicycle/pedestrian feasibility studies throughout the region similar to the feasibility study done in the West Houston Mobility Plan (2015)
- Conduct or support Safe Routes to School audits in the region

EVALUATION
- Use crash data to identify relevant geographic and demographic information about bicycle and pedestrian crashes

STATE AND REGIONAL SAFETY PLANS, CONTINUED

2018 H-GAC REGIONAL SAFETY PLAN (H-GAC.COM/TRANSPORTATION-SAFETY)

Bicycle Strategies (see pages 39-40 of the regional safety plan)
ENGINEERING
- Lane Reductions (Road Diet) CRF: 19-47%
- Bicycle Lanes
- Separated Bicycle Lanes
- Bike Boulevard
- Intersection markings for bicyclists
- School Zone Improvements
- Wayfinding
- Ensure best practices and countermeasures are incorporated into TIP/RTP projects, as well as local engineering projects as applicable
- Perform safety audits at high crash locations

ENFORCEMENT
- Enforce existing laws against bicyclists and drivers

EDUCATION
- Launch Regional Safety Campaign focusing on Bicycle safety
- Support and expand existing bicycle/pedestrian safety programs
- Encourage adoption of bicycle helmets laws

ENCOURAGEMENT AND EMPOWERMENT
- Conduct bicycle/pedestrian feasibility studies throughout the region similar to the feasibility study done in the West Houston Mobility Plan (2015)
- Conduct or support Safe Routes to School audits in the region

EVALUATION
- Use crash data to identify relevant geographic and demographic information about bicycle and pedestrian crashes

Implementation Plan (see page 48 of the regional safety plan)
IDENTIFY LOCATIONS FOR BICYCLE/PEDESTRIAN INFRASTRUCTURE
Conduct bicycle/pedestrian feasibility studies throughout the region similar to the feasibility study done in the West Houston Mobility Plan

LAUNCH REGIONAL SAFETY CAMPAIGN FOCUSING ON BICYCLE & PEDESTRIAN SAFETY
Track number of media exposures regarding bicycle and pedestrian safety and the distribution of printed materials

PROMOTE ADULT BICYCLE SAFETY TRAINING
Procure a consultant to conduct adult bicycle safety training classes

ENGINEERING SAFETY AUDITS OF HIGH-FREQUENCY CRASH LOCATIONS
Conduct safety audits at high frequency crash locations and conduct or support Safe Routes to School audits

RECOMMENDATION 2: ENSURE EQUITY

Ensure that all people – regardless of age, ability, or location within the region – have access to walkways and bikeways that are safe, convenient and comfortable.

Performance Measures

1. Share of new walkways and bikeways constructed in environmental justice sensitive areas and rural communities

2. Share of new walkways and bikeways constructed within a half mile of transit stops

3. Share of non-motorized crashes, fatalities, and serious injuries in environmental justice sensitive areas

Strategy		Timeline	Implementers
Equity 1	Conduct ADA Self-Evaluations and Transition Plans.	Short	Local stakeholders
Equity 2	Collect feedback from residents in rural communities to better understand their specific active transportation needs.	Short	H-GAC
Equity 3	Complete the sidewalk networks within one-half mile of all transit stops in the region.	Long	H-GAC & local stakeholders
Equity 4	Include an analysis of underserved populations, rural communities, and transit connections when collecting data related to active transportation.	Ongoing	H-GAC & local stakeholders
Equity 5	Fund high-comfort walkways and bikeways (1) in environmental justice sensitive areas, (2) near transit stops, and (3) in rural communities.	Ongoing	H-GAC & local stakeholders
Equity 6	Identify and distribute information to local governments about funding opportunities specifically for (1) ADA improvements, (2) first-mile/last-mile infrastructure, and (3) rural infrastructure.	Ongoing	H-GAC
Equity 7	Include first-mile/last-mile connections to transit as considerations in all planning activities, and use it as a required scope element in Special District and Livable Centers Studies in study areas with transit service.	Ongoing	H-GAC & local stakeholders
Equity 8	Host workshops and share information about strategies for building walkway and bikeway networks in small towns and rural communities.	Ongoing	H-GAC

Table 8

RECOMMENDATION 3: CONNECT

Build interconnected networks of walkways and bikeways in Focus Areas and between regional hubs like employment and population centers and tourist destinations.

Performance Measures

1. Miles of new walkways built (within and outside of Regional Focus Areas)

2. Miles of new bikeways built (by facility type and comfort/level of stress within and outside of Bicycle Focus Areas)

3. Number of planning studies completed by H-GAC

4. Number of recommendations funded from H-GAC planning studies

Strategy		Timeline	Implementers
Connectivity 1	Create a toolbox of best practices for designing, funding and building walkways, bikeways and roadways.	Immediate	H-GAC
Connectivity 2	Create and refine performance measures for walkway and bikeway network connectivity.	Immediate	H-GAC
Connectivity 3	Develop funding criteria for the Transportation Improvement Program (TIP) that captures all benefits of active transportation infrastructure including safety, mobility, air quality, health, economic development, and recreation.	Short	H-GAC
Connectivity 4	Collect and share information and research on the benefits of active transportation on the economy, mobility, quality of life, and tourism.	Medium	H-GAC & local stakeholders
Connectivity 5	Increase the number of cities in the region with Complete Streets policies through technical assistance and sharing best practices (see page 11 for a definition of Complete Streets).	Long	H-GAC & local stakeholders
Connectivity 6	Identify and build bikeways that connect population centers to local tourism destinations.	Long	H-GAC & local stakeholders
Connectivity 7	Conduct active transportation planning studies, particularly in areas of need based on the Focus Area analysis (see Focus Areas starting on page 34). These include Special District and Livable Centers Studies conducted by H-GAC as well as studies conducted by local partners (shared goal with 2018 H-GAC Regional Safety Plan).	Ongoing	H-GAC & local stakeholders
Connectivity 8	Plan and build high-comfort bikeways in areas of high need based on the Focus Area analysis (see the Bicycle Focus Areas on pages 62-65) and where supported by local plans.	Ongoing	H-GAC & local stakeholders
Connectivity 9	Plan and build new walkways in areas of high need based on the Focus Area analysis (see the Pedestrian Focus Areas on pages 58-61) and where supported by local plans.	Ongoing	H-GAC & local stakeholders
Connectivity 10	Include high-comfort walkways and bikeways as a component of all roadway projects, both new construction and retrofits.	Ongoing	H-GAC & local stakeholders
Connectivity 11	Support land use plans and policies that promote dense development, a mix of uses, and design principles that support all modes of transportation, such as transit-oriented development.	Ongoing	H-GAC & local stakeholders
Connectivity 12	Host workshops on policies, plans, and programs that improve walkways and bikeways. Workshop topics may include AASHTO and NACTO design standards, Complete Streets policies, and other best practices.	Ongoing	H-GAC

Table 9

REGIONAL BIKEWAY NETWORK

In addition to building connected networks of bikeways, it is also important to zoom out to the regional network to consider connections that promote tourism and connectivity between communities.

Thanks to previous planning studies we already have a sense of potential connections at the regional level. See the recommendations from the three plans on the following pages. Together, all three plans give us a starting point for a larger regional network. Creating these connections will take coordination across city and county boundaries, and potentially non-traditional funding sources. As identified in the Connectivity 6 Strategy on the previous page, we need to commit to further study of these potential connections to determine which ones are most feasible and effective for the region. We also need to revisit these recommendations to identify potential connections to Focus Areas like Cleveland, Cloverleaf, and Winnie.

EXISTING PLANS GUIDE THE REGIONAL VISION NETWORK

Texas Bicycle Tourism Trails Study - TxDOT

Find the plan by searching for "Texas Bicycle Tourism Trails Study" on the TxDOT website at www.txdot.gov.
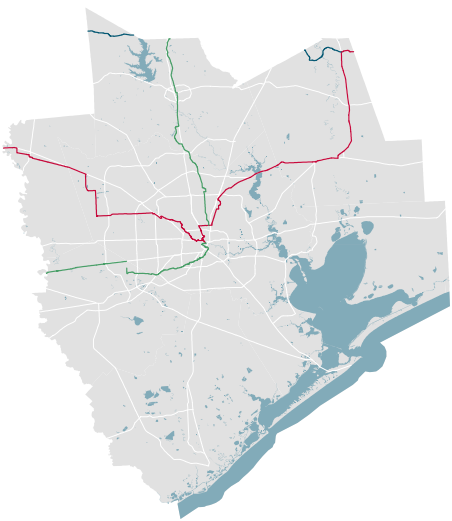
Beyond the Bayous - Houston Parks Board

Find information on the Beyond the Bayous plan on their website at www.houstonparksboard.org

2040 Regional Pedestrian & Bicycle Plan - H-GAC

Find the plan by searching for "2040 Regional Pedestrian & Bicycle Plan" at www.h-gac.com.
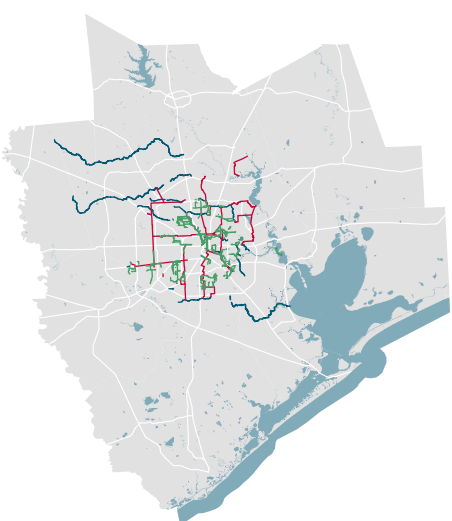
REGIONAL BIKEWAY NETWORK COMPONENTS

TEXAS BICYCLE TOURISM TRAILS STUDY - TXDOT *Map 26*

In 2018, TxDOT completed the Texas Bicycle Tourism Trails Study to identify a statewide network of bikeways to encourage tourism, including in our region. Learn more about the plan online at txdot.gov.

— Cross-state Spines
— Connecting Spurs
— Regional Routes

BEYOND THE BAYOUS - HOUSTON PARKS BOARD *Map 27*

The Houston Parks Board, a local non-profit that builds parks and greenways in Harris County completed their Bayou Greenways 2020 and Beyond the Bayous plans. Both plans outline future connections to extend the reach of the current set of greenways within the region's urban core. Learn more about the plans online at houstonparksboard.org.

— Regional Connectors
— Neighborhood Network
— Expanded Bayou Greenways
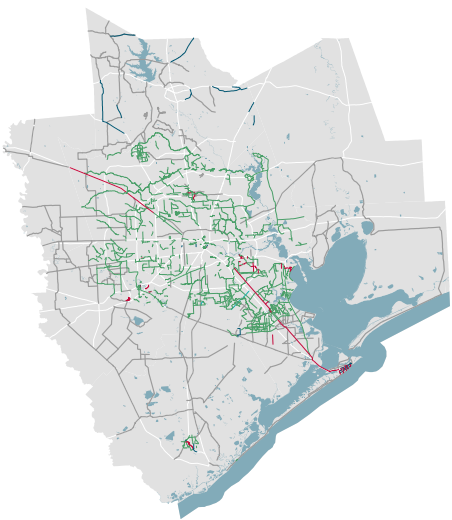
2040 REGIONAL PEDESTRIAN & BICYCLE PLAN - H-GAC *Map 28*

Finally, this plan's predecessor – the 2040 Regional Pedestrian and Bicycle Plan – identified proposed bikeways from local and regional plans, including regional connections. Find definitions of the categories below on page 24 of this document.

— Bike Lane
— Shared-Use Path/Trail
— Signed Shared Roadway
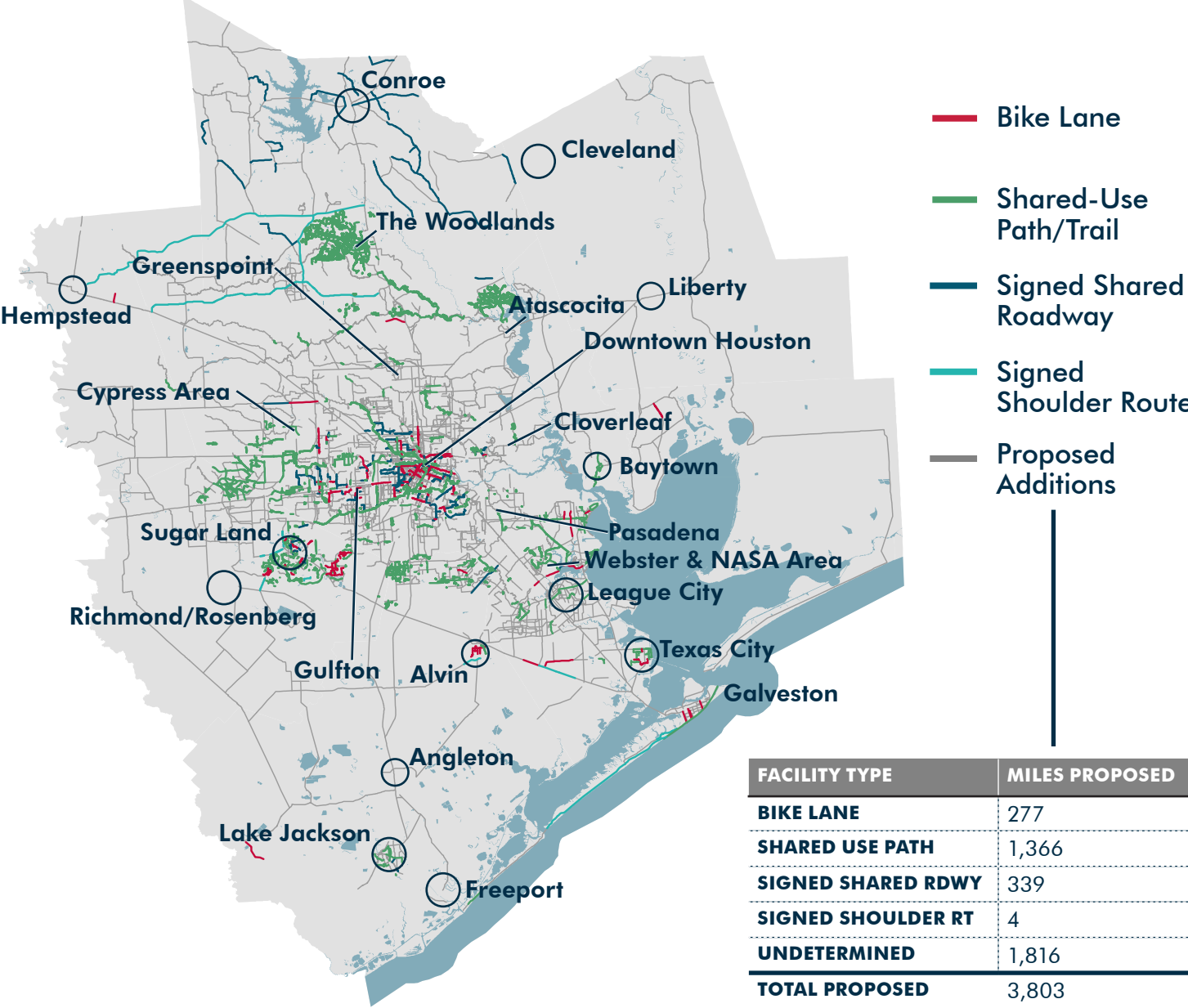— Wide Shoulder
— Undetermined Facility Type

REGIONAL BIKEWAY NETWORK

This map combines existing facilities and proposed facilities from regional and local plans, including the ones on the previous page. The facilities shown here are the beginning of a regional network.

Note: More planning is needed to review and improve upon this Regional Bikeway Network map so that it offers greater detail on facility needs and promotes better connections for Focus Areas and rural communities.

Regional Vision: Existing and Proposed Bikeways
Map 29

FACILITY TYPE	MILES PROPOSED
BIKE LANE	277
SHARED USE PATH	1,366
SIGNED SHARED RDWY	339
SIGNED SHOULDER RT	4
UNDETERMINED	1,816
TOTAL PROPOSED	3,803

WALKWAY AND BIKEWAY NETWORK COST

The cost of active transportation infrastructure depends on the type of facility and the specific context of the location. The Federal Highway Administration and the Robert Wood Johnson Foundation developed a guide outlining the cost of different pedestrian and bicycle infrastructure types.[18] Cost estimates were adjusted to 2019 dollars.

REGIONAL WALKWAY NETWORK *Table 10*

We estimated the cost of completing the region's walkway network by finding the miles of sidewalk still needed for both sides of roadways in our region (except for highways, private driveways, and parking lots) and multiplying that by $35 per linear foot, or $183,322 per linear mile, FHWA's estimated cost for a 5-foot concrete sidewalk. These estimated costs do not include repairs to existing sidewalks, new or improved crosswalks, or special infrastructure like pedestrian bridges.

COUNTY	MILES NEEDED	ESTIMATED COST	COST + 20% CONTINGENCY
BRAZORIA	4,600	$845 million	$1.0 billion
CHAMBERS	1,400	$264 million	$317 million
FORT BEND	3,900	$714 million	$857 million
GALVESTON	3,300	$604 million	$725 million
HARRIS	17,200	$3.15 billion	$3.8 billion
LIBERTY	3,400	$622 million	$747 million
MONTGOMERY	8,000	$1.5 billion	$1.8 billion
WALLER	2,000	$376 million	$451 million
TOTAL	43,900	$8.04 billion	$9.65 billion

REGIONAL BIKEWAY NETWORK *Table 11*

We estimated the cost to implement the regional bikeway network, as currently envisioned, using FHWA cost estimates for bike lanes, trails, and signed bike routes. Most of the proposed additions to the network have a suggested facility type, but many of the facility types are undetermined. For those, we took the weighted average of the other facilities to find an expected cost of the undetermined sections.

COUNTY	MILES PROPOSED	ESTIMATED COST	COST + 20% CONTINGENCY
BRAZORIA	353	$145 million	$174 million
CHAMBERS	105	$40 million	$48 million
FORT BEND	378	$159 million	$191 million
GALVESTON	399	$167 million	$200 million
HARRIS	2,035	$766 million	$919 million
LIBERTY	108	$42 million	$50 million
MONTGOMERY	284	$87 million	$104 million
WALLER	141	$54 million	$65 million
TOTAL	3,803	$8.04 billion	$9.65 billion

RECOMMENDATION 4: MAINTAIN AND MONITOR

Maintain and improve the existing network of walkways and bikeways in the region and coordinate regional data collection for active transportation infrastructure.

Performance Measures

1. Number of permanent and temporary counters deployed

2. Number of ITS installations that include technology for active transportation (e.g., pedestrian and bicycle detection at signalized intersections)

3. Share of bike facilities with a high level of service

Strategy		Timeline	Implementers
Maintain and Monitor 1	Conduct an annual active transportation survey of local governments to gather information on (1) existing infrastructure, (2) local policies, (3) planning activities, and (4) regional knowledge of best practices in the field.	Immediate	H-GAC
Maintain and Monitor 2	Map all recently completed and proposed bikeways from local plans and upload them to the Regional Bikeway Viewer. Standardize bikeway facility data across jurisdictions.	Immediate	H-GAC & local stakeholders
Maintain and Monitor 3	Create an online viewer for the regional sidewalk layer. Update H-GAC's sidewalk GIS data set to include crosswalks, absent sidewalks, and proposed walkway improvements.	Immediate	H-GAC
Maintain and Monitor 4	Develop a process and schedule for updating and sharing regional walkway and bikeway data.	Immediate	H-GAC
Maintain and Monitor 5	Classify the regional bikeway GIS layer by level of service and/or comfort.	Immediate	H-GAC
Maintain and Monitor 6	Continue to distribute the I Walk Here and I Bike Here surveys, particularly in Brazoria, Chambers, Liberty and Waller counties to understand the preferences and needs of rural residents.	Immediate	H-GAC & local stakeholders
Maintain and Monitor 7	Increase the number of permanent and temporary counters in the region.	Short	H-GAC & local stakeholders
Maintain and Monitor 8	Conduct an active transportation origin/destination study in the region.	Medium	H-GAC
Maintain and Monitor 9	Incorporate walking and biking into the Regional Travel Model.	Long	H-GAC
Maintain and Monitor 10	Include active transportation intelligent transportation systems (ITS) in the construction and retrofit of roadways.	Ongoing	H-GAC & local stakeholders
Maintain and Monitor 11	Fund projects that retrofit existing walkways and bikeways to be ADA-compliant and resilient to changing climate patterns.	Ongoing	H-GAC & local stakeholders
Maintain and Monitor 12	Collect, analyze, and share data on people walking and biking using permanent and temporary counters, particularly around schools, transit centers and job centers.	Ongoing	H-GAC & local stakeholders

Table 12

RECOMMENDATION 5: ENCOURAGE

Encourage and incentivize the use of walkways and bikeways to mitigate congestion, improve air quality, and increase physical activity.

Performance Measures

1. Use of active modes for regional commuters (current RTP performance measure)

2. Share of regional residents reporting physical inactivity

3. Number of walkway and bikeway users counted by permanent and temporary counters

4. N0x emissions reductions (tons per year)

5. Number of people reached through connectivity outreach (Commute Solutions, workshops, toolbox downloads, data downloads)

6. Number of communities with Walk Friendly or Bike Friendly status

| Strategy		Timeline	Implementers
Encourage 1	Test and promote new technologies that incentivize the use of active transportation for physical activity and utilitarian trips.	Short	H-GAC & local stakeholders
Encourage 2	Develop outreach tools to notify residents of new and updated walkways and bikeways constructed in their communities as a way to encourage use and share safety tips.	Short	H-GAC & local stakeholders
Encourage 3	Increase the number of communities in the region that are designated Walk Friendly and Bike Friendly communities (see page 11 for a definition of Walk Friendly and Bike Friendy communities).	Medium	H-GAC & local stakeholders
Encourage 4	Encourage region-wide participation in Bike Month and National Walk and Bike to School Day.	Medium	H-GAC
Encourage 5	Include public health officials when planning walkways, bikeways, and roadways.	Ongoing	H-GAC & local stakeholders
Encourage 6	Provide resources, information, and encouragement for employers and employees in the region about active transportation commuting via H-GAC's Commute Solutions program.	Ongoing	H-GAC
Encourage 7	Collect public health data as a component of any active transportation analysis.	Ongoing	H-GAC & local stakeholders
Encourage 8	Build infrastructure that has the support of local residents and that fit within the local context.	Ongoing	H-GAC & local stakeholders
Encourage 9	Use outreach and planning processes as opportunities to educate residents about the benefits of active transportation and national best practices for policies, programs, and design.	Ongoing	H-GAC & local stakeholders

Table 13

County Profiles

2045 Active Transportation Plan

BRAZORIA WALKWAYS & PEDESTRIAN FOCUS AREAS

Map 30

Pedestrian Focus Areas

Existing Sidewalks

Roadway

INSET 1 - BRAZORIA PEDESTRIAN FOCUS AREAS

See Inset 1
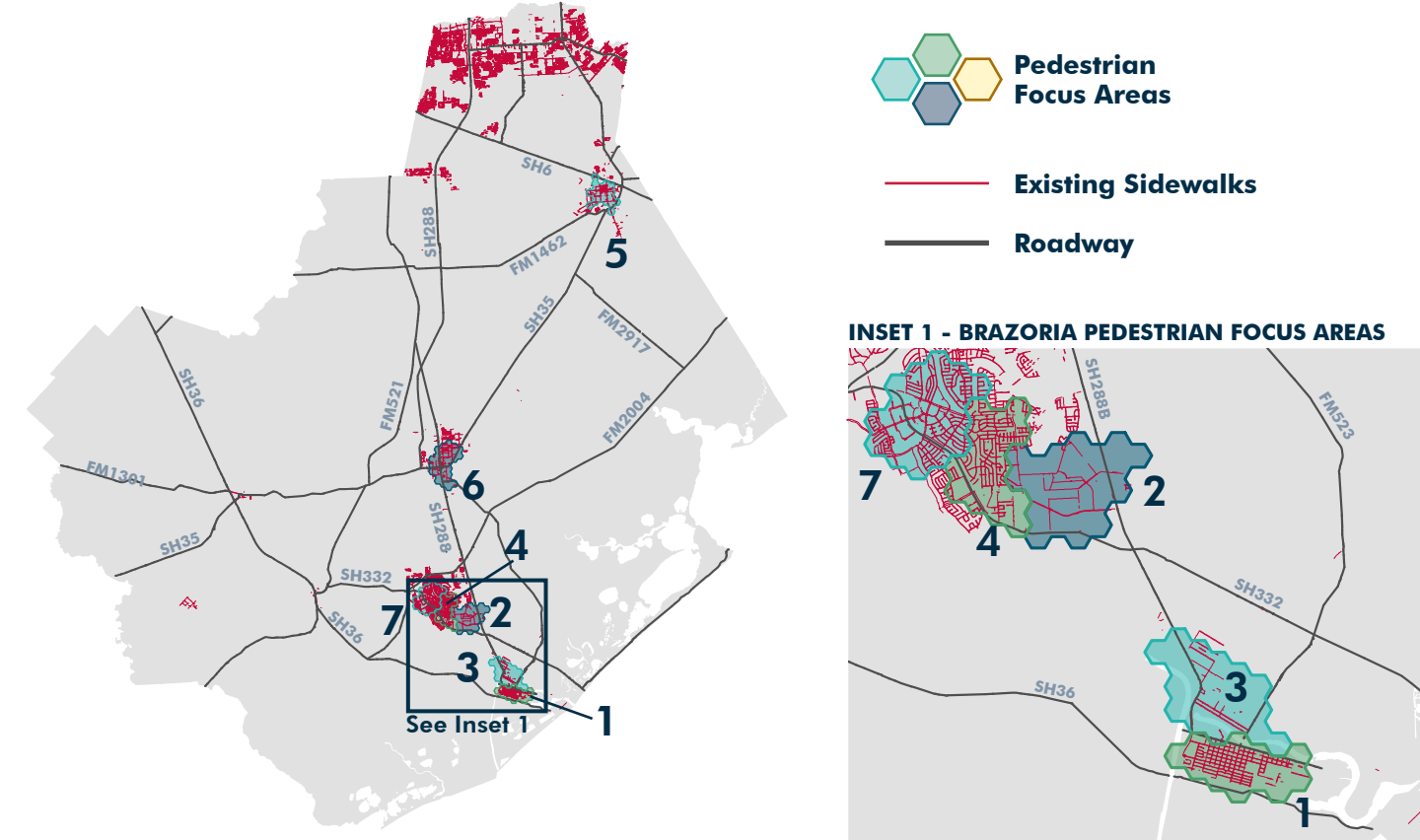
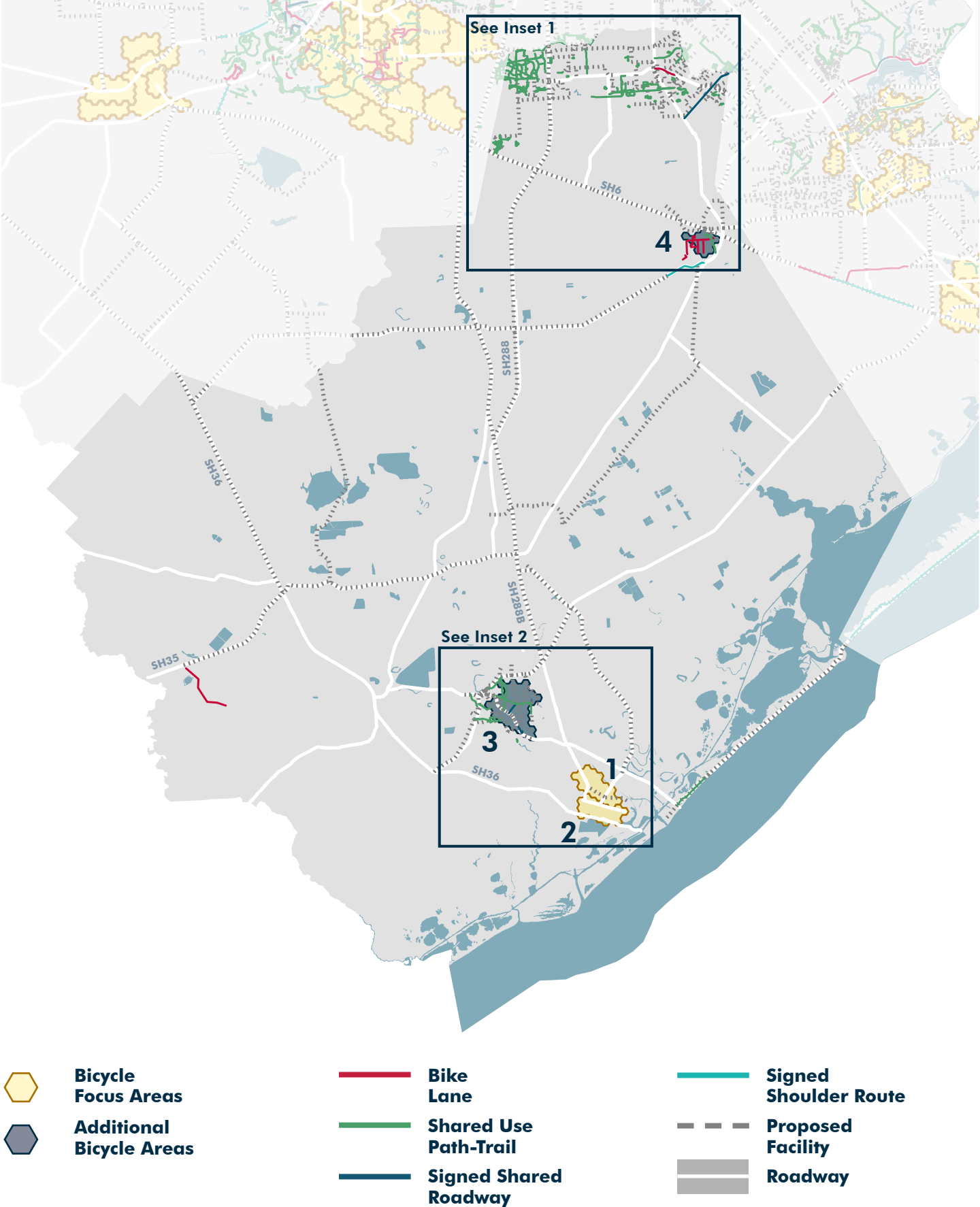| Pedestrian Focus Areas		Index	Cost to Complete Network
1	Freeport (South)	81	$4.9 million
2	Clute	81	$11.0 million
3	Freeport (North)	80	$10.7 million
4	Lake Jackson (East)	79	$3.2 million
5	Alvin	78	$15.3 million
6	Angleton	78	$20.5 million
7	Lake Jackson (West)	76	$3.6 million

Table 14

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

Map 31

Legend

- **Bicycle Focus Areas**
- **Additional Bicycle Areas**
- **Bike Lane**
- **Shared Use Path-Trail**
- **Signed Shared Roadway**
- **Signed Shoulder Route**
- **Proposed Facility**
- **Roadway**

Bicycle Focus Areas	Index
1 Freeport (North)	82
2 Freeport (South)	82

Additional Bicycle Areas

These areas did not score within the Top 40 highest focus areas outside of Harris County, but they still represent areas of need relative to other places in Brazoria County.

|		
3	Lake Jackson	80
4	Alvin	80

Table 15

**INDEX:** The index for each Focus Area is the average Focus Area score for all its hexagons.

COST

The 353 miles of the currently proposed bikeways in Brazoria County (see page 79) are estimated to cost $174 million to complete. This includes 8 miles of proposed bike lanes, 106 miles of proposed shared-use paths, 7 miles of signed shared roadways, one mile of a signed shoulder bike route, and an additional 231 miles of bikeways with an undesignated facility type.

Few of these proposed bikeways are currently proposed for the county's two Focus Areas in Freeport. Additional planning is necessary to identify bikeway improvements for these communities.

INSET 1 - BRAZORIA BICYCLE FOCUS AREAS NORTH
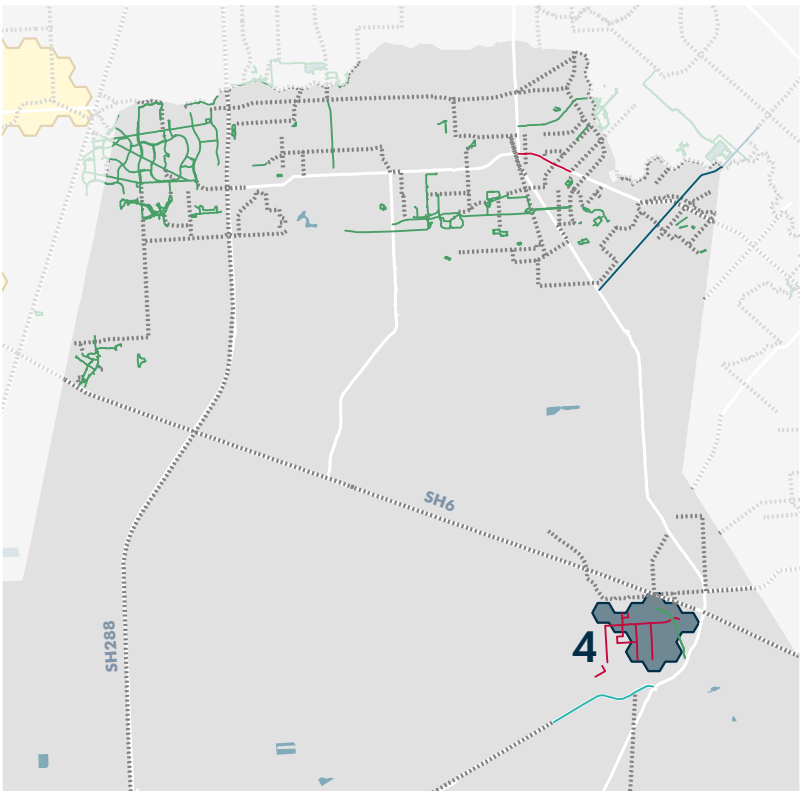
INSET 2 - BRAZORIA BICYCLE FOCUS AREAS SOUTH

BRAZORIA PLANS & RECOMMENDATIONS
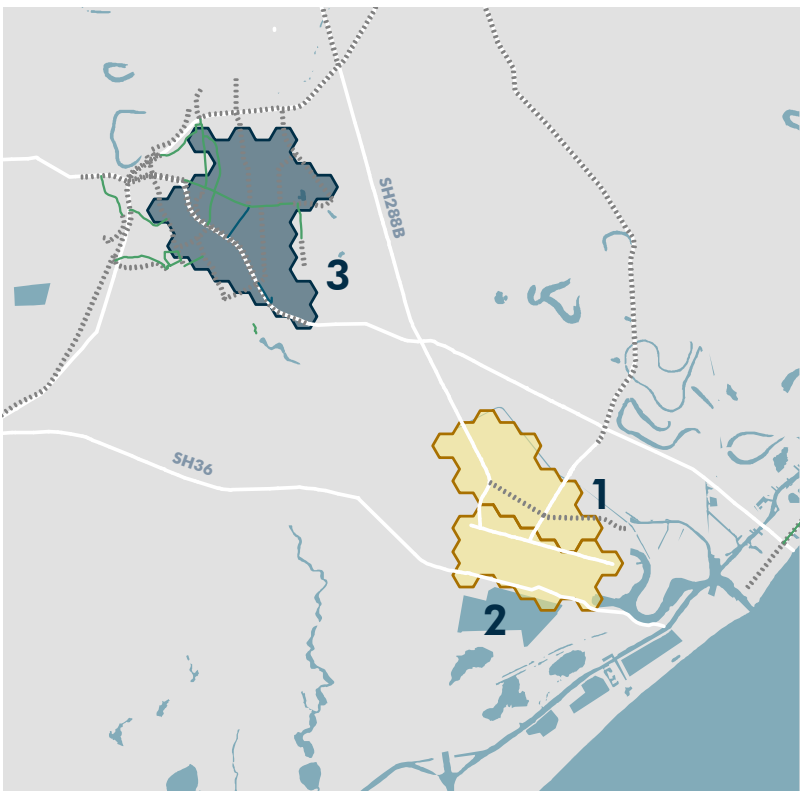
Existing Plan	Plan Partners	Year
Parks and Recreation Master Plan	City of Alvin	2017
Master Parks Plan	City of Manvel	2017
Parks and Recreation Master Plan	City of Pearland	2015
Pedestrian and Bicycle Master Plan	City of Lake Jackson	2011
Trail Master Plan	City of Pearland	2007

Table 16

The recommendations listed here offer a set of ideas specific to Brazoria County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Brazoria County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits to reveal potential design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans, particularly in areas with a high need based on Focus Area criteria like Alvin, Angleton, Clute, Freeport, and Lake Jackson.
3. Bring sidewalks into compliance with the Americans with Disabilities Act (ADA), particularly in places with an existing sidewalk network like Lake Jackson, southern Freeport, and the northern portion of the county.
4. Fill the gaps in the county's sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map like Alvin, Angleton, Clute, and northern Freeport.
5. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists, and pedestrians.

ENSURE EQUITY

1. Build new walkways and bikeways that connect environmental justice areas to nearby job centers, particularly in areas with high need according to the Focus Area analysis like Freeport.
2. Use walkways and bikeways to create first-mile/last-mile connections to transit stops in the county, particularly in within the job and population centers in Freeport and Lake Jackson.
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.
4. Identify specific strategies to improve walkway and bikeway connectivity in the county's environmental justice communities.

BRAZORIA PLANS & RECOMMENDATIONS

CONNECT

1. Conduct local active transportation studies that expand on the set of existing parks and trails plans and in areas that demonstrate a high need based on the Focus Area analysis. Use these plans to guide investment in walkways and bikeways that connect population centers, schools, job centers, and transit.
2. Use the upcoming Livable Centers Study in Angleton to identify sidewalk improvements in its Pedestrian Focus Area.
3. Identify and build bikeway connections between the county's population centers and tourist destinations, including Brazos Bend State Park, the Brazoria National Wildlife Refuge and the San Bernard National Wildlife Refuge.

MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

CHAMBERS WALKWAYS & PEDESTRIAN FOCUS AREAS

With largely rural communities, none of Chambers County's hexagons were identified as Pedestrian or Bicycle Focus Areas. However, people still walk, bike, and roll in the county, and some places show more need than others. We have listed the top three places in Chambers County with a higher relative need for walkways and bikeways.

Chambers County's expected growth and its abundant natural resources also offer great reasons to invest in active transportation. Communities in the county have the benefit of planning in advance for an expected population boom and building walkways and bikeways in anticipation of future needs. Tourism traffic generators like the Anahuac National Wildlife Refuge, Lake Anahuac, Smith Point, and others are also potential destinations for bicyclists on regional or long-distance bicycling tours.
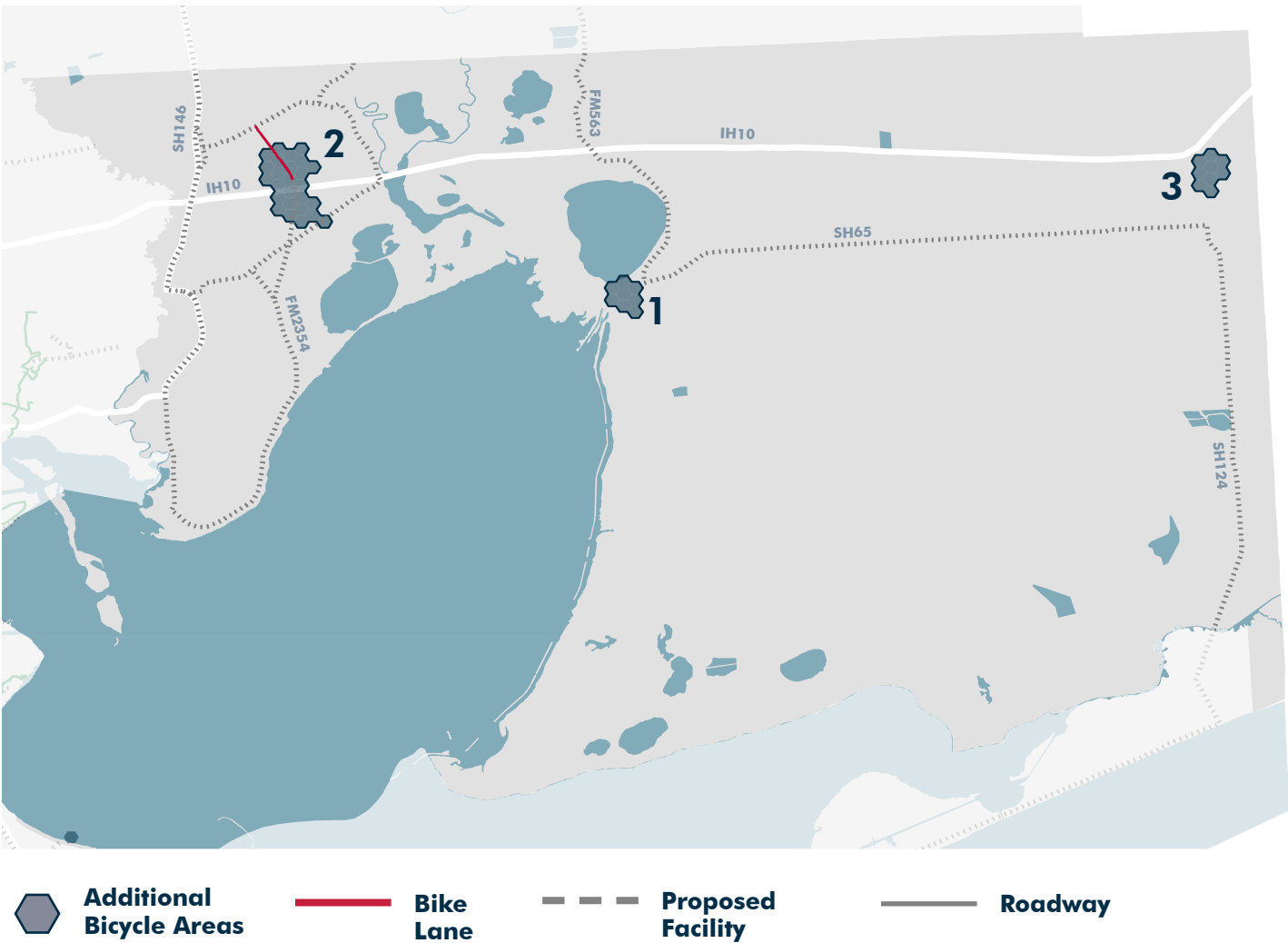
Map 32

Additional Pedestrian Areas   Index   Cost to Complete Network

These areas did not score within the Top 40 highest focus areas outside of Harris County, but they still represent areas of need relative to other places in Chambers County.

		Index	Cost to Complete Network
1	Anahuac	55	$8.0 million
2	Mont Belvieu	49	$5.1 million
3	Winnie	46	$4.1 million

Table 17

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

CHAMBERS BIKEWAYS & BICYCLE FOCUS AREAS

Map 33

Additional Bicycle Areas   Index

These areas did not score within the Top 40 highest focus areas outside of Harris County, but they still represent areas of need relative to other places in Chambers County.

		Index
1	Anahuac	49
2	Mont Belvieu	49
3	Winnie	47

Table 18

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST

The 105 miles of currently proposed bikeways in Chambers County (see page 79) are estimated to cost $48 million to complete. This accounts for 105 miles of bikeways with an undesignated facility type, mostly along major FM and SH roadways.

Few of these proposed bikeways are currently proposed for any of the county's Additional Bicycle Areas. Additional planning is necessary to identify bikeway improvements for Anahuac, Mont Belvieu, and Winnie.

CHAMBERS PLANS & RECOMMENDATIONS

Existing Plan	Plan Partners	Year
City of Mont Belvieu Livable Centers Study	H-GAC, City of Mont Belvieu	2018

Table 19

The recommendations listed here offer a set of ideas specific to Chambers County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Chambers County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits to reveal potential design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans, particularly in areas with a high need based on Focus Area criteria like Anahuac, Mont Belvieu, and Winnie.
3. Fill the gaps in the county's sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map.
4. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
5. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists, and pedestrians.

ENSURE EQUITY

Chambers County has some Census tracts with high Environmental Justice Populations, but the largest concentrations live in small coastal communities along the eastern shore of Trinity Bay. These communities do not have nearby schools, transit stops, or a concentration of destinations within walking and biking distance.

1. Identify specific strategies to improve walkway and bikeway connectivity for the county's coastal environmental justice communities, potentially through coordinated investments in tourism.
2. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.

CHAMBERS PLANS & RECOMMENDATIONS

CONNECT

1. Conduct local active transportation studies that establish a vision for walkway and bikeway networks in the county, particularly in areas that demonstrate a high need based on the Focus Area analysis. Use these studies as a guide for investment in walkways and bikeways that connect residential areas to schools and commercial centers.
2. Fund and build the active transportation infrastructure recommended in the 2018 Mont Belvieu Livable Centers Study.
3. Study potential bikeway connections between the county's population centers and tourist destinations like the Anahuac National Wildlife Refuge, Fort Anahuac Park, Smith Point, JJ Mayes Trace Park, the JD Murphree Wildlife Management Area, and the McFaddin National Wildlife Refuge.
4. Study the potential for a bikeway connection to the Bolivar Peninsula.
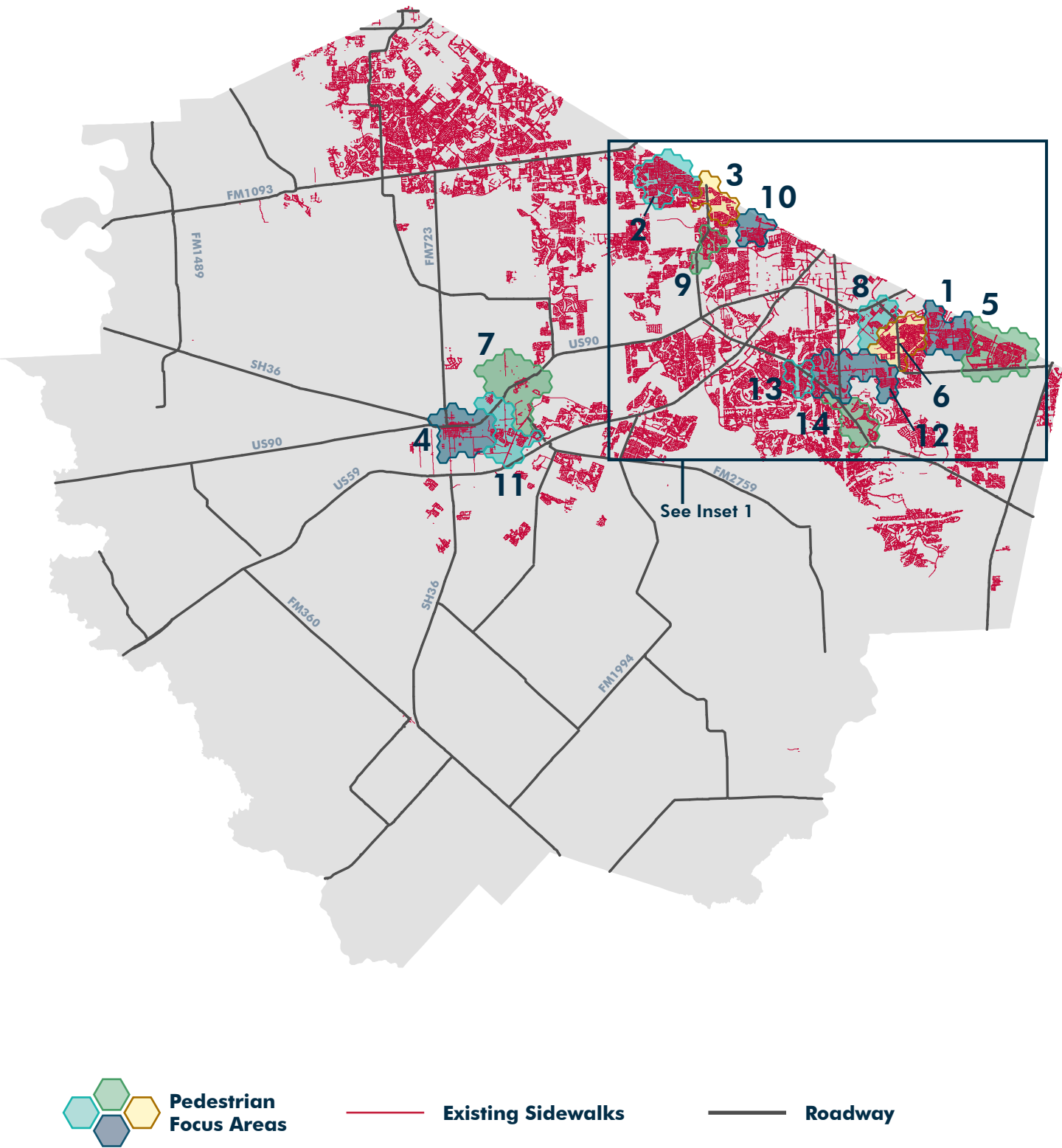
MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
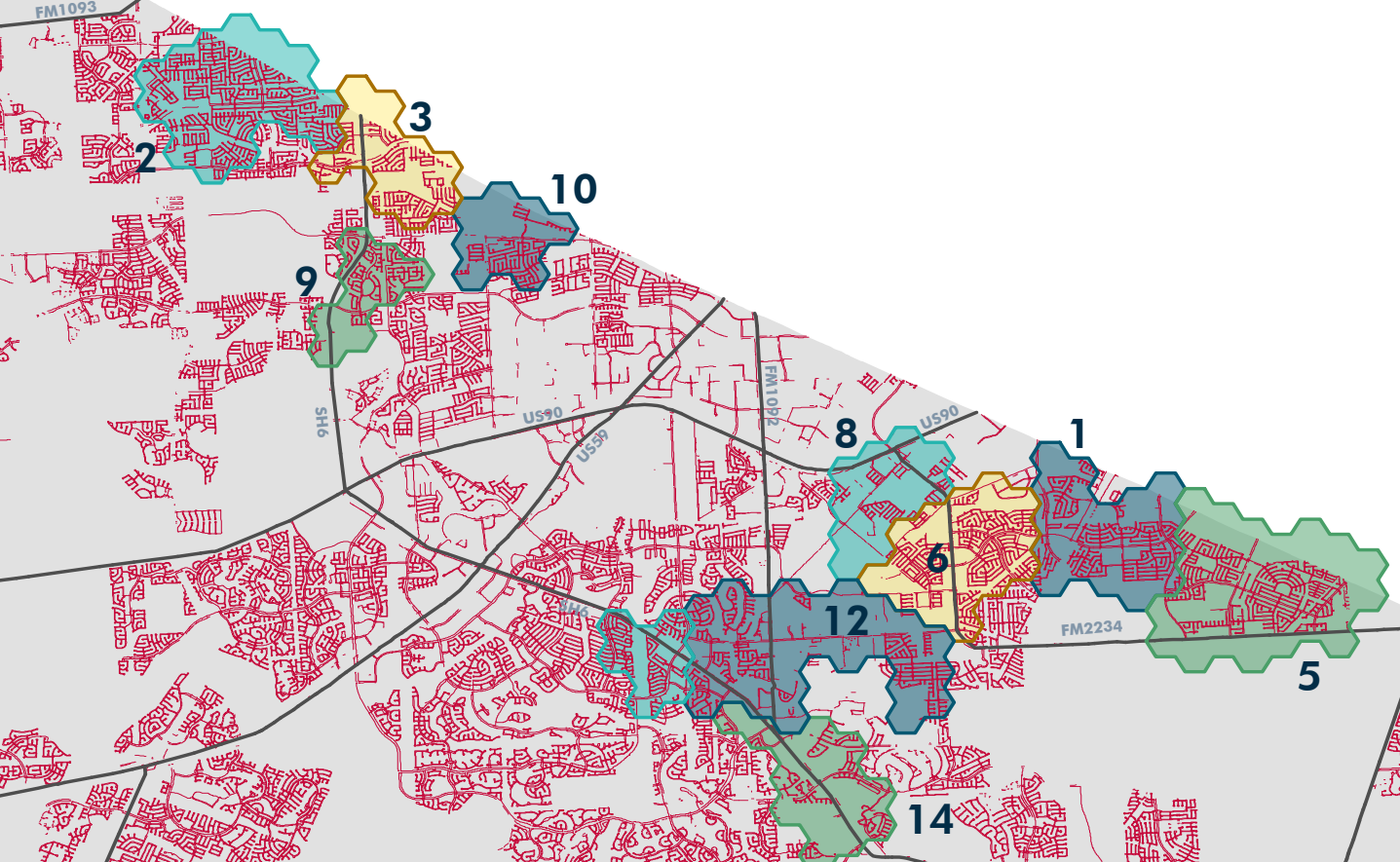4. Obtain Walk Friendly and Bike Friendly community designations.

Pedestrian Focus Areas ⬡⬡⬡⬡

Existing Sidewalks ——

Roadway ——

INSET 1 - NORTHEAST PEDESTRIAN FOCUS AREAS

Pedestrian Focus Areas		Index	Cost to Complete Network
1	Briargate	85	$3.7 million
2	Mission Bend	84	$2.2 million
3	SH6 at Keegans Bayou	84	$3.2 million
4	Downtown Rosenberg	84	$19.1 million
5	Ridgegate/Ridgemont	83	$9.0 million
6	Missouri City (North)	82	$2.7 million
7	Richmond	81	$17.1 million
8	Fifth Street	81	$6.4 million
9	SH6 at Airport Blvd	80	$1.8 million
10	Bellfort at Eldridge	80	$1.6 million
11	Rosenberg (East)	79	$7.2 million
12	Quail Valley	79	$10.0 million
13	Sugar Land (Southeast)	79	$700,000
14	Dewalt	77	$2.4 million

Table 20

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

FORT BEND BIKEWAYS & BICYCLE FOCUS AREAS

Map 35
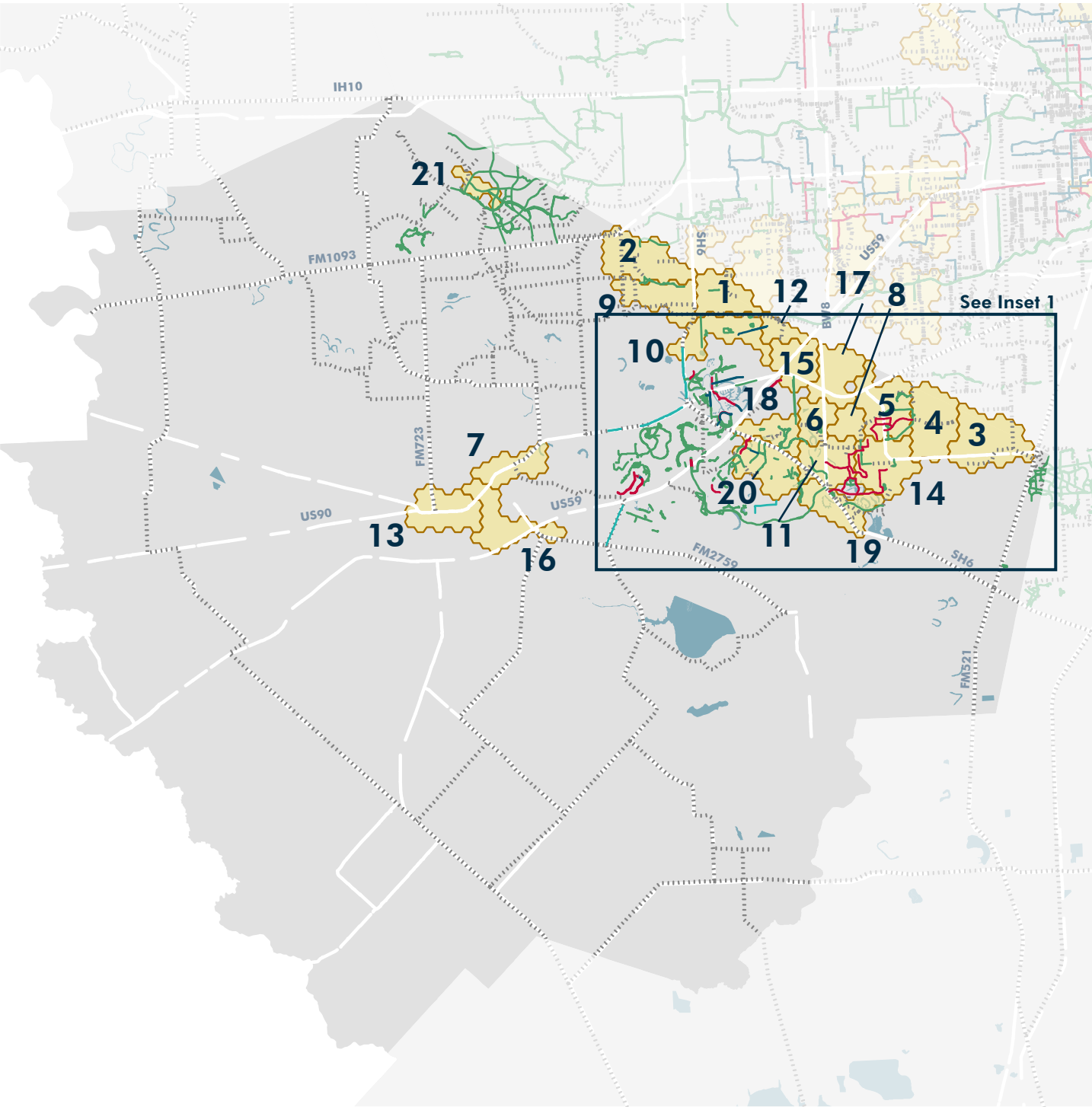
Legend:
- Bicycle Focus Areas (hexagon)
- Bike Lane (red)
- Shared Use Path-Trail (green)
- Signed Shared Roadway (dark blue)
- Signed Shoulder Route (teal)
- Proposed Facility (dashed gray)
- Roadway (gray)

FORT BEND BIKEWAYS & BICYCLE FOCUS AREAS

INSET 1 - NORTHEAST BICYCLE FOCUS AREAS
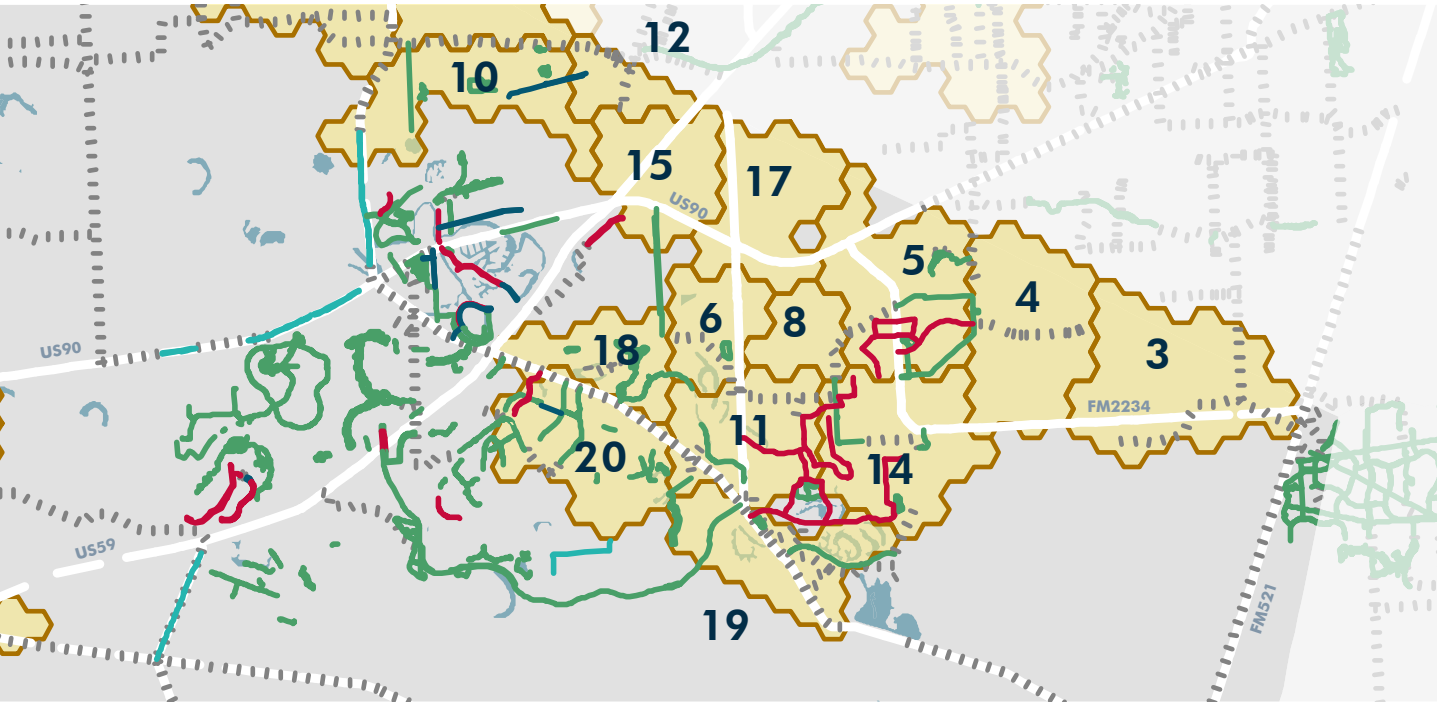
Bicycle Focus Areas	Index
1 Keegans Bayou at Fort Bend Co. Line	90
2 Mission Bend	89
3 Ridgegate/Ridgemont	86
4 Briargate	86
5 Missouri City (North)	86
6 Brightwater	86
7 Downtown Richmond	85
8 Fifth Street	85
9 Four Corners	85
10 Sugar Land (North)	85
11 Quail Valley (West)	84
12 Meadows Place	84
13 Downtown Rosenberg	84
14 Quail Valley (East)	84
15 Stafford (West)	84
16 Rosenberg (East)	83
17 Stafford (East)	83
18 Sugar Land (East)	82
19 Dewalt	81
20 Sugar Land (Southeast)	81
21 Cinco Ranch (Westheimer Pkwy)	81

Table 21

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST

The 378 miles of the currently proposed bikeways in Fort Bend County (see page 79) are estimated to cost $191 million to complete. This includes 3 miles of proposed bike lanes, 108 miles of proposed shared-use paths, and an additional 268 miles of bikeways with an undesignated facility type.

Many of the county's Bicycle Focus Areas lack proposed bikeways, including the Focus Areas around Richmond/Rosenberg, Ridgegate/Ridgemont, and Stafford, among others. Additional planning is necessary to identify bikeway improvements for these communities.

Existing Plan	Plan Partners	Year
Fulshear Livable Centers Study	H-GAC, City of Fulshear	2018
Trail Master Plan	City of Richmond	2015
Rosenberg Avenue/90 A Livable Centers Study	H-GAC, West Fort Bend Management District, City of Rosenberg	2015
Brazos River Corridor Master Plan	Fort Bend Green	2014
Bicycle and Pedestrian Mobility Plan	City of Missouri City	2013
Pedestrian and Bicycle Master Plan	City of Sugar Land	2013
Transit and Pedestrian Study	City of Rosenberg	2010
Missouri City Pedestrian and Bicycle Plan	H-GAC, City of Missouri City	2009
Sugar Land Town Center Pedestrian and Bicyclist Special District Study	H-GAC, City of Sugar Land	2007

Table 22

The recommendations listed here offer a set of ideas specific to Fort Bend County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Fort Bend County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits to identify design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans, particularly in areas with a high need based on Focus Area criteria like Rosenberg, Richmond, Mission Bend, and the cluster of communities in the county's northeast.
3. Bring sidewalks into compliance with the Americans with Disabilities Act, particularly in places with an existing sidewalk network like Sugar Land, Missouri City, and Mission Bend.
4. Fill the gaps in the county's sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map, like Richmond/Rosenberg.
5. Build high-comfort bikeways on roads with a history of bicycle crashes.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists, and pedestrians.

ENSURE EQUITY

1. Build new walkways and bikeways that connect residents to nearby job centers, particularly in areas with high need according to the Focus Area analysis like Richmond, Rosenberg, and Ridgegate/Ridgemont Pedestrian and Bicycle Focus Areas.
2. Build walkways and bikeways that create first-mile/last-mile connections to transit stops in the county, including:
   • Connections to Fort Bend County Transit stops
   • Connections to METRO's 98 (Briargate) and 49 (Chimney Rock/S Post Oak) bus routes in Ridgegate/Ridgemont
   • High-comfort bikeways that connect to the METRO Park and Ride in Missouri City
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.
4. Identify specific strategies to improve walkway and bikeway connectivity in the county's environmental justice communities.

CONNECT

1. Conduct local active transportation studies in areas that lack a plan, and in areas that demonstrate a high need based on the Focus Area analysis. Use these plans to guide investment in walkways and bikeways that connect population centers, schools, job centers, and transit.
2. Fund and build the active transportation infrastructure recommendations included in the 2015 Rosenberg Livable Centers Study and the 2013 active transportation plans for Missouri City and Sugar Land.
3. Identify and build bikeway connections between the county's population centers and tourist destinations, including Brazos Bend State Park, the George Ranch Historical Park, Sugar Land Town Center, The Fountains, Fulshear, and others.

MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.
4. Maintain the existing networks of bikeways in Sugar Land and Missouri City and walkways in northeast Fort Bend County.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

Map 36
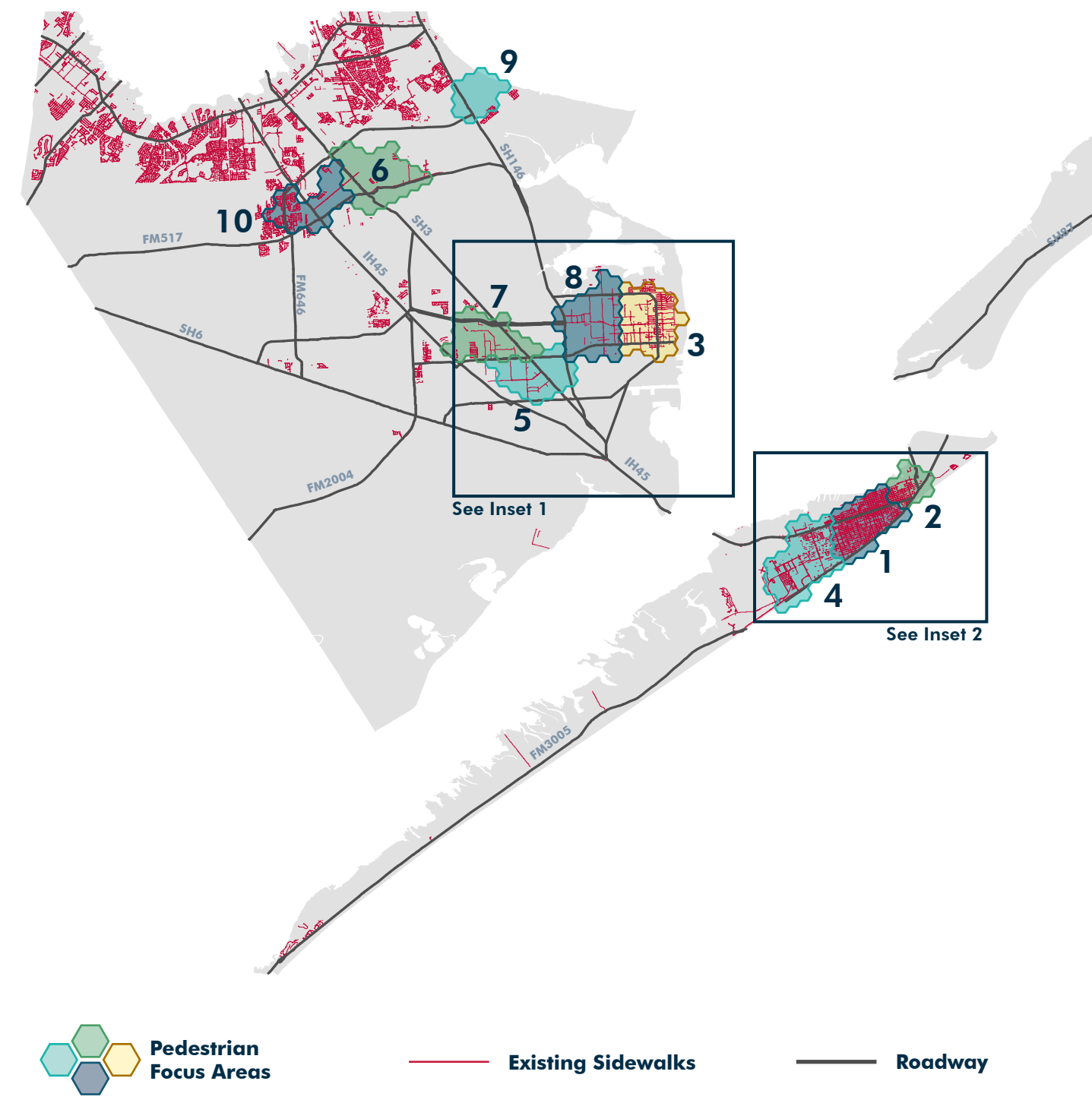
INSET 1 - TEXAS CITY PEDESTRIAN FOCUS AREAS
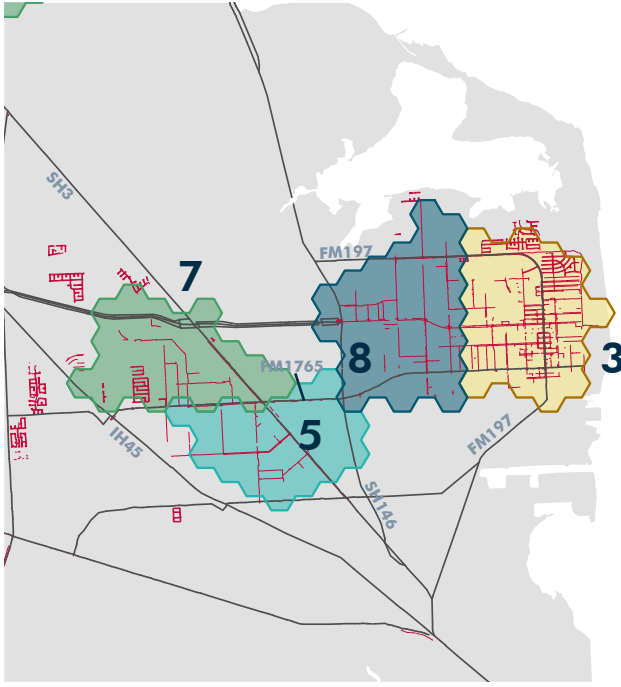
INSET 2 - GALVESTON PEDESTRIAN FOCUS AREAS
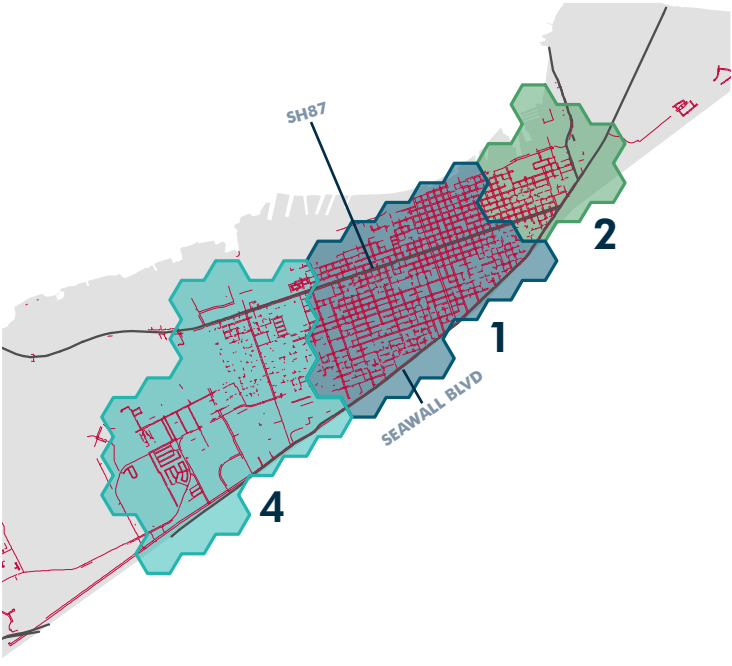
Pedestrian Focus Areas	Index	Cost to Complete Network
1 Downtown Galveston	95	$13.5 million
2 UTMB (East)	86	$5.5 million
3 Downtown Texas City	84	$20.9 million
4 Stewart Rd at 61st St	83	$20.9 million
5 Downtown LaMarque	83	$19.6 million
6 Dickinson (East)	80	$26.2 million
7 Texas City at SH3	80	$16.9 million
8 Texas City (West)	79	$24.0 million
9 Bacliff	78	$14.3 million
10 Dickinson (West)	76	$10.3 million

Table 23

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

GALVESTON BIKEWAYS & BICYCLE FOCUS AREAS

Map 37
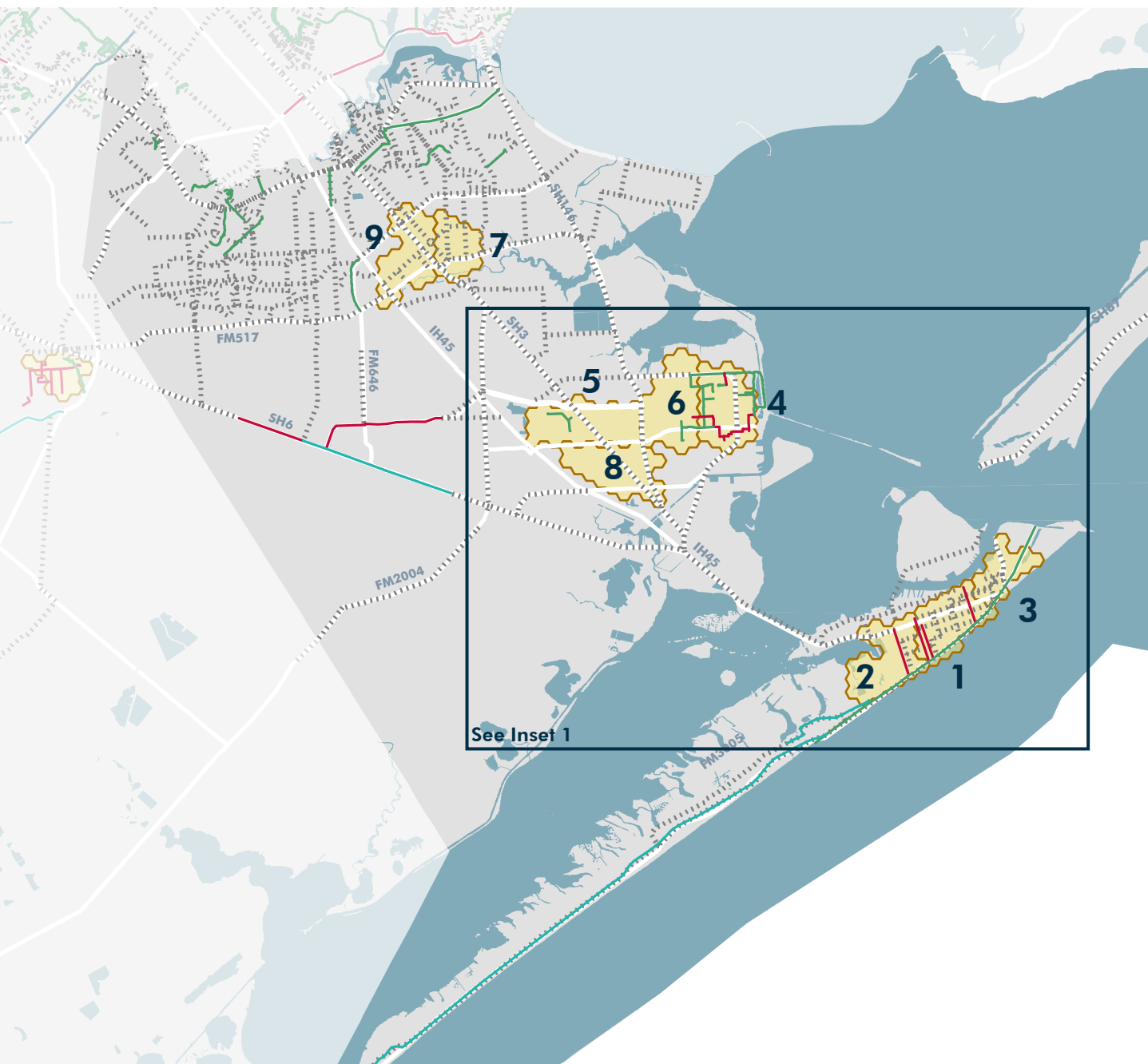
Legend:

- ⬡ Bicycle Focus Areas
- ▬ Bike Lane
- ▬ Shared Use Path-Trail
- ▬ Signed Shared Roadway
- ▬ Signed Shoulder Route
- ╌╌ Proposed Facility
- ▬ Roadway

GALVESTON BIKEWAYS & BICYCLE FOCUS AREAS

INSET 1 - SOUTH GALVESTON COUNTY BICYCLE FOCUS AREAS
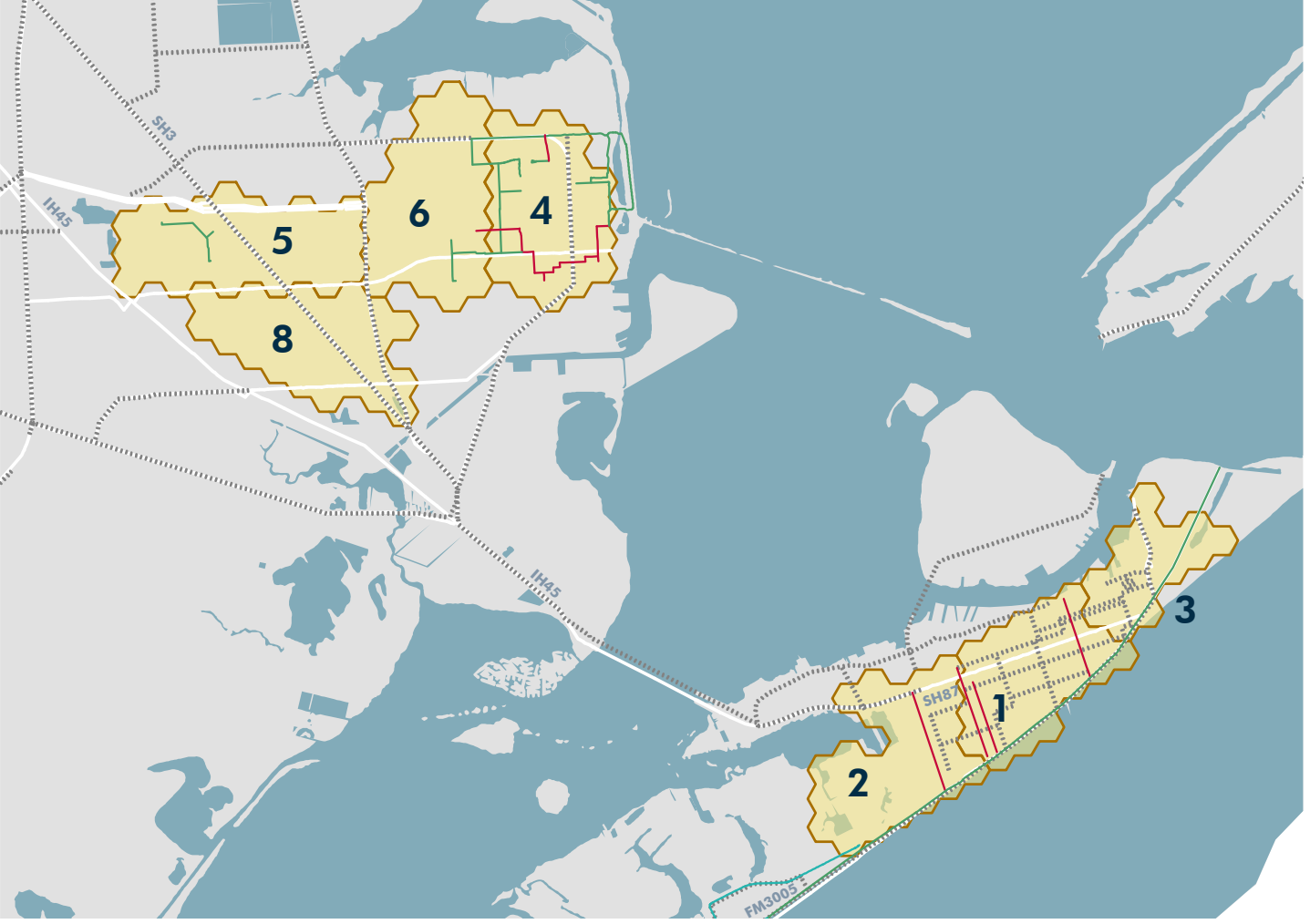
Bicycle Focus Areas		Index
1	Downtown Galveston	95
2	Stewart Rd at 61st St	89
3	UTMB (East)	87
4	Downtown Texas City	86
5	Texas City at SH3	86
6	Texas City at SH146	85
7	Dickinson (East)	85
8	Downtown LaMarque	84
9	Dickinson (West)	82

Table 24

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST

The 399 miles of the currently proposed bikeways in Galveston County (see page 79) are estimated to cost $200 million to complete. This includes 32 miles of proposed bike lanes, 185 miles of proposed shared-use paths, 12 miles of proposed signed shared roadways, and an additional 170 miles of bikeways with an undesignated facility type.

Many of the county's Bicycle Focus Areas lack proposed bikeways, particularly the Focus Areas in Texas City and LaMarque. Additional planning is necessary to identify bikeway improvements for these communities.

GALVESTON PLANS & RECOMMENDATIONS

Existing Plan	Plan Partners	Year
Parks, Trails & Open Space Master Plan	City of League City	2017
City of Texas City Livable Centers Study	H-GAC, City of Texas City	2016
Galveston Livable Centers Study	H-GAC, Galveston Housing Authority, Historic Downtown Strand Seaport Partnership	2012
City of League City: Main Street Implementation Plan	H-GAC, City of League City	2012
Hike and Bike Trails Master Plan	City of Seabrook	2010
Galveston Island Pedestrian and Bicyclist Special Districts Study	H-GAC, City of Galveston	2006

Table 25

The recommendations listed here offer a set of ideas specific to Galveston County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Galveston County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits to reveal potential design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans, particularly in areas with a high need based on Focus Area criteria like Galveston, Texas City, Dickinson, LaMarque, and Bacliff.
3. Bring sidewalks into compliance with the Americans with Disabilities Act, particularly in places with an existing sidewalk network like Galveston and portions of League City, Friendswood, Texas City, and others.
4. Fill the gaps in the county's sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map like Texas City, LaMarque, Dickinson, and Bacliff.
5. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists, and pedestrians.

ENSURE EQUITY

1. Build walkways and bikeways that connect focus areas to nearby job centers, particularly between environmental justice Census tracts and job centers within Galveston and Texas City.
2. Build walkways and bikeways that create first-mile/last-mile connections to transit stops in the county, including:
   - Connections to Island Transit stops in Galveston's central and eastern neighborhoods.
   - Connections to Connect Transit stops in Texas City.
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.
4. Identify specific strategies to improve walkway and bikeway connectivity in the county's environmental justice areas.

GALVESTON PLANS & RECOMMENDATIONS

CONNECT

1. Conduct local active transportation studies and expand on existing parks and trails plans, and in areas that demonstrate a high need based on the Focus Area analysis. Use these plans to guide investment in walkways and bikeways that connect population centers, schools, job centers, and transit.
2. Fund and build the active transportation recommendations in the 2016 Texas City Livable Centers Study and revisit the Galveston, League City, and NASA Area Livable Centers studies to determine progress and revamp the recommendations.
3. Continue to invest in a high-comfort bikeway network in the City of Galveston.
4. Identify and build bikeway connections between the county's population centers and tourist destinations like San Luis Pass, the Johnson Space Center, Moody Gardens, the Kemah Boardwalk, and others.
5. Study potential bikeway connections up the Bolivar Peninsula to the national wildlife refuges in Chambers County for touring bicyclists.

MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.
4. Maintain the existing networks of bikeways and walkways in the City of Galveston and in the communities in northern Galveston County.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

Map 38

Pedestrian Focus Areas

Existing Sidewalks — Roadway

INSET 1 - CENTRAL HARRIS PEDESTRIAN FOCUS AREAS
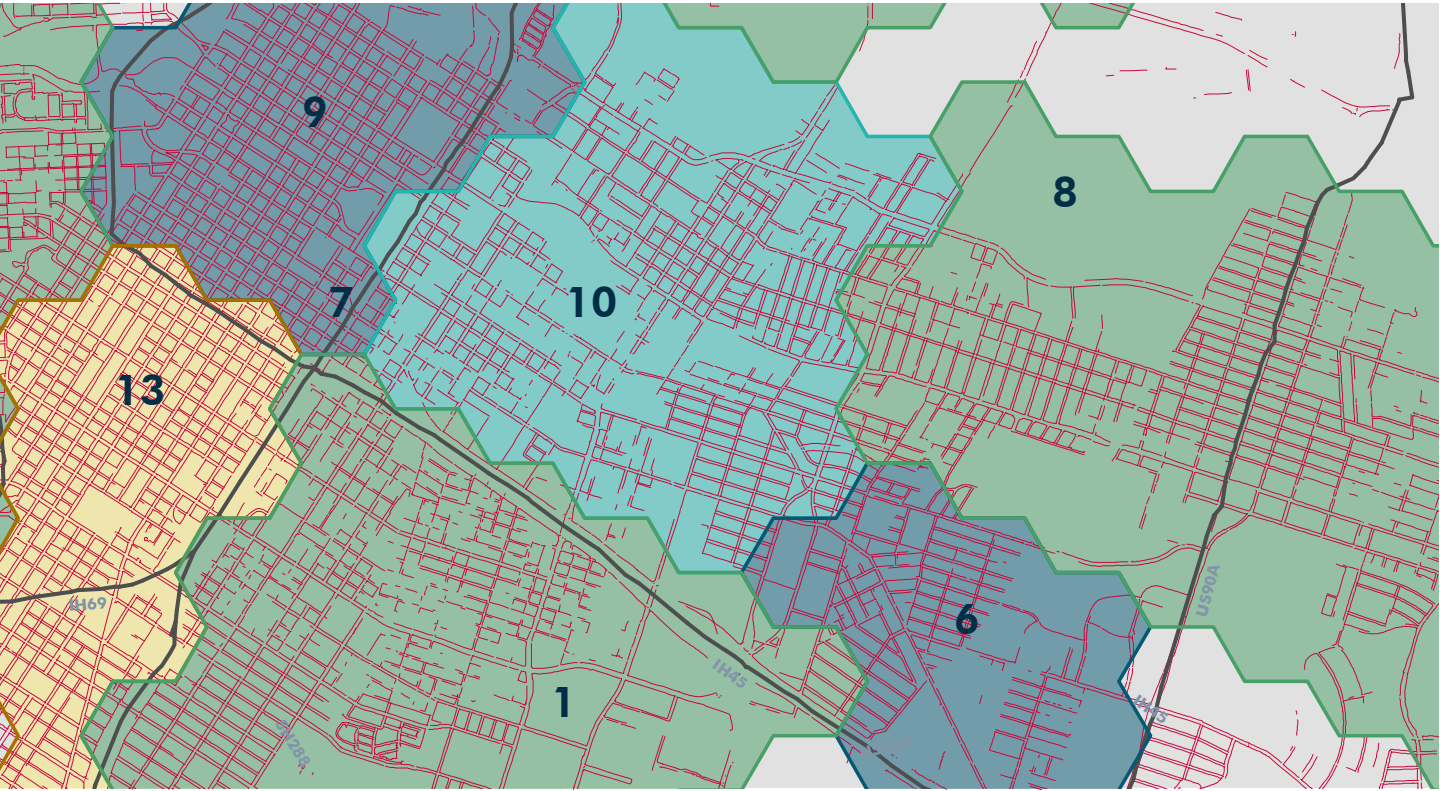
Pedestrian Focus Areas	Index	Cost to Complete Network
1 Third Ward	98	$14.1 million
2 Kashmere Gardens	98	$16.3 million
3 Near Northside (Quitman St)	97	$11.6 million
4 Old Spanish Trail/South Union	97	$21.5 million
5 Fifth Ward	96	$18.4 million
6 Eastwood	96	$5.9 million
7 Midtown/Museum District	96	$3.2 million
8 Second Ward & Magnolia Park	96	$13.4 million
9 Downtown	96	$7.0 million
10 East Downtown	96	$9.3 million
11 Upper Kirby & Rice Village	95	$3.1 million
12 Near Northside (Cavalcade St)	95	$8.4 million
13 Greater Montrose	95	$3.6 million
14 Texas Medical Center	94	$2.8 million
15 Greenway Plaza & Highland Village	94	$3.8 million
16 Greater Heights	94	$13.5 million

Table 26

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

CENTRAL HARRIS BIKEWAYS & BICYCLE FOCUS AREAS

Map 39

Legend:

- **Bicycle Focus Areas**
- **Bike Lane**
- **Shared Use Path-Trail**
- **Signed Shared Roadway**
- **Signed Shoulder Route**
- **Proposed Facility**
- **Roadway**

INSET 1 - CENTRAL HARRIS BICYCLE FOCUS AREAS
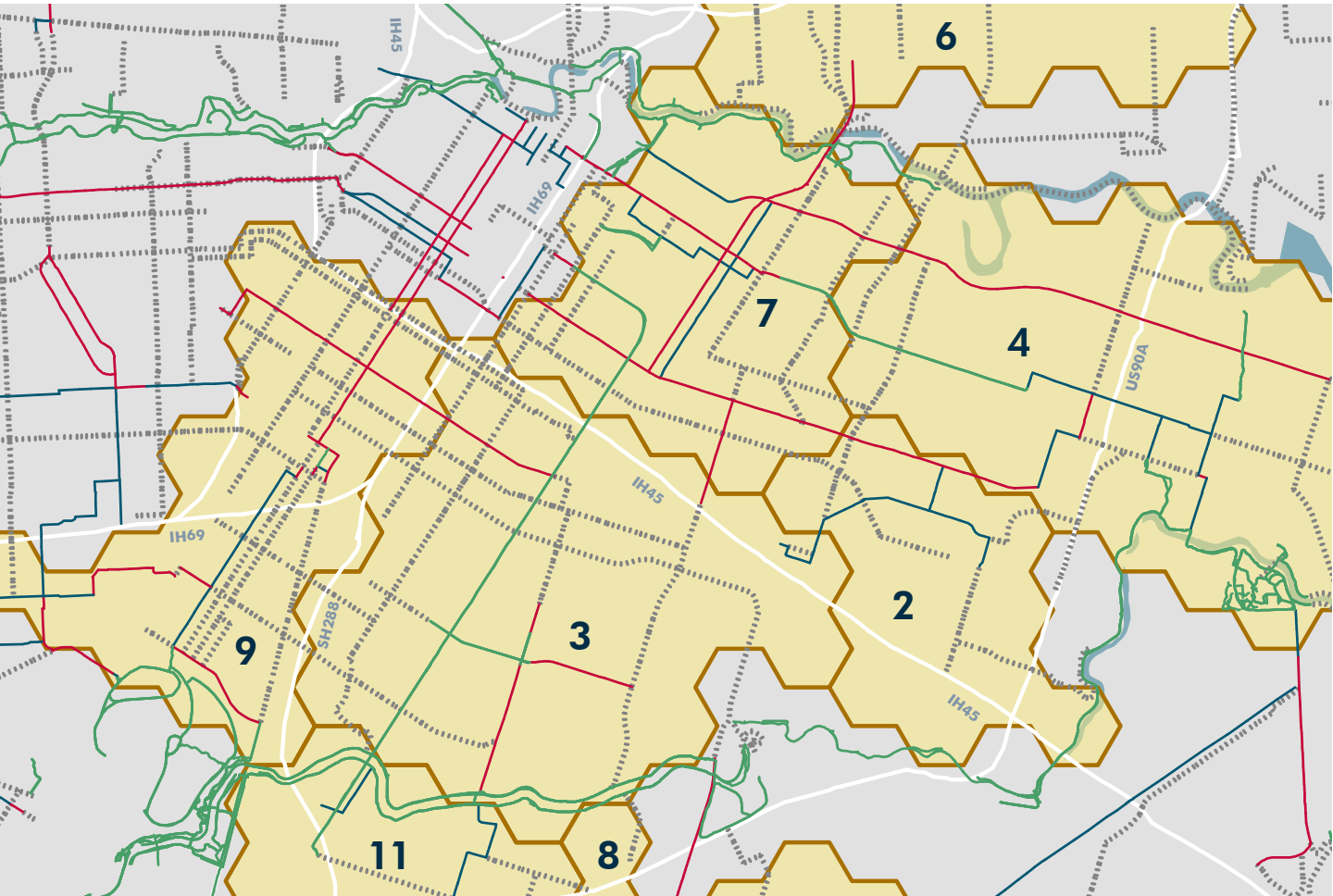
Bicycle Focus Areas		Index
1	Near Northside (Quitman St)	99
2	Eastwood	98
3	Third Ward	98
4	Second Ward and Magnolia Park	98
5	Kashmere Gardens	97
6	Fifth Ward	97
7	East Downtown	97
8	Griggs Rd at Cullen Blvd	97
9	Midtown/Museum District	96
10	Near Northside (Cavalcade St)	96
11	South Side (Scott St)	96

Table 27

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST

The 2,035 miles of the currently proposed bikeways in Harris County (see page 79) are estimated to cost $919 million to complete. This includes 235 miles of proposed bike lanes, 968 miles of proposed shared-use paths, 258 miles of proposed signed shared roadways, 3 miles of signed shoulder routes, and an additional 571 miles of bikeways with an undesignated facility type.

Note: This cost is for all of Harris County, not just the portion mapped here.

Some of Central Harris County's Bicycle Focus Areas lack a dense grid of proposed bikeways, particularly Kashmere Gardens, Fifth Ward, Eastwood, and Third Ward. Additional planning is necessary to identify bikeway improvements for these communities.

CENTRAL HARRIS EXISTING PLANS

Existing Plan	Plan Partners	Year
METRONext (in process)	METRO	2019
Houston Bike Plan	City of Houston	2017
Houston Active Living Plan	Houston Health Department	2017
Greenway Plaza Special Districts Study	H-GAC	2016
Kashmere Gardens Livable Centers Study	H-GAC, Near Northside Mgmt. Dist., City of Houston	2016
Museum Park Livable Centers Study	H-GAC, Museum Park Super Neighborhood, Houston Southeast, City of Houston	2016
5th Ward/Buffalo Bayou/East End Livable Centers Study	H-GAC, Buffalo Bayou Partnership, 5th Ward CRC, Greater East End District	2015
Parks Master Plan	Houston Parks and Recreation Department, Trust for Public Land, Rice University Center for Civic Leadership	2015
Bike and Ride Access and Implementation Plan	METRO	2014
Heights-Northside Mobility Study	City of Houston, H-GAC, METRO	2014
Northwest Mobility Study	City of Houston, H-GAC, METRO	2014
Washington Avenue Livable Centers Study	H-GAC, City of Houston, TIRZ 13, Better Houston	2013
Inner West Loop Mobility Study	City of Houston	2013
Independence Heights – Northline Livable Centers Study	H-GAC, Greater Northside Management District, Independence Heights Redevelopment Council, Northline Development	2012
East End Mobility Study	H-GAC, Greater East End District	2012
Texas Medical Center Mobility Study	City of Houston	2012
Fifth Ward Pedestrian and Bicyclist Study	H-GAC, 5th Ward Community Redevelopment Corporation	2011
Downtown/EaDo Livable Centers Study	H-GAC, Downtown District, East Downtown Management District	2011
Fourth Ward Livable Centers Study	H-GAC, Fourth Ward Redevelopment Authority, City of Houston	2010
Midtown Livable Centers Study	H-GAC, City of Houston, Midtown Mgmt. Dist.	2010
Northside Livable Centers Study	H-GAC, Greater Northside Mgmt. Dist.	2010
Upper Kirby Livable Centers Study	H-GAC, Upper Kirby District	2010
East End Livable Centers Study	H-GAC, Greater East End District	2009
Bayou Greenways 2020	Houston Parks Board	2007
Montrose Pedestrian & Bicycle Plan	H-GAC, City of Houston	2005
Pedestrian and Bicycle Special Districts Study Phase 2 - Third Ward Pilot Project	H-GAC, City of Houston	2004
Bike & Ride Access & Implementation Plan	METRO	2004

Table 28

CENTRAL HARRIS RECOMMENDATIONS

The recommendations listed here offer a set of ideas specific to central Harris County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Harris County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits – like those conducted by the City of Houston and FHWA in 2018 – to reveal potential design improvements at those locations.
2. Create a pedestrian and bicycle safety action plan for the City of Houston or at the county level.
3. Bring existing sidewalks into compliance with the Americans with Disabilities Act throughout central Harris County.
4. Fill the gaps in the sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map like portions of the East End, the Northside, Third Ward, Kashmere Gardens, and Independence Heights.
5. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists, and pedestrians.

ENSURE EQUITY

1. Build walkways and bikeways that connect focus areas to nearby job centers, particularly between environmental justice Census tracts and job centers in Downtown Houston, the Texas Medical Center, Greenway Plaza, Midtown, Third Ward, and Uptown.
2. Build walkways and bikeways that create first-mile/last-mile connections to METRO's high-frequency bus and rail stops.
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.
4. Identify specific strategies to improve walkway and bikeway connectivity in the county's environmental justice areas.

CENTRAL HARRIS RECOMMENDATIONS

CONNECT

1. Conduct neighborhood-level active transportation studies that build on the recommendations from the Houston Bike Plan and identify walkway improvements. Use these plans to creation connections between population centers, schools, job centers, and transit.
2. Revisit the studies completed more than five years ago to determine progress and revamp the recommendations.
3. Use the upcoming Livable Centers Studies in Eastwood and Montrose to identify active transportation improvements.
4. Build the active transportation recommendations in the Houston Bike Plan, Bayou Greenways 2020, the Parks Master Plan, METRO's Bike and Ride Access and Implementation Plan, and the several Livable Centers and mobility studies.
5. Continue to invest in the growing bikeway network in Houston.
6. Identify and build bikeway connections between the county's population centers and tourist destinations like Memorial Park, Hermann Park, the Museum District, the Astrodome/NRG Stadium, Montrose, Rice Village, Buffalo Bayou Park, the Heights, and others.

MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.
4. Maintain the existing networks of bikeways in the City of Houston.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

SOUTH/EAST HARRIS WALKWAYS & PEDESTRIAN FOCUS AREAS

Map 40

INSET 1 - PEDESTRIAN FOCUS AREAS
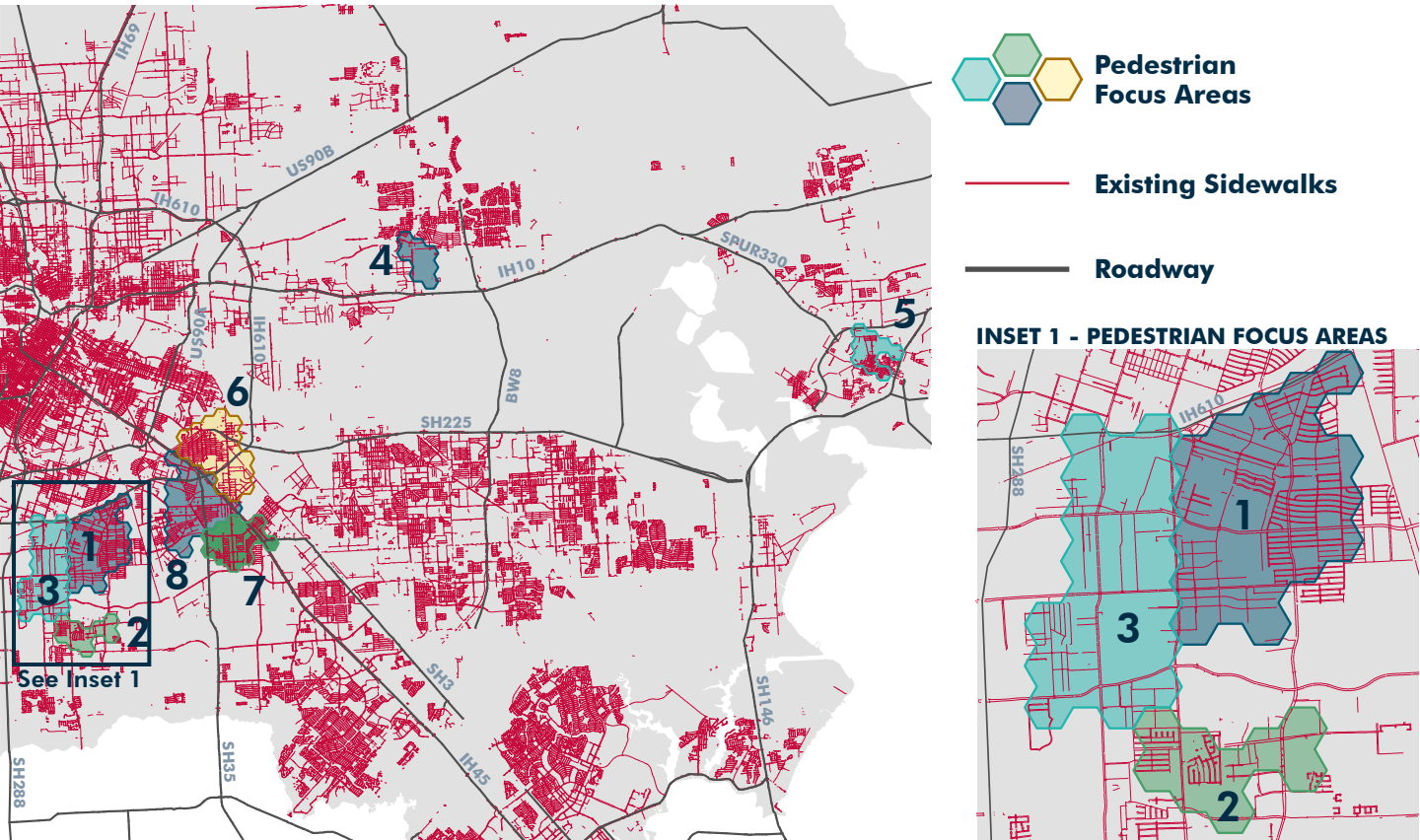
Pedestrian Focus Areas		Index	Cost to Complete Network
1	South Park	98	$14.6 million
2	Crestmont Park	98	$4.9 million
3	Sunnyside	98	$19.2 million
4	Cloverleaf	97	$8.3 million
5	Baytown	97	$9.1 million
6	Pecan Park & Park Place	97	$12.4 million
7	Hobby	96	$5.7 million
8	Golfcrest	96	$14.3 million

Table 29

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

SOUTH/EAST HARRIS BIKEWAYS & BICYCLE FOCUS AREAS

Map 41
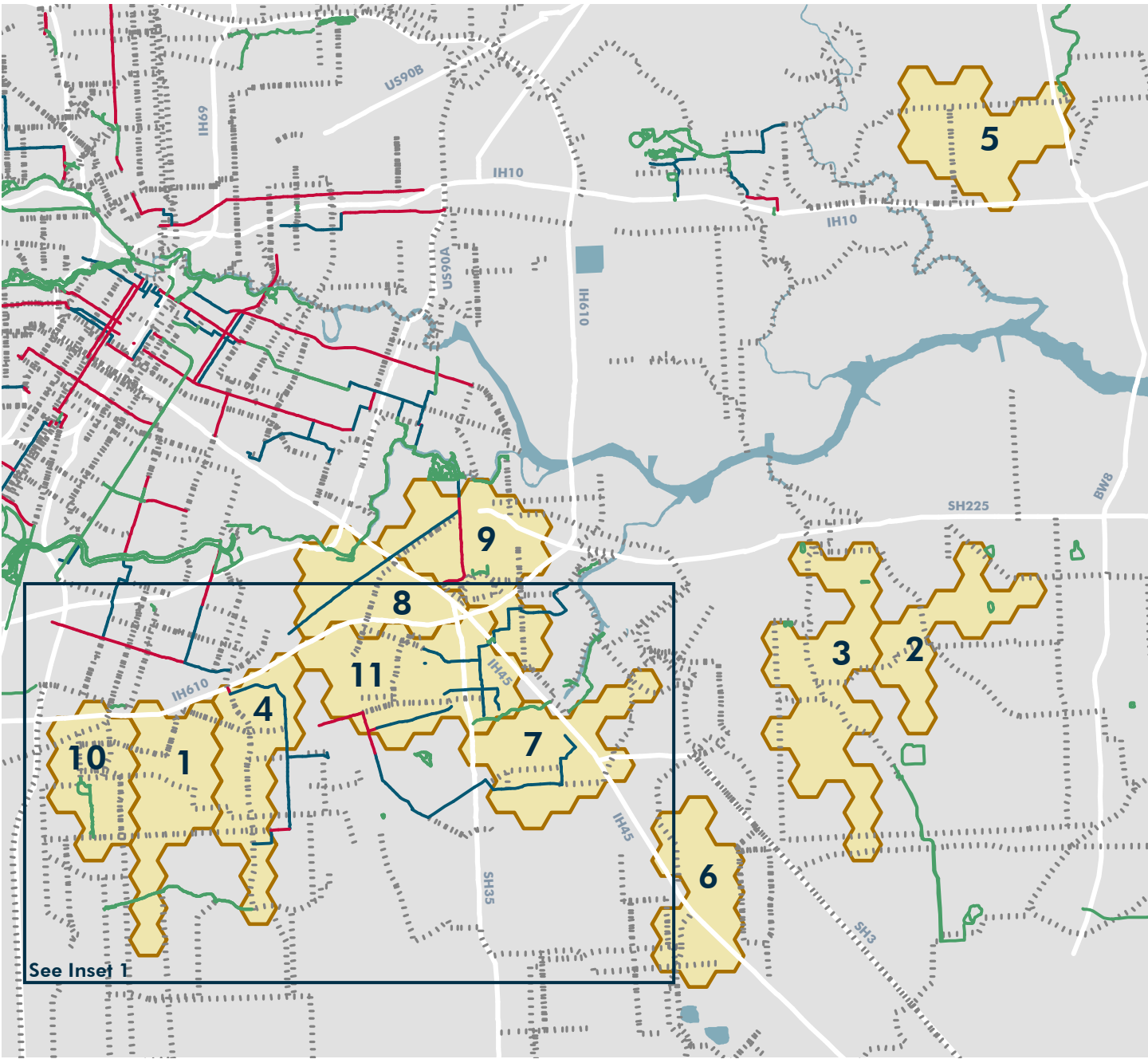
Legend

⬡ **Bicycle Focus Areas**

— **Bike Lane**

— **Shared Use Path-Trail**

— **Signed Shared Roadway**

— **Signed Shoulder Route**

- - - **Proposed Facility**

▬▬ **Roadway**

SOUTH/EAST HARRIS BIKEWAYS & BICYCLE FOCUS AREAS

INSET 1 - CENTRAL HARRIS BICYCLE FOCUS AREAS
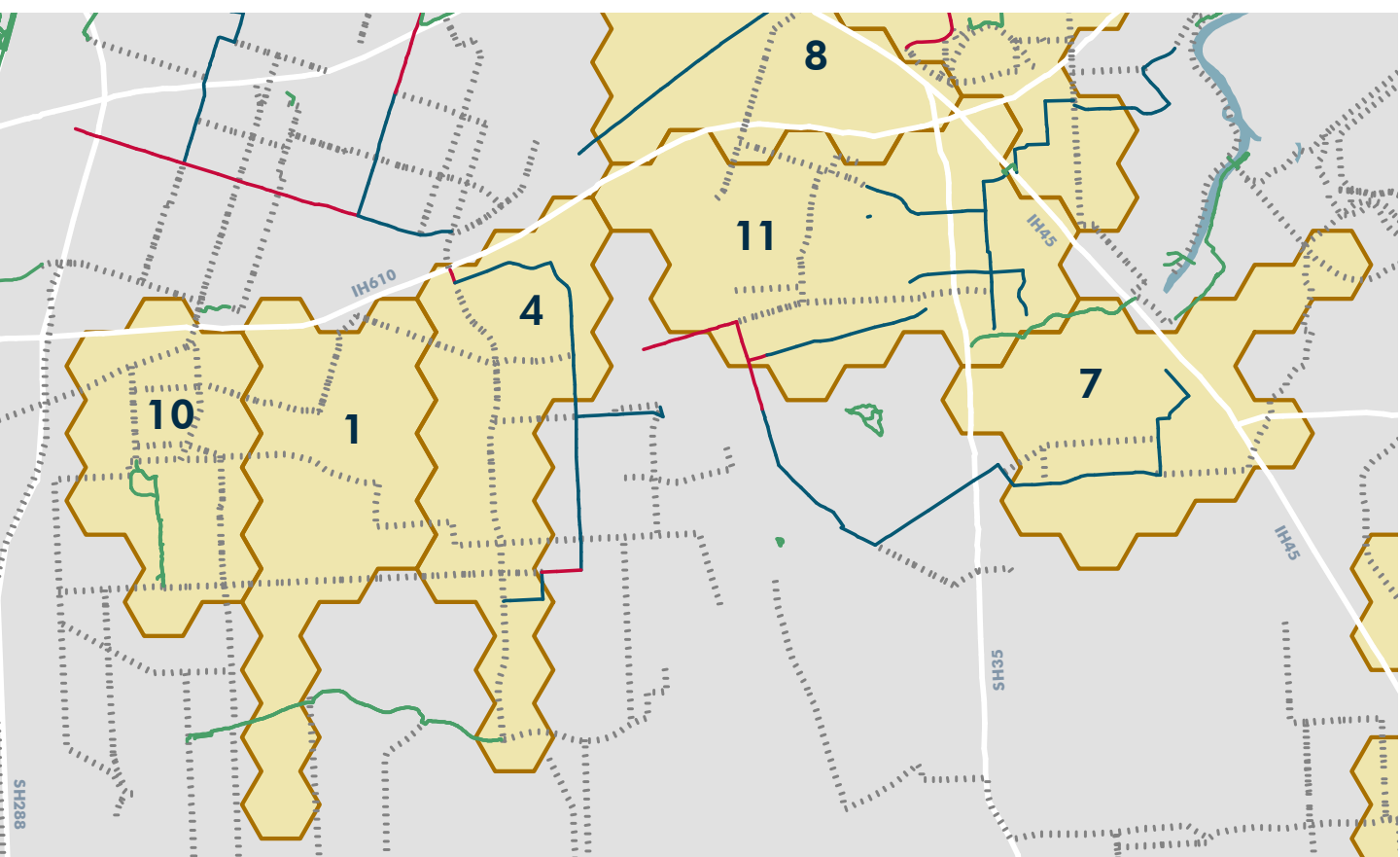
Bicycle Focus Areas		Index
1	Sunnyside (Cullen Blvd)	99
2	Southmore Ave and Pasadena Blvd	98
3	Vince Bayou at Southmore Ave	98
4	South Park (MLK Blvd)	98
5	Cloverleaf	98
6	Edgebrook	97
7	Hobby	97
8	Gulfgate	97
9	Pecan Park and Park Place	97
10	Sunnyside (Scott St)	96
11	Golfcrest	96

Table 30

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST

The 2,035 miles of the currently proposed bikeways in Harris County (see page 79) are estimated to cost $919 million to complete. This includes 235 miles of proposed bike lanes, 968 miles of proposed shared-use paths, 258 miles of proposed signed shared roadways, 3 miles of signed shoulder routes, and an additional 571 miles of bikeways with an undesignated facility type.

Note: This cost is for all of Harris County, not just the portion mapped here.

Many of South/East Harris County's Bicycle Focus Areas lack a dense grid of proposed bikeways, particularly Sunnyside, South Park, the Hobby area, and Cloverleaf. Additional planning is necessary to identify bikeway improvements for these communities.

SOUTH/EAST HARRIS PLANS & RECOMMENDATIONS

Existing Plan	Plan Partners	Year
METRONext (in process)	METRO	2019
Bicycle-Pedestrian Trail Master Plan	City of La Porte	N/A
Houston Bike Plan	City of Houston	2017
Houston Active Living Plan	Houston Health Department	2017
Hobby Area Livable Centers Study	H-GAC, Hobby District	2017
5th Ward/Buffalo Bayou/East End Livable Centers Study	H-GAC, Buffalo Bayou Partnership, 5th Ward Community Redevelopment Corporation, Greater East End District	2015
Parks Master Plan	Houston Parks and Recreation Department, Trust for Public Land, Rice University Center for Civic Leadership	2015
Bike and Ride Access and Implementation Plan	METRO	2014
NASA Area Livable Centers Study	H-GAC, NASA Area Management District, City of Nassau Bay	2012
East End Mobility Study	H-GAC, Greater East End District	2012
Texas Medical Center Mobility Study	City of Houston	2012
Clear Lake Pedestrian and Bicyclist Study	H-GAC, City of Houston	2011
Playbook 2020	City of Baytown	2010
East End Livable Centers Study	H-GAC, Greater East End District	2009
Bayou Greenways 2020	Houston Parks Board	2007
Bike & Ride Access & Implementation Plan	METRO	2004
Parks & Trails Master Plan	Greens Bayou Coalition	-

Table 31

The recommendations listed here offer a set of ideas specific to South/East Harris County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Harris County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits – like those conducted by the City of Houston and FHWA in 2018 – to reveal potential design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans at the city or county level, particularly in areas with a high need based on Focus Area criteria in Houston, Pasadena, Baytown, Cloverleaf, and South Houston.
3. Bring sidewalks into compliance with the Americans with Disabilities Act, particularly in places with an existing sidewalk network like South Park, Hobby, and Pecan Park & Park Place.
4. Fill the gaps in the county's sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map like Baytown, Cloverleaf, Sunnyside, and Crestmont Park.
5. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists, and pedestrians.

SOUTH/EAST HARRIS PLANS & RECOMMENDATIONS

ENSURE EQUITY

1. Build walkways and bikeways that residents to nearby job centers, particularly in areas with high need according to the Focus Area analysis in Pasadena, Baytown, along SH 225, the NASA area, near Hobby Airport, near Gulfgate, and along IH 45.
2. Build walkways and bikeways that create first-mile/last-mile connections to transit stops in the county, including:
   • Connections to METRO's high-frequency bus and rail stops in Houston.
   • Connections to Harris County Transit stops in Baytown.
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.
4. Identify specific strategies to improve walkway and bikeway connectivity in the county's environmental justice areas.

CONNECT

1. Conduct local active transportation studies in areas that lack a plan, and in areas that demonstrate a high need based on the Focus Area analysis. Use these plans to guide investment in walkways and bikeways that connect population centers, schools, job centers, and transit.
2. Revisit the studies completed more than five years ago to determine progress and revamp the recommendations.
3. Use the upcoming Livable Centers Studies in Pasadena and Seabrook to identify active transportation improvements.
4. Build the active transportation recommendations in the Houston Bike Plan, Bayou Greenways 2020, the Pasadena Bicycle Transportation Action Plan, the Livable Centers Studies in the Hobby Area and 5th Ward/East End, and METRO's Bike and Ride Access and Implementation Plan.
5. Continue to invest in the growing bikeway network in Houston.
6. Identify and build bikeway connections between the county's population centers and tourist destinations like Port Houston, Lake Houston, Battleship Texas/San Jacinto Monument, Sylvan Beach Park, Mason Park, and the Johnson Space Center.

MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.
4. Maintain the existing networks of bikeways in the City of Houston.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to incentivize workers to walk, bike, or roll to commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

NORTH HARRIS WALKWAYS & PEDESTRIAN FOCUS AREAS

Map 42

Pedestrian Focus Areas ▬ **Existing Sidewalks** ▬ **Roadway**
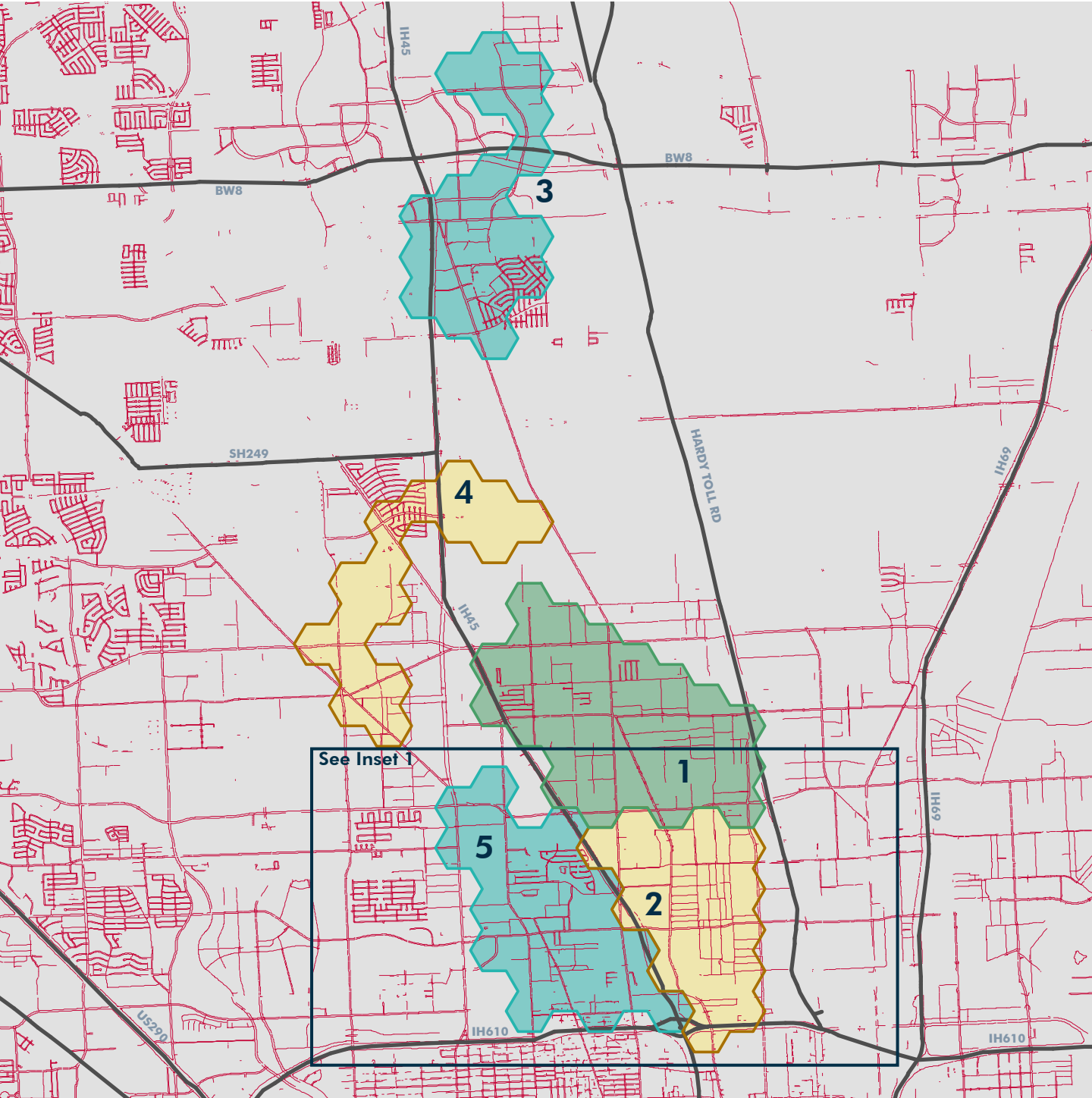
NORTH HARRIS WALKWAYS & PEDESTRIAN FOCUS AREAS

INSET 1 - PEDESTRIAN FOCUS AREAS
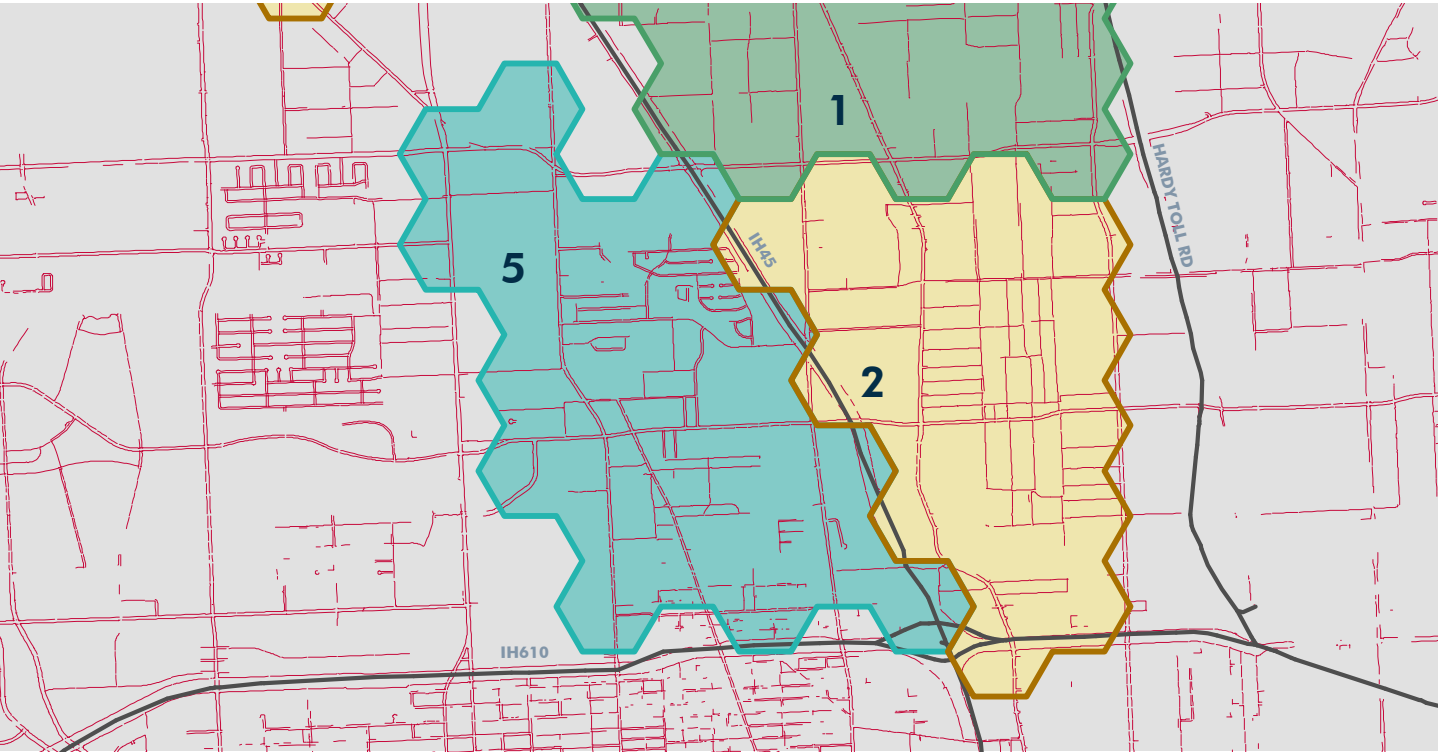
Pedestrian Focus Areas		Index	Cost to Complete Network
1	Northline (Parker Rd)	97	$20.7 million
2	Northline (Commons)	97	$11.5 million
3	Greenspoint	97	$6.0 million
4	Acres Home at Gulf Bank	97	$13.7 million
5	Independence Heights	96	$15.2 million

Table 32

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

NORTH HARRIS WALKWAYS & PEDESTRIAN FOCUS AREAS

Map 43

Bicycle Focus Areas Legend

- **Bicycle Focus Areas**
- **Bike Lane**
- **Shared Use Path-Trail**
- **Signed Shared Roadway**
- **Signed Shoulder Route**
- **Proposed Facility**
- **Roadway**

NORTH HARRIS WALKWAYS & PEDESTRIAN FOCUS AREAS

INSET 1 - GREENSPOINT BICYCLE FOCUS AREA
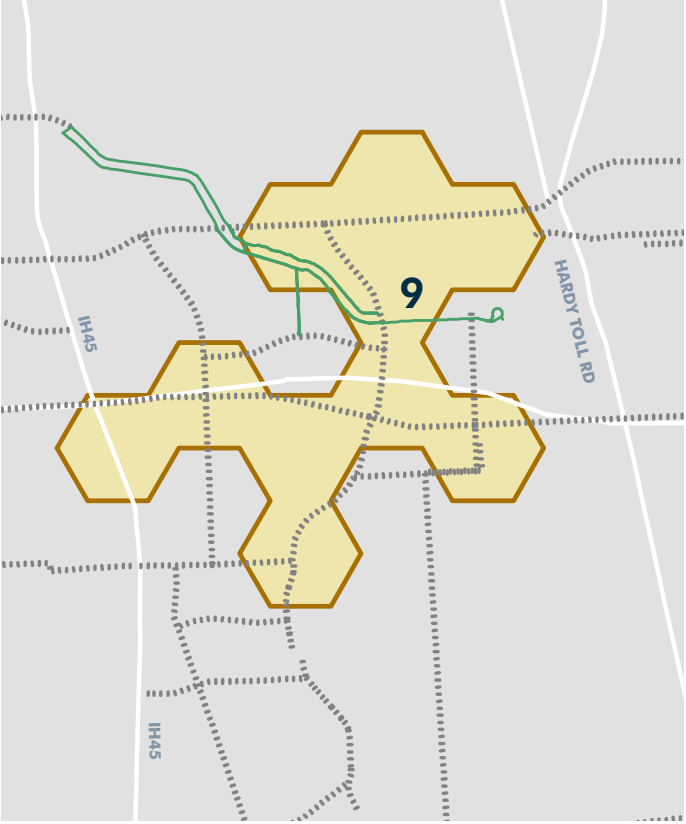
INSET 2 - ACRES HOME BICYCLE FOCUS AREAS

Bicycle Focus Areas
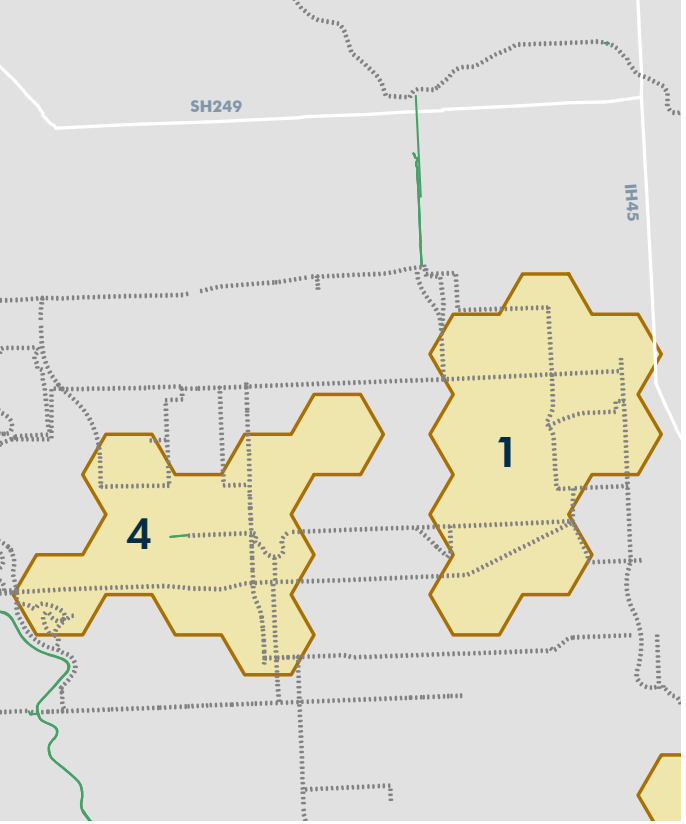
	Bicycle Focus Areas	Index
1	Acres Home (East)	99
2	Crosstimbers St and Lockwood Dr	98
3	Halls Bayou at Little York Rd	98
4	Acres Home (West)	98
5	Northline (Commons)	97
6	Trinity Gardens	97
7	Aldine Westfield Rd at Jensen Dr	97
8	Northline (Parker Rd)	97
9	Greenspoint	97
10	Independence Heights	97

Table 33

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST

The 2,035 miles of the currently proposed bikeways in Harris County (see page 79) are estimated to cost $919 million to complete. This includes 235 miles of proposed bike lanes, 968 miles of proposed shared-use paths, 258 miles of proposed signed shared roadways, 3 miles of signed shoulder routes, and an additional 571 miles of bikeways with an undesignated facility type.

Note: This cost is for all of Harris County, not just the portion mapped here.

Many of North Harris County's Bicycle Focus Areas lack a dense grid of proposed bikeways, particularly Northline, Halls Bayou at Little York, and the Focus Areas in Acres Home. Additional planning is necessary to identify bikeway improvements for these communities.

Existing Plan	Plan Partners	Year
North Houston Livable Centers Study (in process)	H-GAC, North Houston District	2019
METRONext (in process)	METRO	2019
Houston Bike Plan	City of Houston	2017
Houston Active Living Plan	Houston Health Department	2017
Parks Master Plan	Houston Parks and Recreation Department, Trust for Public Land, Rice University Center for Civic Leadership	2015
Bike and Ride Access and Implementation Plan	METRO	2014
Cypress Creek Parkway Livable Centers Study	H-GAC, Ponderosa Forest Utility District, Houston Northwest Chamber of Commerce, Cypress Creek Parkway Property Owner's Association	2014
Heights-Northside Mobility Study	City of Houston, H-GAC, METRO	2014
Northwest Mobility Study	City of Houston, H-GAC, METRO	2014
Airline Livable Centers Study	H-GAC, Airline Improvement District, Harris County	2012
Near Northwest Livable Centers Study	H-GAC, Near Northwest Management District	2012
Airline Improvement District Pedestrian and Bicyclist Special District Study	H-GAC, Airline Improvement District	2009
City of Tomball Livable Centers Study	H-GAC, City of Tomball	2009
Bayou Greenways 2020	Houston Parks Board	2007
Bike & Ride Access & Implementation Plan	METRO	2004

Table 34

The recommendations listed here offer a set of ideas specific to north Harris County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Harris County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits – like those conducted by the City of Houston and FHWA in 2018 – to reveal potential design improvements at those locations.
2. Create pedestrian and bicycle safety action plans at the city or county level.
3. Bring existing sidewalks into ADA compliance.
4. Fill the gaps in the sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map.
5. Build high-comfort bikeways on roads with a history of bicycle crashes.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists and pedestrians.

ENSURE EQUITY

1. Build walkways and bikeways that residents to nearby job centers, particularly in areas with high need according to the Focus Area analysis like Greenspoint, Bush Intercontinental Airport, along FM 1960, and in Humble.
2. Build walkways and bikeways that create first-mile/last-mile connections to METRO's high-frequency bus and rail stops.
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.
4. Identify specific strategies to improve walkway and bikeway connectivity in the county's environmental justice areas.

CONNECT

1. Conduct neighborhood-level active transportation studies in the places that do not currently have one. Use these plans to guide investment in walkways and bikeways that connect population centers, schools, job centers, and transit.
2. Revisit the studies completed more than five years ago to determine progress and revamp the recommendations.
3. Use the current North Houston Livable Centers Study to identify active transportation improvements.
4. Use the upcoming East Aldine Livable Centers Study to identify active transportation improvements.
5. Build the active transportation recommendations in the Houston Bike Plan, Bayou Greenways 2020, METRO's Bike and Ride Access and Implementation Plan, and the several Livable Centers and mobility studies in the area.
6. Continue to invest in the growing bikeway network in Houston.
7. Identify and build bikeway connections between the county's population centers and tourist destinations like Old Town Spring, Meyer Park, Burroughs Park, and the Mercer Botanic Gardens.

MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.
4. Maintain the existing networks of bikeways in the City of Houston.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

Pedestrian Focus Areas

——— Existing Sidewalks ——— Roadway
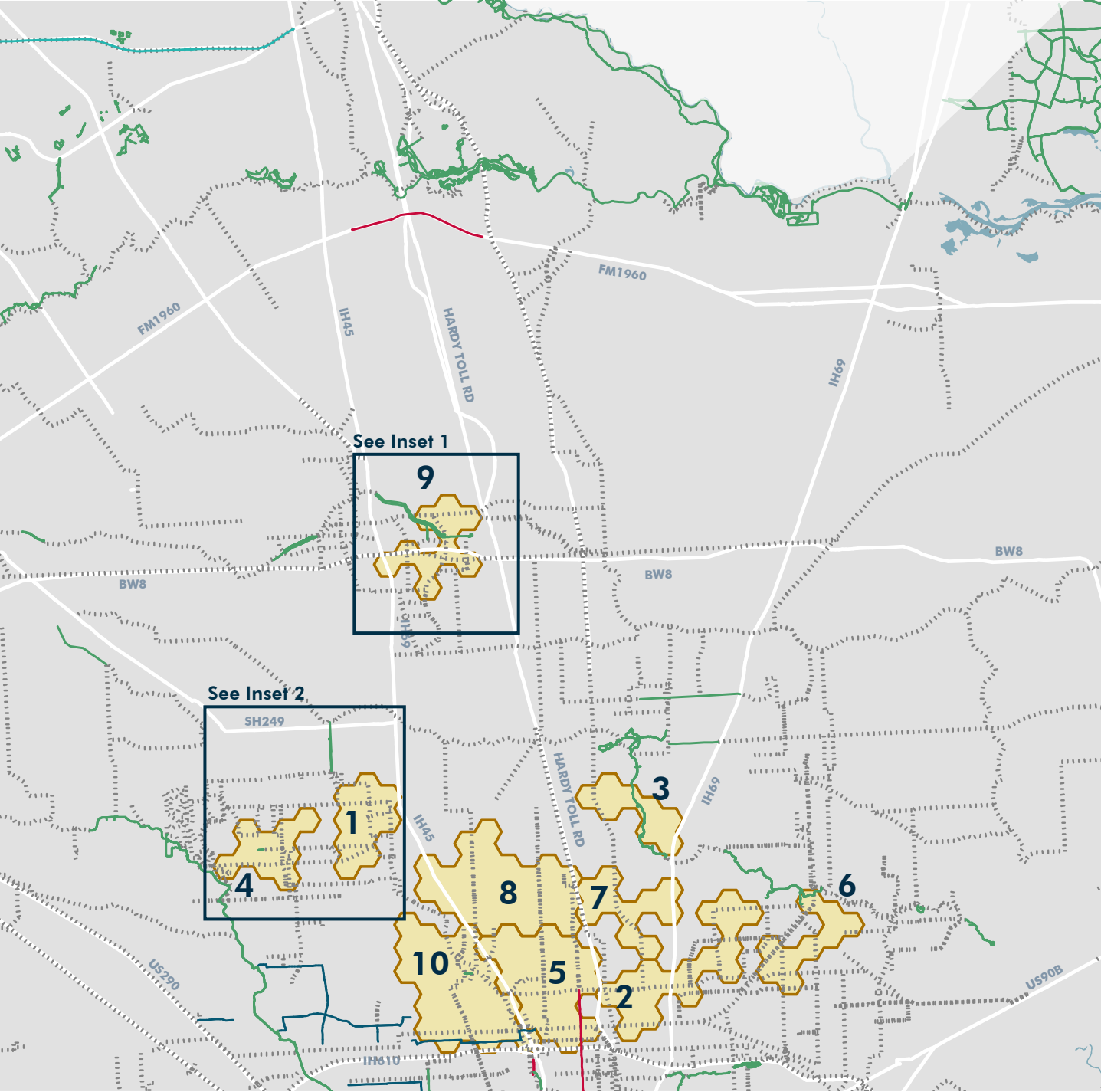
INSET 1 - PEDESTRIAN FOCUS AREAS

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

	Pedestrian Focus Areas	Index	Cost to Complete Network
1	Gulfton	98	$5.6 million
2	Buffalo Speedway SW	97	$1.8 million
3	Alief (East)	97	$5.2 million
4	Southwest (Fondren Rd)	97	$2.3 million
5	Spring Branch	97	$13.8 million
6	Alief (West)	96	$4.5 million
7	Uptown (Richmond Ave)	96	$7.2 million
8	Chinatown	96	$6.4 million
9	Beechnut St at Bissonnet St	95	$7.7 million
10	Bellaire	95	$6.8 million
11	Sharpstown	91	$4.5 million

Table 35

WEST HARRIS BIKEWAYS & BICYCLE FOCUS AREAS
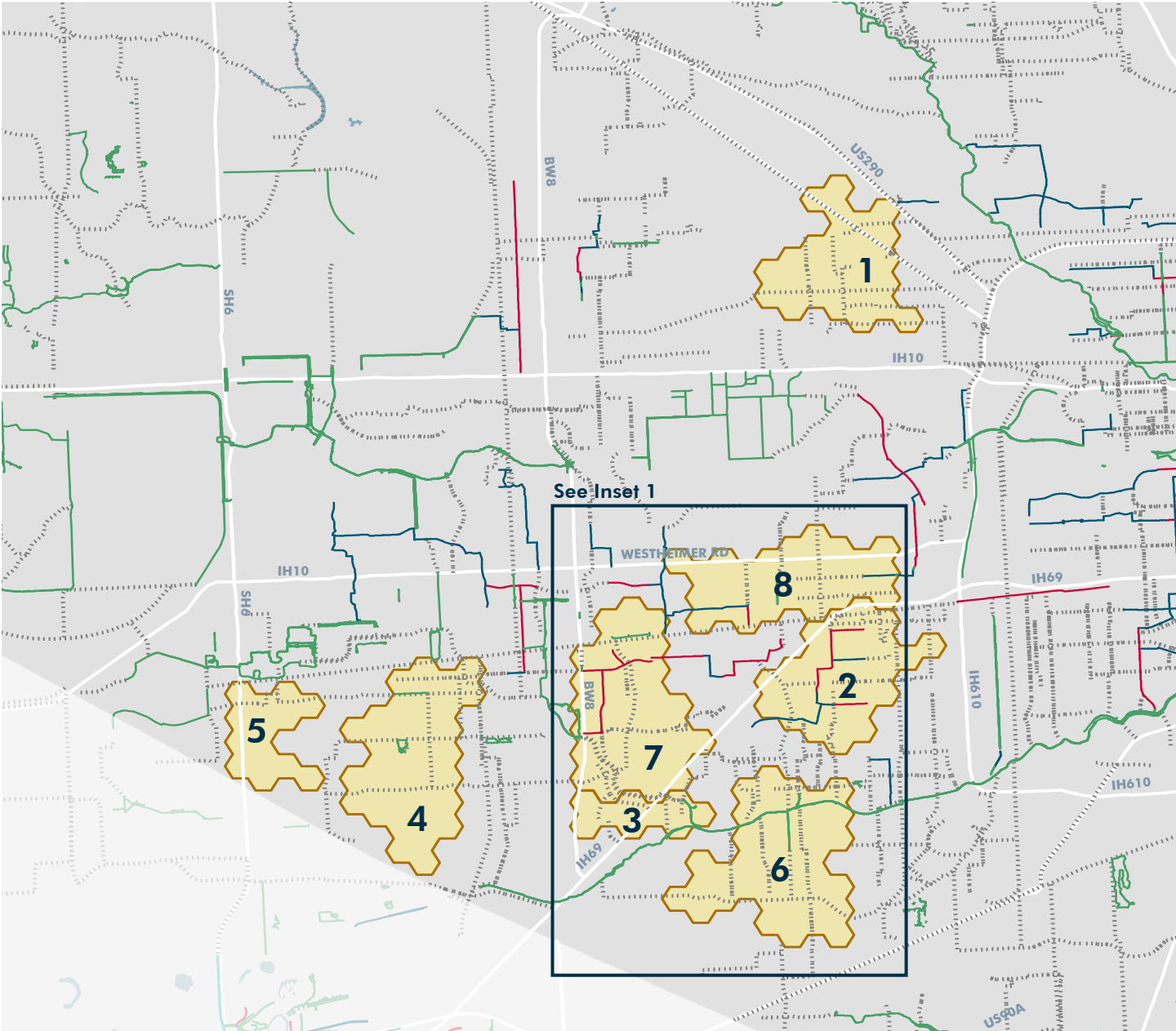
Legend:

⬡ Bicycle Focus Areas

— Bike Lane

— Shared Use Path-Trail

— Signed Shared Roadway

— Signed Shoulder Route

- - - Proposed Facility

═══ Roadway

WEST HARRIS BIKEWAYS & BICYCLE FOCUS AREAS

INSET 1 - BICYCLE FOCUS AREAS
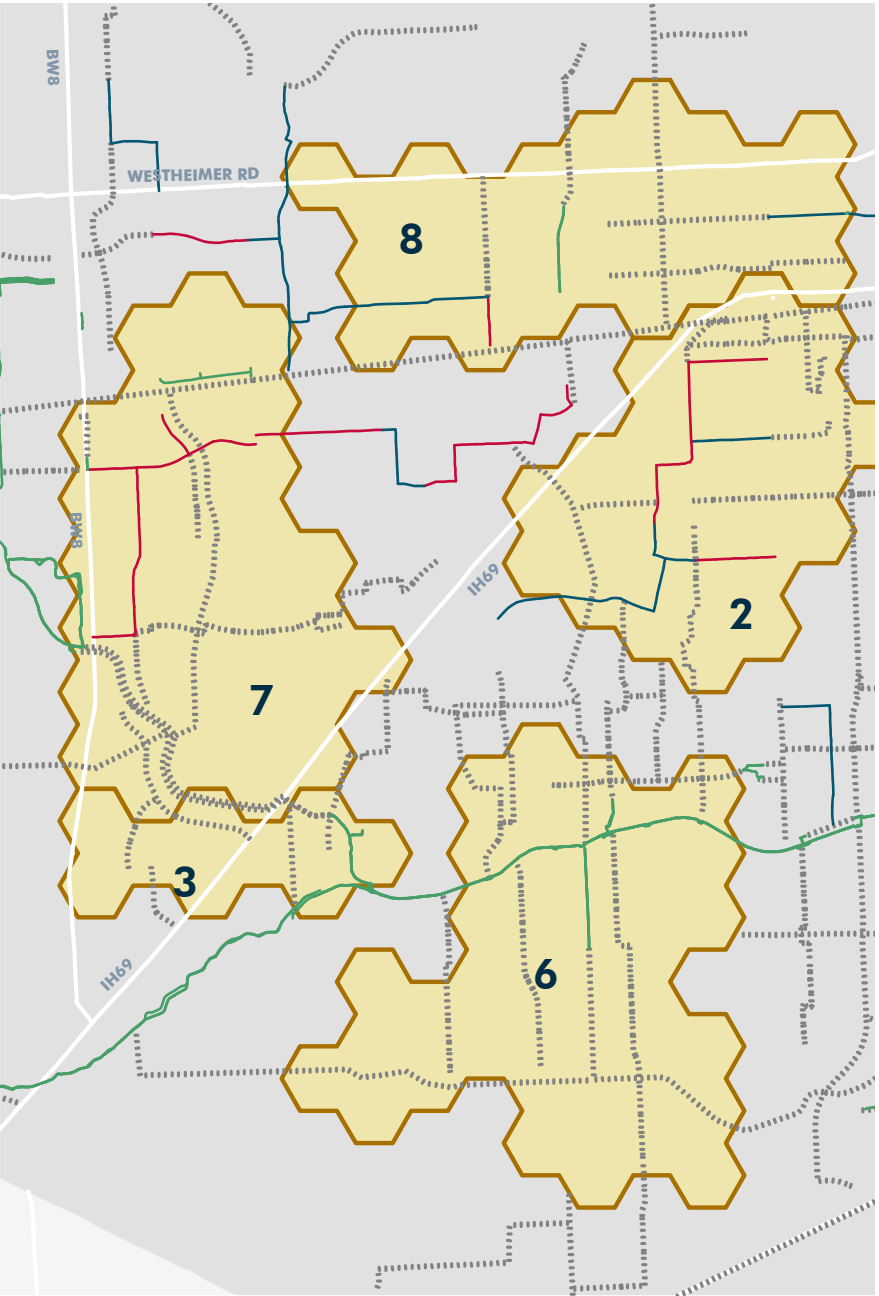
Bicycle Focus Areas   Index

1	Spring Branch	97
2	Gulfton	97
3	Bissonnet St at BW8	97
4	Alief (West)	97
5	Westpark Tollway at SH6	96
6	Southwest (Fondren Rd)	96
7	Chinatown	96
8	Uptown (Richmond Ave)	96

Table 36

COST

The 2,035 miles of the currently proposed bikeways in Harris County (see page 79) are estimated to cost $919 million to complete. This includes 235 miles of proposed bike lanes, 968 miles of proposed shared-use paths, 258 miles of proposed signed shared roadways, 3 miles of signed shoulder routes, and an additional 571 miles of bikeways with an undesignated facility type. Note: This cost is for all of Harris County, not just the portion mapped here.

Many of West Harris County's Bicycle Focus Areas lack a dense grid of proposed bikeways, particularly Uptown, Spring Branch, Gulfton, and Fondren. Additional planning is necessary to identify bikeway improvements for these communities.

Existing Plan	Plan Partners	Year
Spring Branch Trail Study (in process)	H-GAC, Spring Branch Management District	2019
International District Livable Centers Study (in process)	H-GAC, International Management District	2019
METRONext (in process)	METRO	2019
Spring Branch Livable Centers Study	H-GAC, Spring Branch Management District, City of Houston	2018
Westchase Livable Centers Study	H-GAC, Westchase District, City of Houston	2018
Houston Bike Plan	City of Houston	2017
Houston Active Living Plan	Houston Health Department	2017
Ped/Bike Plan	Westchase District	2016
West Houston Mobility Plan	H-GAC, City of Houston, Energy Corridor District, Memorial Management District, Westchase Management District	2015
Parks Master Plan	Houston Parks and Recreation Department, Trust for Public Land, Rice University Center for Civic Leadership	2015
Bike and Ride Access and Implementation Plan	METRO	2014
Northwest Mobility Study	City of Houston, H-GAC, METRO	2014
West Houston Mobility Plan	City of Houston	2011
Energy Corridor Livable Centers Study	H-GAC, Energy Corridor District	2011
Bicycle Master Plan	Energy Corridor District	2010
Bayou Greenways 2020	Houston Parks Board	2007
Gulfton Pedestrian & Bicyclist Special District Study	H-GAC, City of Houston	2005
Bike & Ride Access & Implementation Plan	METRO	2004

Table 37

The recommendations listed here offer a set of ideas specific to west Harris County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Harris County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits – like those conducted by the City of Houston and FHWA in 2018 – to reveal potential design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans at the city or county level.
3. Bring sidewalks into compliance with the Americans with Disabilities Act where they currently exist.
4. Fill the gaps in the sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map.
5. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists and pedestrians.

ENSURE EQUITY

1. Build walkways and bikeways that connect residents to nearby job centers like Uptown, the Energy Corridor, Westchase, and along the SH 290 and US 59 corridors, particularly to areas with high need according to the Focus Area analysis.
2. Build walkways and bikeways that create first-mile/last-mile connections to METRO's high-frequency bus and rail stops.
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.
4. Identify specific strategies to improve walkway and bikeway connectivity in the county's environmental justice areas.

CONNECT

1. Conduct neighborhood-level active transportation studies in the places that do not currently have one. Use these plans to guide investment in walkways and bikeways that connect population centers, schools, job centers, and transit.
2. Revisit the studies completed more than five years ago to determine progress and revamp the recommendations.
3. Use the upcoming Brays Oaks Livable Centers Study to identify active transportation improvements.
4. Use the upcoming Southwest Houston Livable Centers Study to identify active transportation improvements.
5. Build the active transportation recommendations in the Houston Bike Plan, Bayou Greenways 2020, METRO's Bike and Ride Access and Implementation Plan, and the several Livable Centers and mobility studies in the area.
6. Continue to invest in the growing bikeway network in Houston.
7. Identify and build bikeway connections between the county's population centers and tourist destinations like the Galleria, George Bush Park, Cullen Park, Terry Hershey Park, and Katy.
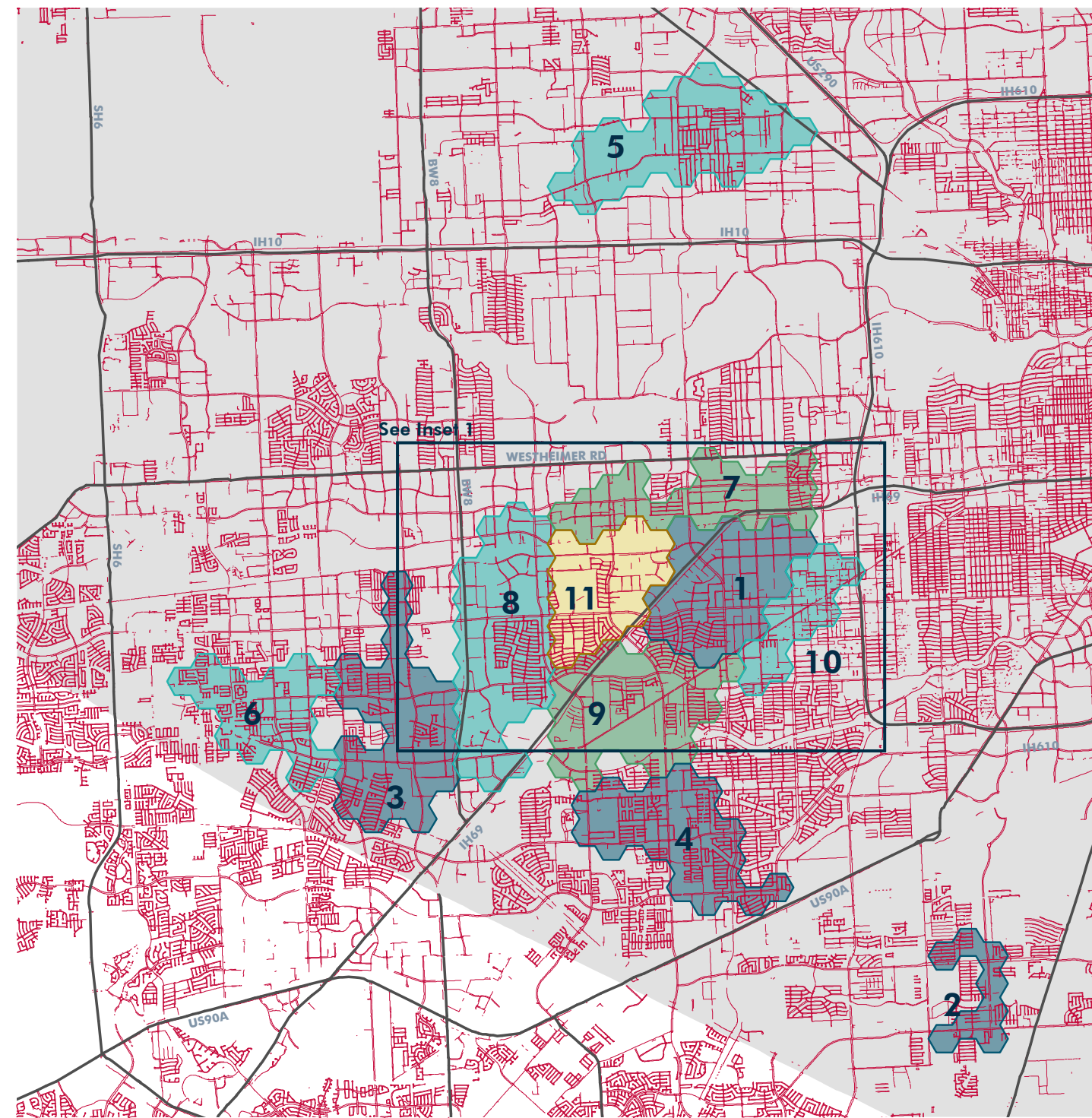
MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.
4. Maintain the existing networks of bikeways in the City of Houston.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll to work.
4. Obtain Walk Friendly and Bike Friendly community designations.

LIBERTY WALKWAYS & PEDESTRIAN FOCUS AREAS

Map 46
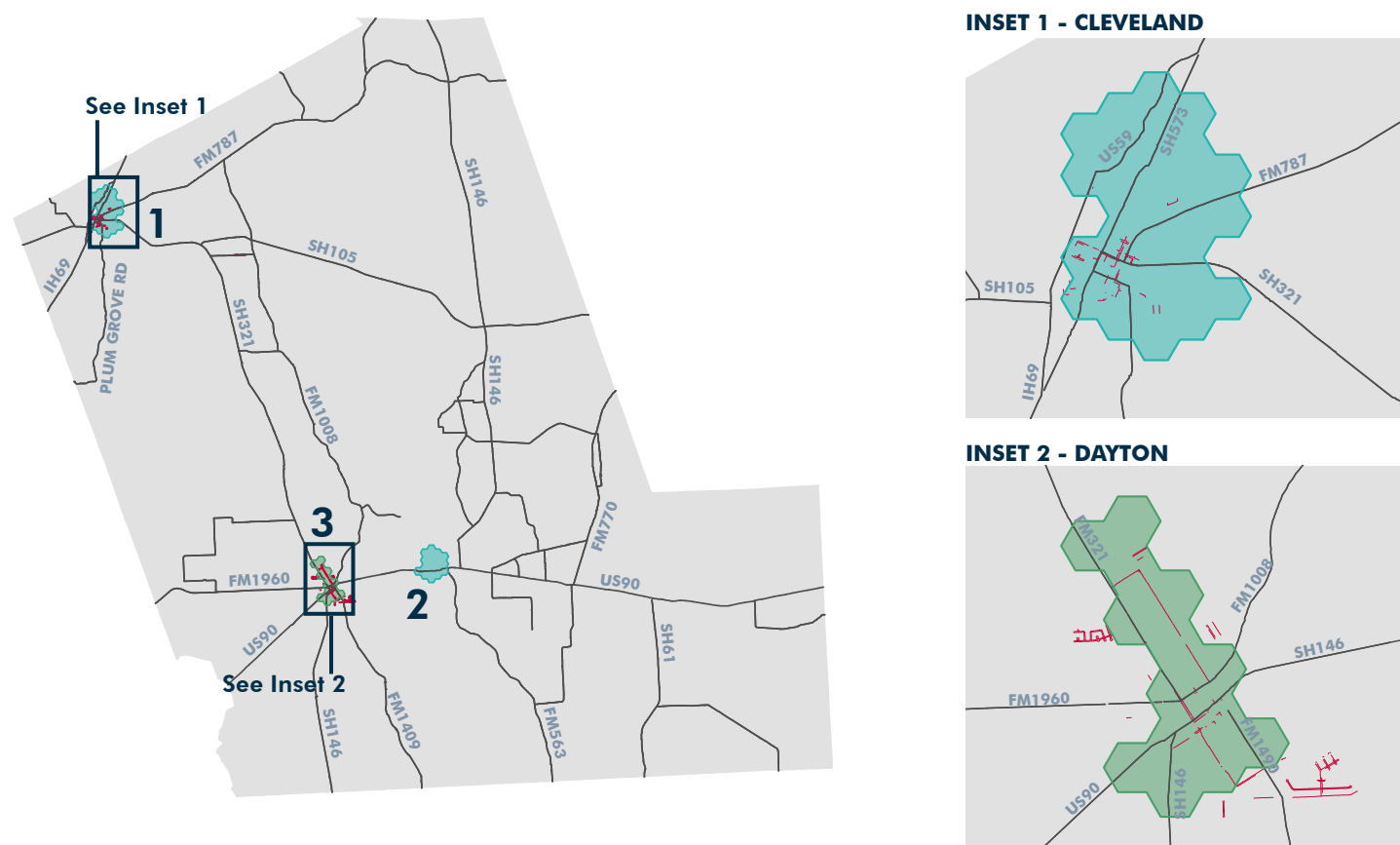
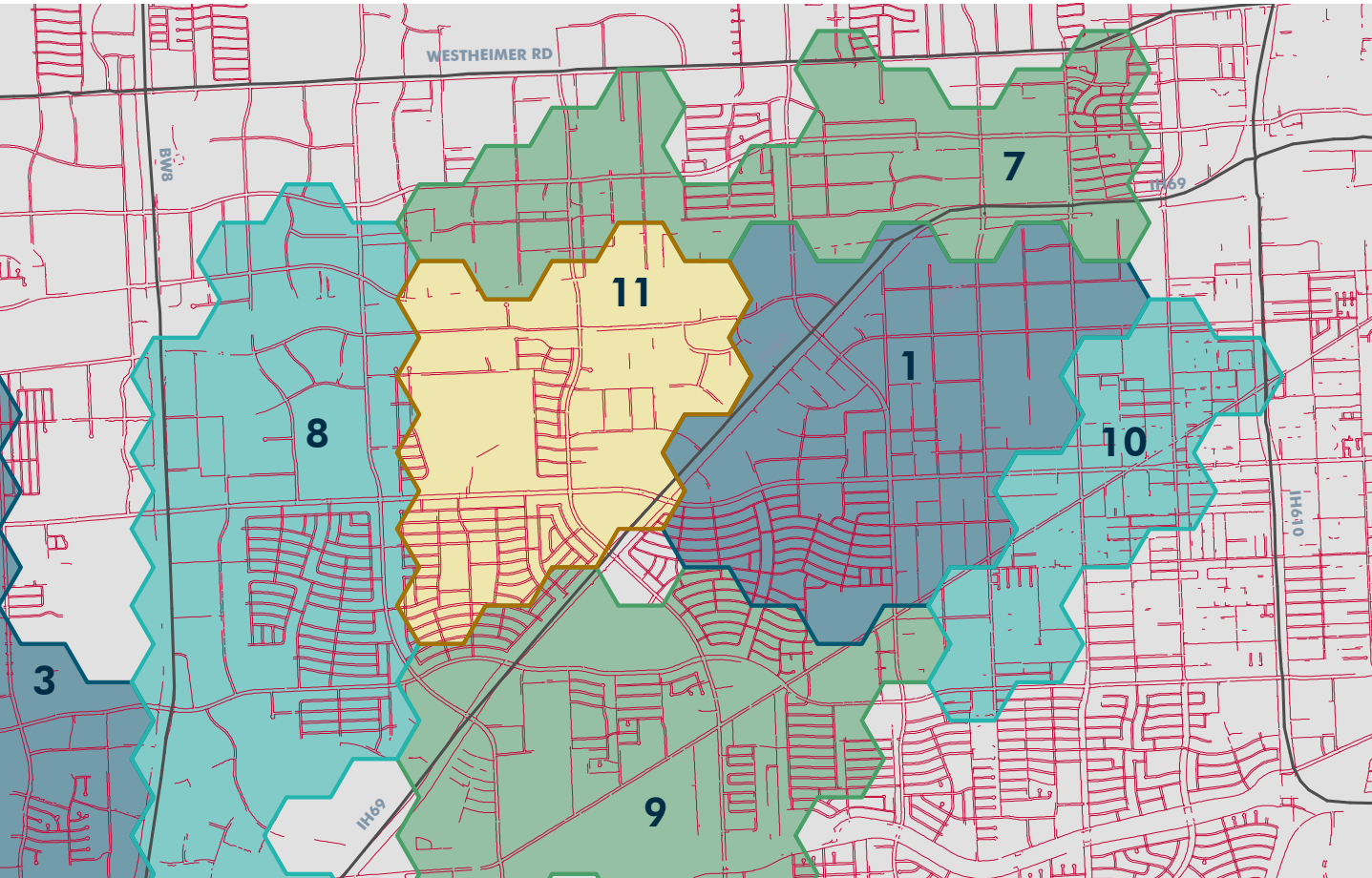**INSET 1 - CLEVELAND**

INSET 2 - DAYTON

⬡ **Pedestrian Focus Areas**   ── **Existing Sidewalks**   ── **Roadway**

Pedestrian Focus Areas	Index	Cost to Complete Network
1 Cleveland	80	$25.8 million
2 Liberty	78	$14.3 million
3 Dayton	77	$9.3 million

Table 38

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

LIBERTY BIKEWAYS & BICYCLE FOCUS AREAS

Map 47
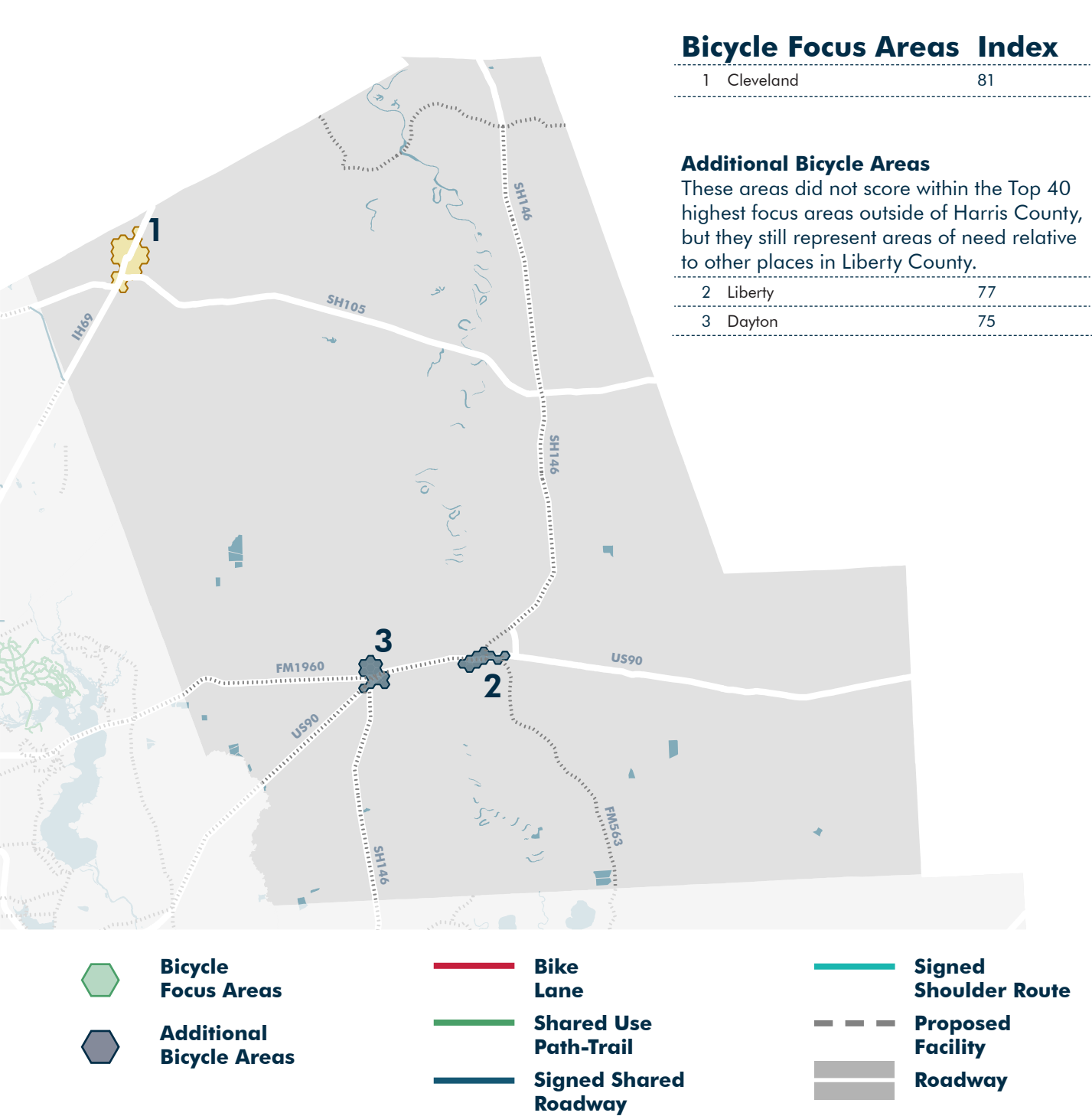
Bicycle Focus Areas Index

1 Cleveland		81

Additional Bicycle Areas
These areas did not score within the Top 40 highest focus areas outside of Harris County, but they still represent areas of need relative to other places in Liberty County.

2 Liberty		77
3 Dayton		75

⬡ **Bicycle Focus Areas**   ── **Bike Lane**   ── **Signed Shoulder Route**

⬡ **Additional Bicycle Areas**   ── **Shared Use Path-Trail**   - - - **Proposed Facility**

── **Signed Shared Roadway**   ══ **Roadway**

COST
The 108 miles of the currently proposed bikeways in Liberty County (see page 79) are estimated to cost $50 million to complete. This accounts for 108 miles of bikeways with an undesignated facility type, mostly along major FM and SH roadways.

Few of these proposed bikeways are currently proposed for any of the county's Bicycle Areas. Additional planning is necessary to identify bikeway improvements for Cleveland, Dayton, and Liberty.

LIBERTY PLANS & RECOMMENDATIONS

EXISTING PLAN	PLAN PARTNERS	YEAR
Parks Master Plan	City of Dayton	2018*
Comprehensive Transportation Plan	City of Dayton	2018

*Plan up for adoption in 2019

Table 39

The recommendations listed here offer a set of ideas specific to Liberty County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Liberty County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits to reveal potential design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans, particularly in areas with a high need based on Focus Area criteria like Cleveland, Liberty, and Dayton.
3. Bring existing sidewalks in Cleveland, Liberty, and Dayton into compliance with the Americans with Disabilities Act.
4. Fill the gaps in the county's sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map .
5. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists and non-motorists.

ENSURE EQUITY

1. Build walkways and bikeways that connect foresidents to nearby job centers, particularly in areas with high need according to the Focus Area analysis.
2. Build walkways and bikeways that create first-mile/last-mile connections to the Brazos Transit District transit lines in Cleveland, Dayton and Liberty.
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.
4. Identify specific strategies to improve walkway and bikeway connectivity in the county's environmental justice areas.

CONNECT

1. Conduct local active transportation studies in areas that lack a plan, and in areas that demonstrate a high need based on the Focus Area analysis. Use these studies as a guide for investment in walkways and bikeways that connect residential areas to schools and commercial centers.
2. Build upon the active transportation recommendations included in the City of Dayton's 2018 Comprehensive Transportation Plan and 2018 Parks Master Plan.
3. Identify and build bikeway connections between the county's population centers and tourist destinations like Big Thicket National Reserve, Sam Houston National Forest, Picketts Bayou, Davis Hill State Park, and the Trinity River National Wildlife Refuge.

MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths/protected bike lanes within the county.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

Map 48

Pedestrian Focus Areas · **Existing Sidewalks** — · **Roadway** —

INSET 1 - CONROE PEDESTRIAN FOCUS AREAS
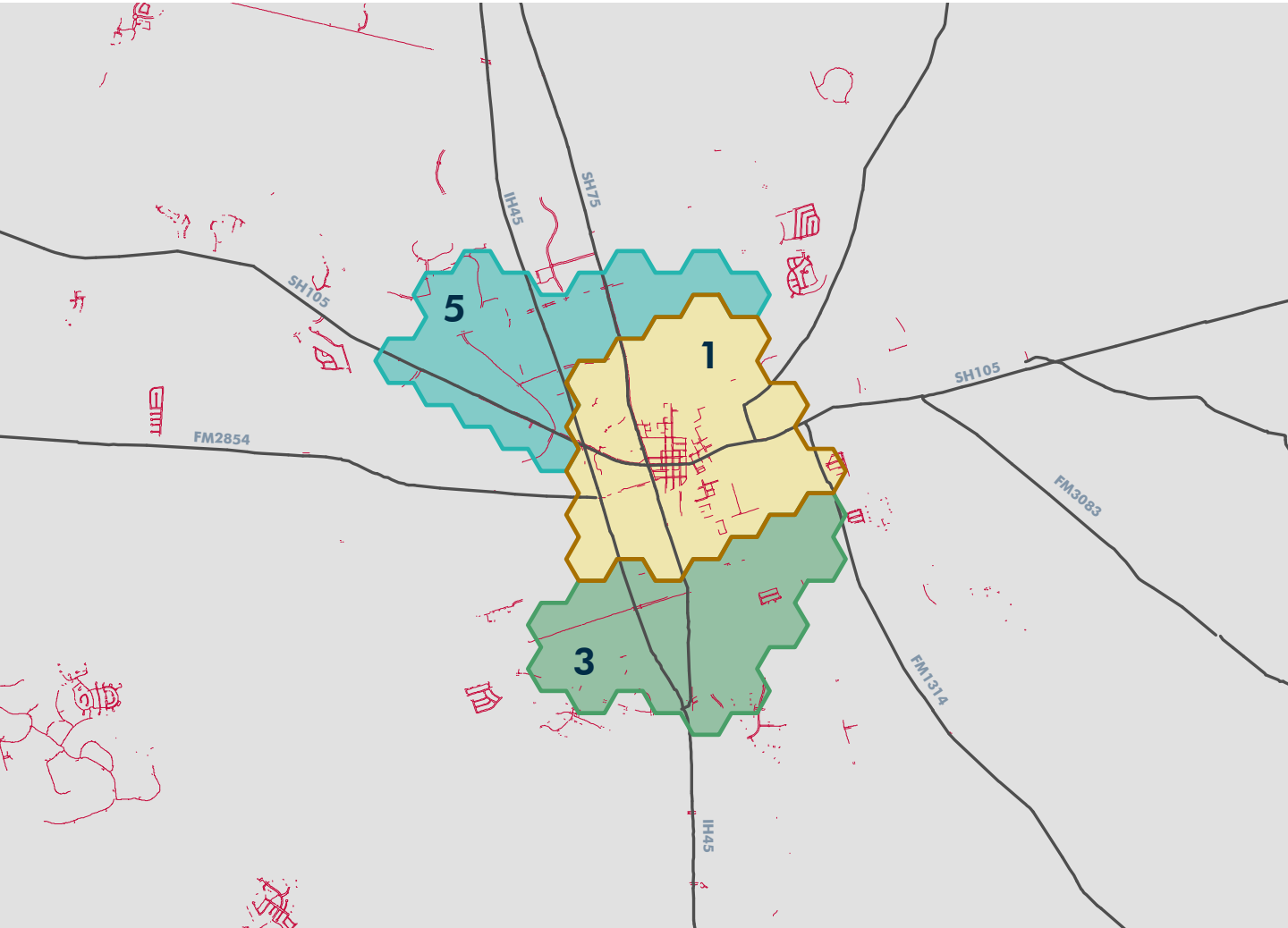
Pedestrian Focus Areas	Index	Cost to Complete Network
1 Downtown Conroe	98	$25.7 million
2 Downtown The Woodlands	97	$13.7 million
3 Conroe (South)	97	$15.7 million
4 Grogans Mill	97	$8.3 million
5 Conroe (Northwest)	97	$11.8 million

Table 40

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.

MONTGOMERY BIKEWAYS & BICYCLE FOCUS AREAS

Map 49
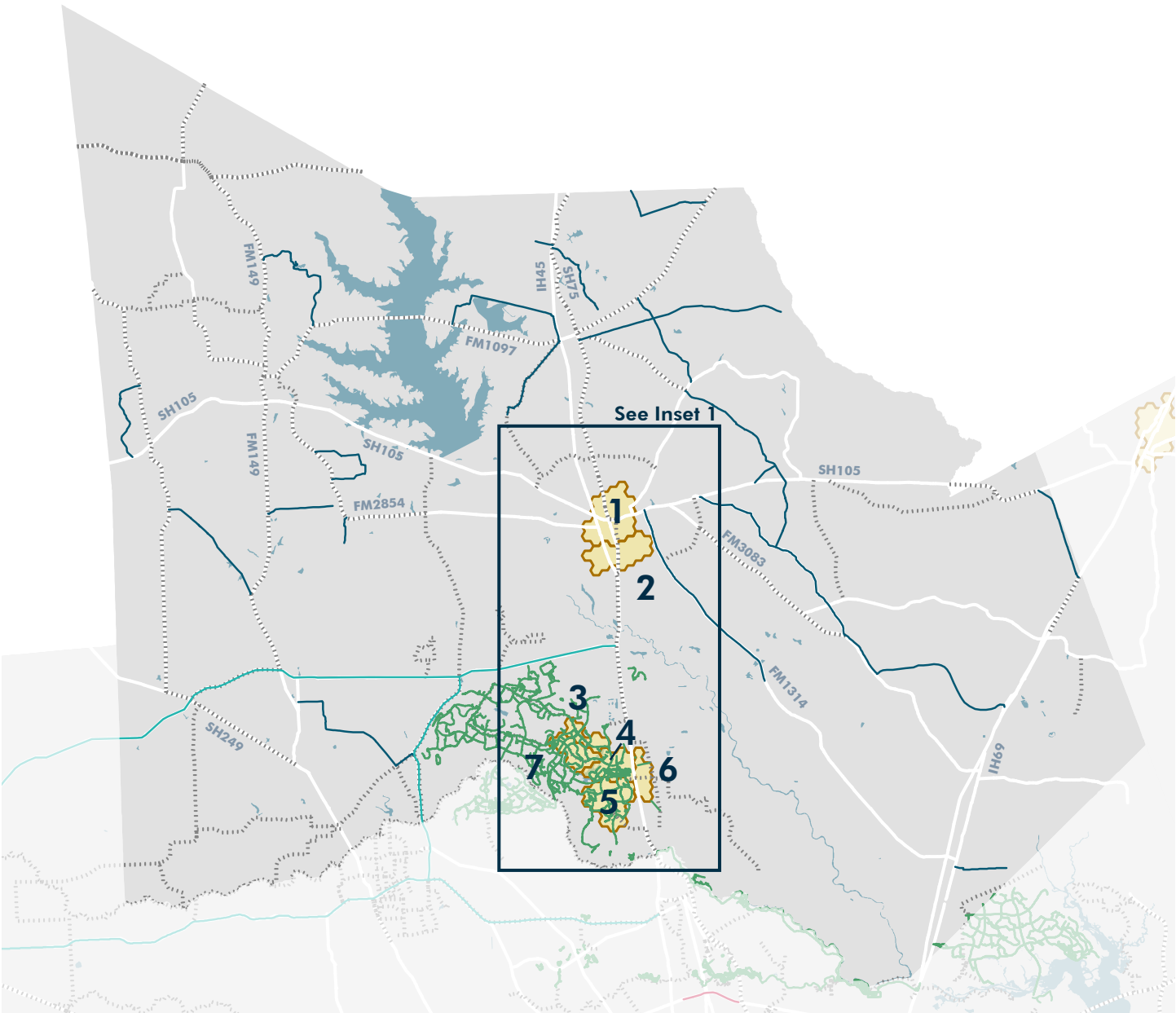
Legend

- Bicycle Focus Areas
- Bike Lane
- Shared Use Path-Trail
- Signed Shared Roadway
- Signed Shoulder Route
- Proposed Facility
- Roadway

MONTGOMERY BIKEWAYS & BICYCLE FOCUS AREAS

INSET 1 - BICYCLE FOCUS AREAS

Bicycle Focus Areas		Index
1	Downtown Conroe	87
2	Conroe (South)	80
3	Research Forest Dr	78
4	Downtown The Woodlands	78
5	Grogans Mill	78
6	Oak Ridge North	96
7	Lake Woodlands Dr	96

Table 41

COST

The 284 miles of the currently proposed bikeways in Montgomery County (see page 79) are estimated to cost $104 million to complete. This includes 62 miles of proposed signed shared roadways and an additional 222 miles of bikeways with an undesignated facility type.

The Bicycle Focus Areas in Conroe currently lack a dense grid of proposed bikeways. Additional planning is necessary to identify bikeway improvements for these communities.

MONTGOMERY PLANS & RECOMMENDATIONS

Existing Plan	Plan Partners	Year
Paths & Parkways	The Woodlands Township	2016

Table 42

The recommendations listed here offer a set of ideas specific to Montgomery County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Montgomery County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits to reveal potential design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans, particularly in areas with a high need based on Focus Area criteria like Conroe, The Woodlands, and Oak Ridge North.
3. Bring existing sidewalks in The Woodlands and the neighborhoods around Fox Run Blvd into compliance with the Americans with Disabilities Act as needed.
4. Fill the gaps in the county's sidewalk network, particularly in areas with absent or discontinuous sidewalks based on the sidewalk map like Conroe.
5. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
6. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists and pedestrians.

ENSURE EQUITY

1. Build walkways and bikeways that connect focus areas to nearby job centers with a priority on connections between environmental justice areas and job centers in the Conroe Pedestrian and Bicycle Focus Areas.
2. Build walkways and bikeways that create first-mile/last-mile connections to transit stops in the county, including:
   • Connections to Conroe Connection stops in Conroe
   • Connections to Park & Ride locations in The Woodlands
3. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.

MONTGOMERY PLANS & RECOMMENDATIONS

CONNECT

1. Conduct local active transportation studies in areas that lack a plan, and in areas that demonstrate a high need based on the Focus Area analysis. Use these plans to guide investment in walkways and bikeways that connect population centers, schools, job centers, and transit.
2. Fund and build the active transportation recommendations in the 2016 Paths & Parkways plan for The Woodlands.
3. Identify and build bikeway connections between the county's population centers and tourist destinations like the Sam Houston National Forest, Lake Conroe, Lake Houston Wilderness Park, WG Jones State Forest, Spring Creek Greenway, Old Town Spring, and Mercer Botanic Gardens.
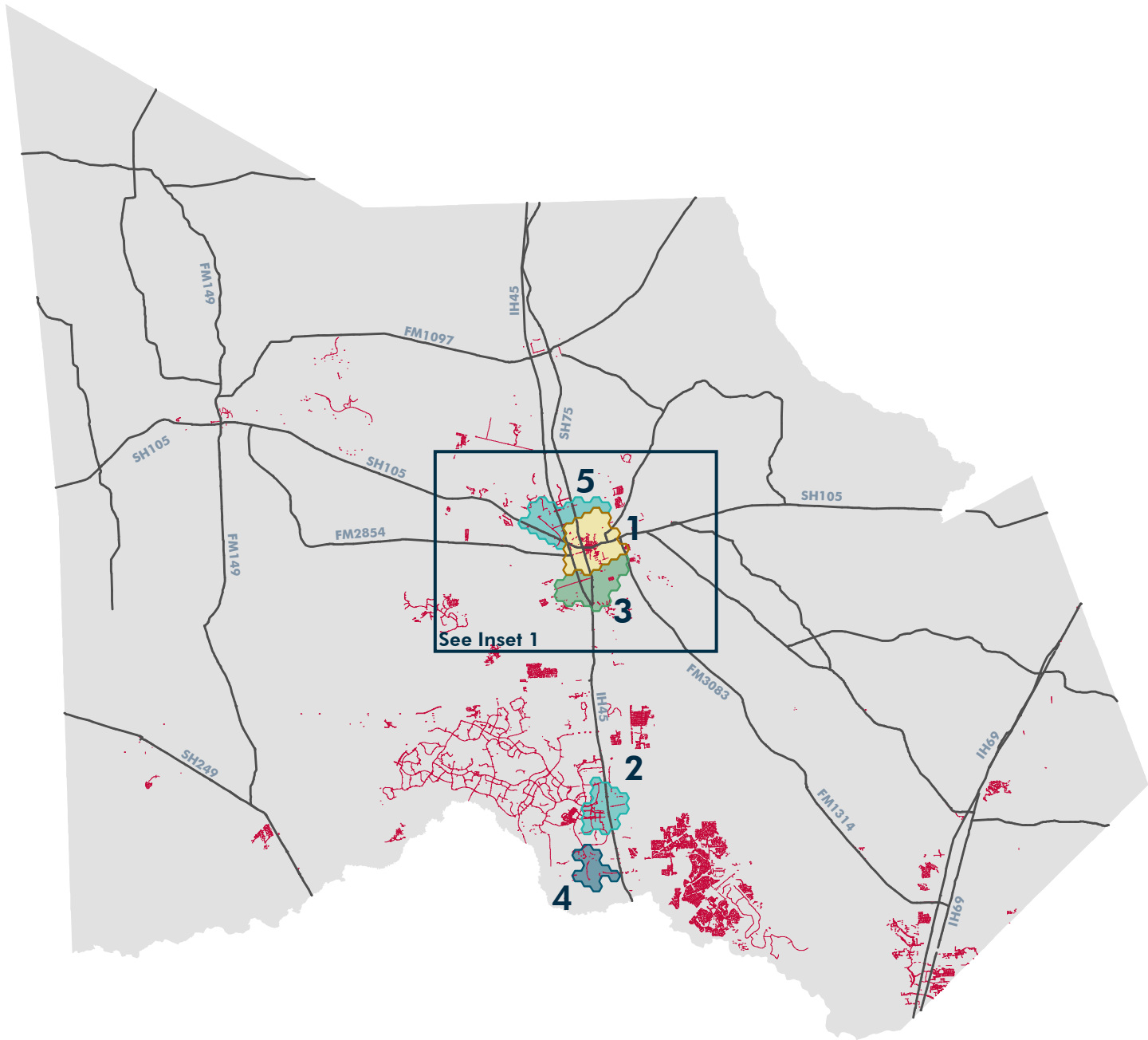
MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters during planning studies, to areas in the county with high need based on the Focus Area analysis, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths/ protected bike lanes within the county.
4. Maintain the existing network of shared-use paths in The Woodlands.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

WALLER WALKWAYS & PEDESTRIAN FOCUS AREAS

Map 50

INSET 1 - HEMPSTEAD AND PRAIRIE VIEW

Legend:
- Pedestrian Focus Area
- Additional Pedestrian Areas
- Existing Sidewalks
- Roadway

Pedestrian Focus Areas

Pedestrian Focus Areas	Index	Cost to Complete Network
1 Hempstead	79	$11.0 million

Additional Pedestrian Areas

These areas did not score within the Top 40 highest focus areas outside of Harris County, but they still represent areas of need relative to other places in Waller County.

2 Brookshire	63	$8.5 million
3 Waller**	60	$4.6 million
4 Prairie View	59	$2.4 million

Table 43

**Note: The Waller Pedestrian Area is smaller than one square mile – the minimum geography used to identify and split focus areas. We included Waller here because the city straddles the Harris-Waller county line, so the city was not analyzed together fully. The city also showed a pattern of need similar to Brookshire and Prairie View.

INDEX: The index for each Focus Area is the average Focus Area score for all its hexagons.

COST TO COMPLETE NETWORK: The cost to complete the network is based on the analysis on page 33. The estimated cost assumes building new 5-foot concrete sidewalks where they do not currently exist in the Focus Area, plus a standard 20% contingency for cost overruns. This total does not include new or improved crosswalks, improvements to existing walkways, or special infrastructure needs like pedestrian bridges or right-of-way acquisition.
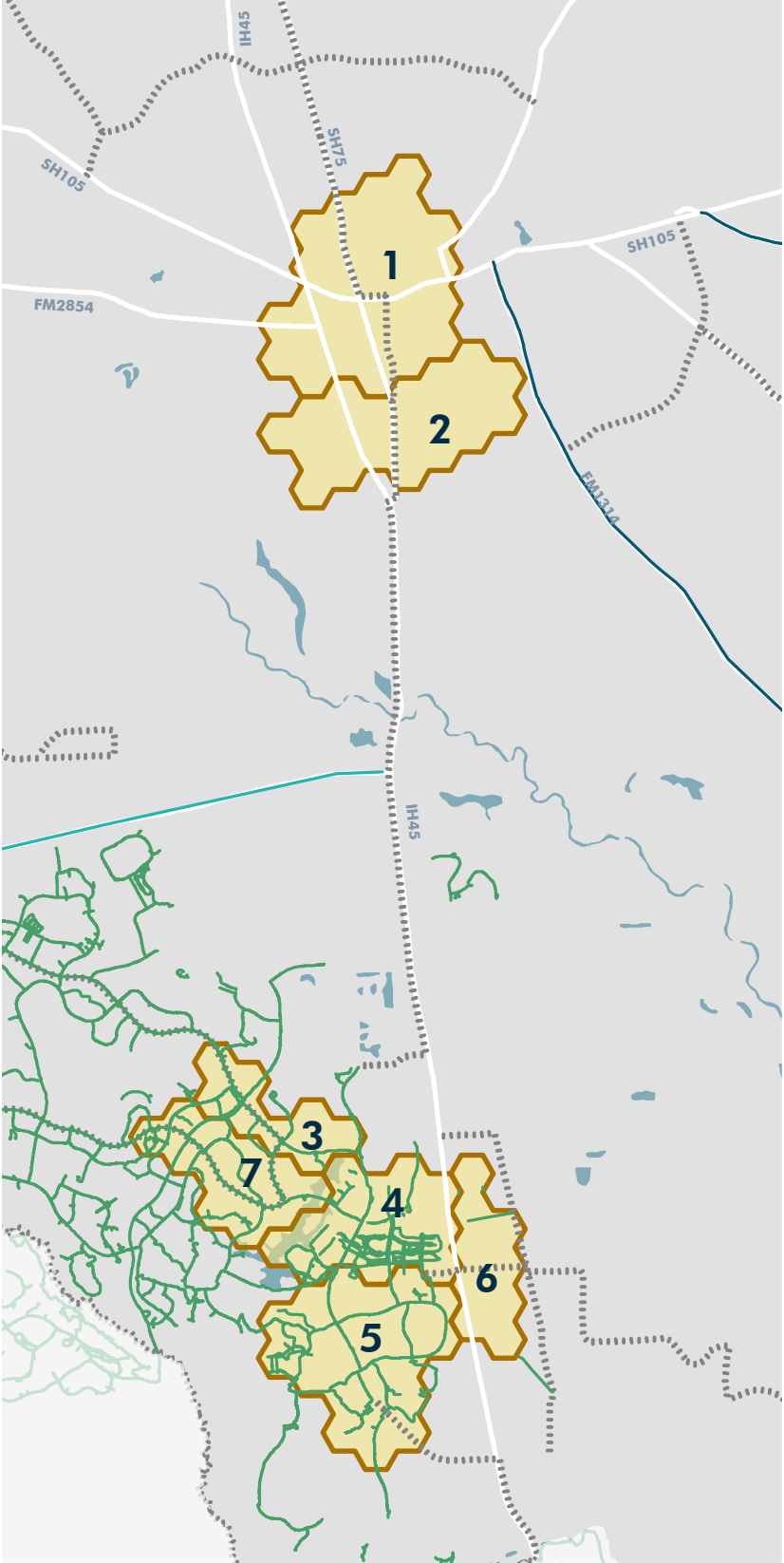
WALLER BIKEWAYS & BICYCLE FOCUS AREAS

Map 51

Legend:
- Additional Bicycle Areas
- Bike Lane
- Shared Use Path-Trail
- Signed Shared Roadway
- Signed Shoulder Route
- Proposed Facility
- Roadway

COST

The 141 miles of the currently proposed bikeways in Waller County (see page 79) are estimated to cost $65 million to complete. This accounts for 141 miles of bikeways with an undesignated facility type, mostly along major FM and SH roadways.

Few of these proposed bikeways are currently proposed for any of the county's Bicycle Areas. Additional planning is necessary to identify bikeway improvements for Hempstead, Brookshire, and Waller.

Additional Bicycle Areas

Additional Bicycle Areas	Index

These areas did not score within the Top 40 highest focus areas outside of Harris County, but they still represent areas of need relative to other places in Waller County.

1 Hempstead	74
2 Brookshire	73
3 Waller**	71

Table 44

**Note: The Waller Bicycle Area is smaller than one square mile – the minimum geography used to identify and split focus areas. We included Waller here because the city straddles the Harris-Waller county line, so the city was not analyzed together fully. The city also showed a pattern of need similar to Brookshire and Hempstead.

WALLER PLANS & RECOMMENDATIONS

Existing Plan	Plan Partners	Year
Hempstead Livable Centers Study	H-GAC, City of Hempstead	2012
City of Waller - Advance Plan	H-GAC, City of Waller, Waller Economic Development Corporation	2009

Table 45

The recommendations listed here offer a set of ideas specific to Waller County that can help its communities and the broader region achieve the 2045 vision. H-GAC's region-wide strategies for each goal (listed on pages 69-81) are intended to support the local recommendations listed here. Residents, local governments, and other stakeholders in Waller County should use this list as a starting point and tailor solutions to fit their specific needs.

PRIORITIZE SAFETY

1. Identify corridors and intersections with a high number of crashes and conduct safety audits to reveal potential design improvements at those locations.
2. Create local pedestrian and bicycle safety action plans, particularly in areas with a high need based on Focus Area criteria like Hempstead, Brookshire, Waller, and Prairie View.
3. Bring existing sidewalks into compliance with the Americans with Disabilities Act and fill the gaps in the county's sidewalk network particularly in areas with absent or discontinuous sidewalks based on the sidewalk map.
4. Build high-comfort bikeways on roads with a history of crashes involving bicyclists.
5. Participate in H-GAC's Regional Safety Campaign to promote safe behaviors for motorists, bicyclists, and pedestrians.

ENSURE EQUITY

1. Build walkways and bikeways that connect residents to nearby job centers, particularly in areas with high need according to the Focus Area analysis like Hempstead.
2. Ensure all schools have walkways within a one-half mile radius and bikeways within a two-mile radius.

WALLER PLANS & RECOMMENDATIONS

CONNECT

1. Conduct local active transportation studies that establish a vision for walkway and bikeway networks in the Brookshire and Prairie View Pedestrian and Bicycle Areas. Use these studies as a guide for investment in walkways and bikeways that connect residential areas to schools and each community's major commercial centers.
2. Revisit the Livable Centers Studies in Hempstead and Waller to measure progress and revamp existing recommendations.
3. Identify and build bikeway connections between the county's population centers and tourist destinations like Prairie View A&M University, Katy, Brenham, and Fulshear.
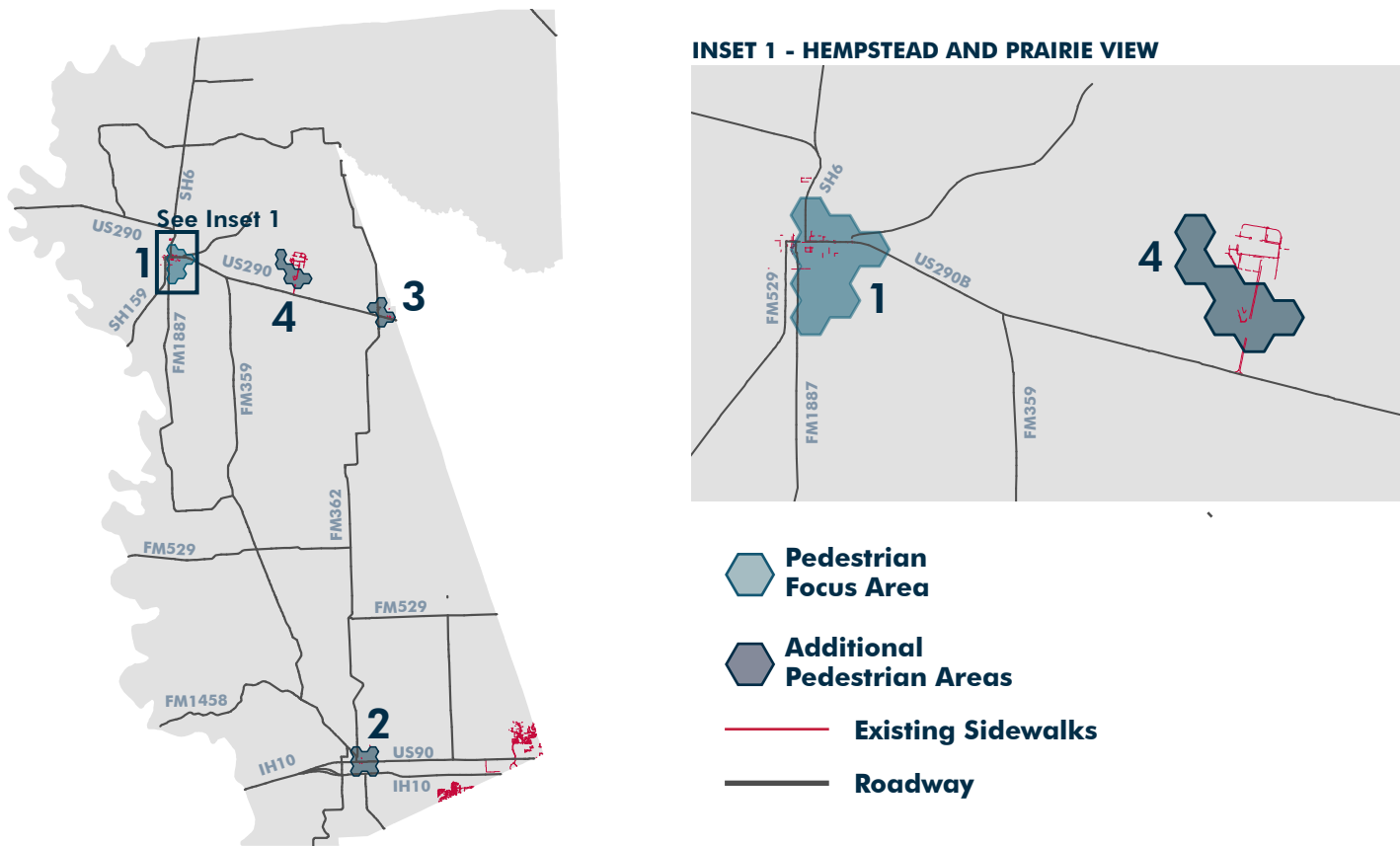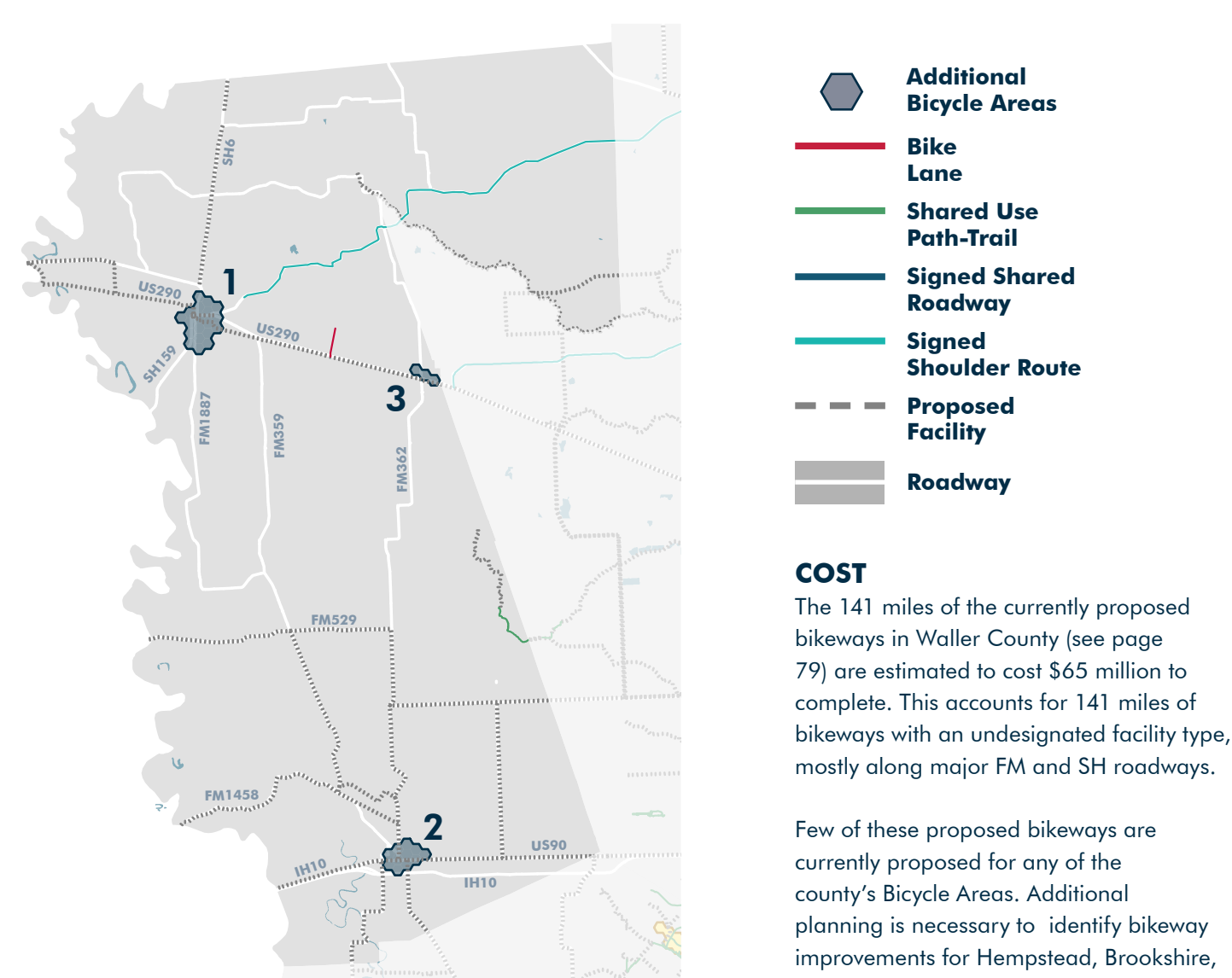
MAINTAIN & MONITOR

1. Keep updated local data sets on existing walkways and bikeways that include comfort level, crash data, and facility type.
2. Take advantage of H-GAC's active transportation count program and deploy temporary counters to the county's pedestrian and bicycle focus areas during planning studies, and before and after infrastructure improvements.
3. Purchase, install, and maintain permanent counters on shared-use paths and protected bike lanes within the county.

ENCOURAGE

1. Participate in Bike Month and National Walk and Bike to School Day.
2. When new walkways and bikeways are completed, provide information to nearby residents about where the new infrastructure connects and remind residents about safe habits for people driving, walking, biking, and rolling.
3. Encourage local employers to offer incentives for workers to walk, bike, or roll for their commute.
4. Obtain Walk Friendly and Bike Friendly community designations.

ENDNOTES

[1] (Page 6) The Houston-Galveston Area Council serves an eight-county Transportation Management Area (TMA) comprised of Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties in the State of Texas.

[2] (Page 6) H-GAC Regional Growth Forecast, 2017 (arcgis02.h-gac.com/RGF2017)

[3] (Page 7, 30) Role of Built Environment in Physical Activity, Obesity, and Cardiovascular Disease, San Diego State University (2012), https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.110.969022

[4] (Page 7) Fast Company, Want to Reduce Stress at Work? Try Commuting By Bike, May 2015 https://www.fastcompany.com/3046054/want-to-reduce-stress-at-work-try-commuting-by-bike

[5] (Page 7, 30) Active Living Research—Moving Toward Active Transportation: How Policies Can Encourage Walking and Bicycling (January 2016) https://activelivingresearch.org/ActiveTravelreview

[6] (Page 7) TCEQ Houston-Galveston-Brazoria Attainment Demonstration State Implementation Plan for 8 hour Ozone, revised on 12/15/2016

[7] (Page 7) Institute for Transportation & Development Policy, A Global High Shift Cycling Scenario, November 2015 https://3gozaa3xxbpb499ejp30lxc8-wpengine.netdna-ssl.com/wp-content/uploads/2015/11/A-Global-High-Shift-Cycling-Scenario_Nov-2015.pdf

[8] (Page 8) League of American Bicyclists, Bicycling Means Business: The Economic Benefits of Bicycle Infrastructure (July 2012) https://www.bikeleague.org/sites/default/files/Bicycling_and_the_Economy-Econ_Impact_Studies_web.pdf

[9] (Page 8) Urban Land Institute, Active Transportation and Real Estate: the Next Fronteir (March 2016) http://uli.org/wp-content/uploads/ULI-Documents/Active-Transportation-and-Real-Estate-The-Next-Frontier.pdf

[10] (Page 8) Political Economy Research Institute, Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts (June 2011)

[11] (Page 8) Rails to Trails Fact Sheet, Trail Investment: A Good Deal for the American Economy (March 2018) https://www.railstotrails.org/resourcehandler.ashx?name=trail-investment-a-good-deal-for-the-american-economy&id=14675&fileName=RTC_Trail_Benefits_Fact_Sheet_All_Use.pdf

[12] (Page 18) Over 130 residents participated in the public meeting surveys with about 13% from Brazoria County, 4% from Chambers County, 13% from Fort Bend County, 8% from Galveston County, 45% from Harris County, 4% from Liberty County, 5% from Montgomery County, and 9% from Waller County.

[13] (Page 18) Over 300 people responded to the I Walk Here survey with ~0% from Brazoria County (only one respondent), none from Chambers County, 11% from Fort Bend County, 54% from Galveston County, 35% from Harris County, none from Liberty County, 1% from Montgomery County, and none from Waller County. Over 300 people also responded to the I Bike Here survey with ~0% from Brazoria County (only one respondent), none from Chambers County, 18% from Fort Bend County, 27% from Galveston County, 52% from Harris County, none from Liberty County, 3% from Montgomery County, and none from Waller County.

[14] (Page 26) U.S. Census Bureau American Community Survey (Table B08006), 2012-2016 5 year estimates

[15] (Page 27) Bureau of Transportation Statistics, 2017 https://www.bts.gov/statistical-products/surveys/national-household-travel-survey-daily-travel-quick-facts

[16] (Page 28) All crash data in this section comes from TxDOT's Crash Records Information System.

[17] (Page 28) http://www.h-gac.com/title-vi-program/default.aspx Click "Environmental Justice"

[18] (Page 33,70) http://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov20131.pdf

[19] (Page 79) https://www.fhwa.dot.gov/tpm/

[20] (Page 79) http://www.h-gac.com/regional-mobility-report/default.aspx

Appendices

2045 Active Transportation Plan

APPENDIX A: FOCUS AREA METHODOLOGY

As the region's existing condition maps show, high-quality walkways and bikeways are present in some communities, but not all. Similarly, regional residents use walkways and bikeways differently depending on their economic circumstances, age, and the availability of infrastructure in their community. For those reasons, some parts of the eight-county region have a higher need for active transportation planning and construction and a higher propensity of active transportation use.

STEP 1 IDENTIFY CRITERIA

We have identified those high-need places in our Focus Area analysis (see pages 34-65). Focus Areas were determined using six criteria, shown below. The criteria are nearly identical for pedestrians and bicycles because walkway and bikeway users have similar needs and similar indicators of use.

Job + Resident Density

Density of Jobs + Residents (also known as Activity Population Density) totals the number of jobs per square mile and the number of residents per square mile. A high Density of Jobs + Residents defines places where the population gathers throughout the day and points to areas of high traffic for pedestrians, bicyclists, cars, and transit. Walkway and bikeway investments in these areas can reduce overall congestion and improve safety for all road users. Source: H-GAC Regional Growth Forecast, 2017

Intersection Density

Intersection Density measures the number of times one roadway intersects another per square mile. As an indicator, intersection density reveals areas where people will have a higher propensity to walk, bike or roll. Areas with high intersection densities typically have more connected street networks, slower vehicle speeds and a larger number of destinations. Source: Southeast Texas Addressing and Referencing Map (STAR*Map) 2017

School Proximity

The State of Texas does not require school districts to provide bus service to children living within two miles of their school, meaning many children walk and bike to class. People living within 2 miles of a grade school, technical school, college or university have a higher propensity to walk, bike or roll to class. Sources: Texas Education Agency 2018 (grade schools include all regular, charter, and alternative schools in the region); Integrated Post-Secondary Education System 2018 and National Center for Education Statistics 2018 (colleges, universities, and technical schools).

Transit Proximity

The recent origin-destination survey for regional transit users clearly shows that most transit users walk or bike to get to and from transit stops. Places near transit stops have a higher need for active transportation infrastructure that is safe and convenient for transit users. Sources: Transit stop data was gathered from the eight regional transit providers who have fixed-route service: Brazos Transit District, City of Conroe, Fort Bend County Transit, City of Galveston, Gulf Coast Center (Connect Transit), Harris County Transit, METRO, and The Woodlands Township.

Crashes

Crashes involving pedestrians and bicyclists are a key signal for identifying unsafe or insufficient active transportation infrastructure. The crashes used for this analysis do not include crashes in which one of the parties (motorist, bicyclist, or pedestrian) was intoxicated. Crashes where all parties were sober are more likely to occur because of issues that can be solved through design or policy. Source: TxDOT Crash Records Information System, 2009-2017

Environmental Justice Areas

Environmental Justice (EJ) Areas are defined as Census block groups in which the average population in a protected class is greater than the average across all eight counties*. Protected classes include low-income households, racial and ethnic minorities, people with low educational attainment, people with limited English proficiency, female-headed households, and zero-car households. These areas indicate need for active transportation because people in these protected classes are more likely to walk, bike, roll or use transit than non-protected classes. Source: Environmental Justice - H-GAC's Strategy for the Fair Treatment and Meaningful Involvement of All People, 2017

*For all protected classes except racial and ethnic minorities, EJ Areas are determined by a greater than regional average plus one standard deviation.

STEP 2 DEVELOP A STANDARD UNIT OF MEASUREMENT

A key purpose for developing Focus Areas is to compare distinct parts of the region with one another. To accomplish this, it is necessary to divide the eight counties into identical geographic units. Fortunately, the Activity Connectivity Explorer (ACE) – a tool to measure density and connectivity in the region – already uses a grid to split the region into hexagons that are one-seventh of a square mile each (see image below). Find information about the ACE tool at arcgis02.h-gac.com/ACE or type "H-GAC ACE Tool" into a search engine.

Why Hexagons?

What are the benefits of using a hexagon? Hexagons are the most complex regular polygon that can fill a plane without gaps or overlap. Hexagons reveal patterns in the data more easily than what squares would offer and are suitable for representing street-oriented development patterns like those found in the eight-county region.
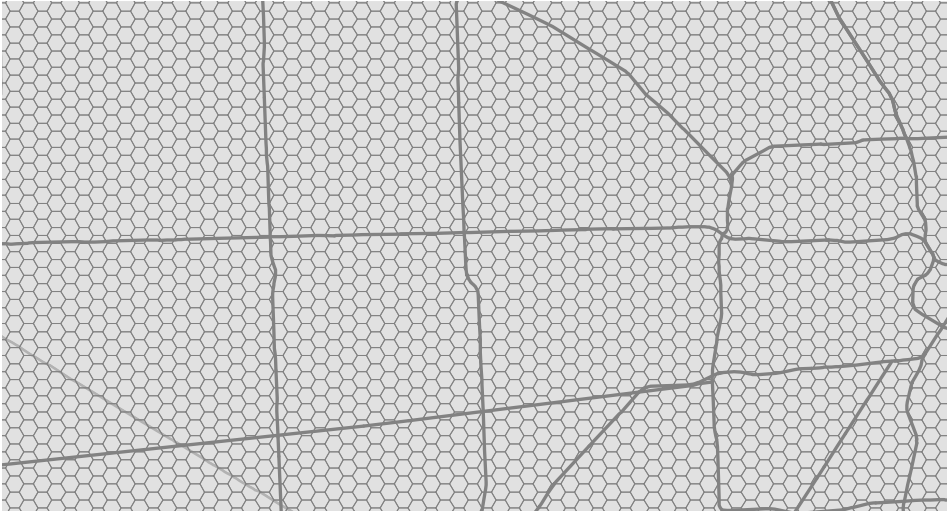
STEP 3 ASSIGN HEXAGONS A VALUE FOR CRITERIA

Each hexagon was assigned a score for all six criteria using GIS geoprocessing tools, shown in the table below.

Focus Area Criteria	Method for Assigning Value	Example
Job + Resident Density	This measurement was calculated in the Activity Connectivity Explorer (ACE) tool. To learn about the ACE methodology, visit arcgis02.h-gac.com/ACE or type "H-GAC ACE Tool" into a search engine.	A hexagon with 3,000 residents and 3,000 jobs per square mile has a Density of Jobs + Residents value of 6,000.
Intersection Density	This measurement was calculated for the ACE tool. To learn about their methodology, visit arcgis02.h-gac.com/ACE or type "H-GAC ACE Tool" into a search engine.	A hexagon with 20 intersections per square mile has an Intersection Density value of 20.
School Proximity	Spatial Join layer of school locations to hexagon layer	A hexagon with 3 schools within 0.5 miles and 12 schools within 2 miles has a School Proximity value of 3 for pedestrians and 12 for bicyclists.
Transit Proximity	Spatial Join layer of transit stop locations to hexagon layer*	A hexagon with 1 transit stop within 0.5 miles and 8 transit stops within 2 miles has a Transit Proximity value of 1 for pedestrians and 8 for bicyclists.
Crashes	Spatial Join layer of crash locations to hexagon layer	A hexagon with 5 pedestrian crashes and 1 bicycle crash between 2009 and 2017 has a Crash value of 5 for pedestrians and 1 for bicyclists.
Environmental Justice Areas	Spatial Join (one-to-many) layer of Environmental Justice Areas (Census block group) to hexagon centroid layer	A hexagon with a centroid in a Census block group that has a higher than average population for 5 out of the 7 Environmental Justice protected classes has an Environmental Justice Area value of 5.

Table 46

* Brazos Transit District (BTD) uses a wave stop system, meaning that a passenger can hail the bus from any point along the bus route. For this reason, BTD does not have any designated stops. Transit stop density for hexagons using Fort Bend County Transit (FBCT) were used as a proxy for the BTD stops. Hexagons within 0.5 miles of a FBCT stop have a median of 2 stops within 0.5 miles. Hexagons within 2 miles of a FBCT stop have a median of 4 stops within 2 miles. The medians for the FBCT hexagons were applied to hexagons within .5 and 2 miles of a BTD line respectively.

STEP 4 ISOLATE HEXAGONS FOR ANALYSIS

Many hexagons in the region sit within large tracts of rural farmland or in the middle of a large body of water – places where active transportation infrastructure is not needed. The analysis eliminates any hexagons that do not meet at least one of the six Focus Area criteria before comparing them against one another.

The remaining hexagons meet at least one of the criteria, as shown in the table below.

This allowed us to reduce the number of hexagons useful for the analysis, but still left some that were unnecessary. For example, a school located along the Trinity Bay coastline captures all hexagons within 2 miles, including those located in the water. To eliminate those types of incidents, we removed all hexagons with 0 jobs + residents per square mile. After isolating all hexagons, we were left with 18,385 pedestrian hexagons and 26,962 bicycle hexagons.

Focus Area Criteria	Minimum Requirement for Analysis
Job + Resident Density	Hexagon has >5,000 jobs + residents per square mile (the top 40% of hexagons)
Intersection Density	Hexagon has >55 intersections per square mile (the top 40% of hexagons)
School Proximity	Hexagon is within 0.5 miles of a school (for Pedestrian Focus Areas) or 2 miles (for Bicycle Focus Areas)
Transit Proximity	Hexagon is within 0.5 miles of a transit stop (for Pedestrian Focus Areas) or 2 miles (for Bicycle Focus Areas)
Crashes	Hexagon contains at least one incident of a crash involving a pedestrian or bicyclist between 2009 and 2017 in which neither party was intoxicated
Environmental Justice Areas	Hexagon is within an Environmental Justice Area

Table 47

Finally, we sorted the remaining hexagons into three groups: all hexagons, hexagons within Harris County, and hexagons outside of Harris County. By separating the hexagons in this way, we can roughly compare hexagons based on their location in the urban center of our region (in Harris County) versus in the suburban and rural places in our county.

STEP 5 CONVERT CRITERIA TO A 100-POINT SCALE

After all hexagons have assigned values for all criteria (see Step 3 above) and have been grouped (see Step 4 above), we normalized the assigned values for each criteria on a scale of 0 to 100. The hexagon with the highest scores in that criteria is given a value of 100 and the hexagon with the lowest score in that criteria is assigned a value of 0. For example, if a hexagon has an intersection density higher than 70% of all other pedestrian hexagons, then its value for Pedestrian Intersection Density is 70 on the 100-point scale.* Maps 6-17 on pages 36-54 show the six pedestrian and six bicycle criteria for the entire region.

*One hexagon may have different scores for pedestrian and bicycle criteria since there are more bicycle hexagons than pedestrian hexagons. The same hexagon that has a Pedestrian Intersection Density value of 70 out of 100 may have a higher intersection density than 80% of all bicycle hexagons, giving it a Bicycle Intersection Density value of 80.

STEP 6 TOTAL ALL CRITERIA

After all pedestrian and bicycle criteria have been converted into a 100-point scale for each hexagon (see Step 5 above) all six criteria are totaled together for a raw Focus Area index score for both pedestrians and bicycles.

STEP 7 CONVERT FOCUS AREA TOTALS TO 100-POINT SCALE

Once all hexagons have a raw Focus Area score (Step 6), the hexagons are again converted to a 100-point scale to calculate the final Pedestrian Focus Area score and Bicycle Focus Area score. See pages 55-56 for maps of the Pedestrian and Bicycle Focus Area Scores for the entire region, Harris County, and Non-Harris County hexagons.

Pedestrian and Bicycle Focus Area Indices

Job + Resident Density + Intersection Density + School Proximity + Transit Proximity + Crashes + Environmental Justice
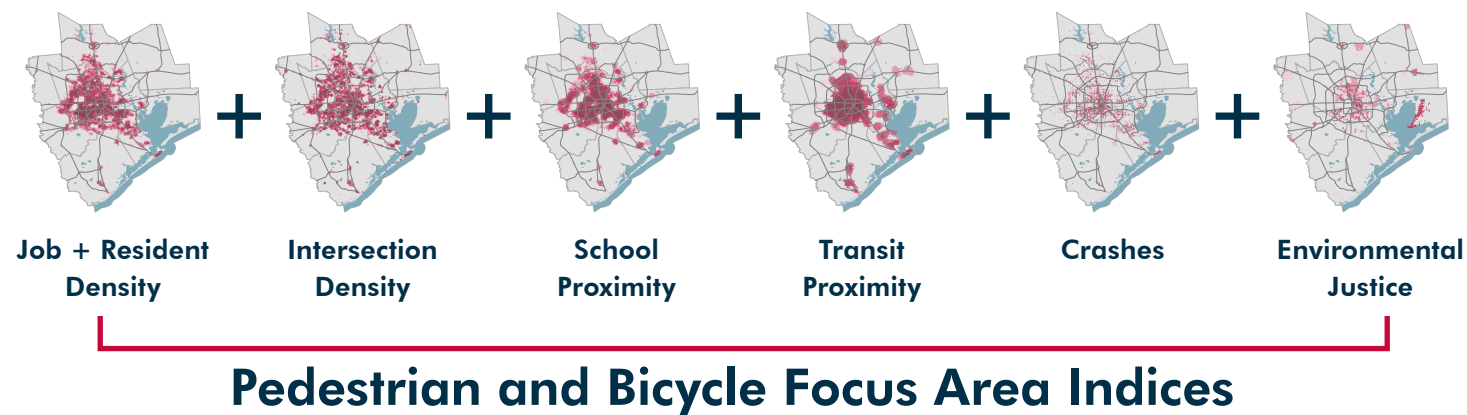
STEP 8 DEFINE FOCUS AREAS

Now that all pedestrian and bicycle hexagons have their respective Focus Area scores, we need to group individual hexagons into distinct Focus Areas with three steps: (1) Selecting high-scoring Focus Area hexagons, (2) Eliminating hexagons that are not part of a clear pattern, (3) Split remaining hexagons into Focus Areas.

Select Hexagons

To identify Focus Areas, we first selected hexagons with high scores on a scale of 0 to 100.

● Select all hexagons with a score of 90 or higher

● Select all hexagons with a score of 98 or higher

● Select any additional hexagons adjacent to hexagons with 98 or higher

● Select any additional hexagons that are surrounded on at least 5 sides by hexagons from the first three steps

Eliminate Hexagons

Next, we eliminated hexagons that were not part of a clear pattern or were in a group too small to be a Focus Area.

⬡ Eliminate any hexagons part of a standalone group totaling one square mile or less (< eight hexagons)

⬡ Eliminate any hexagons with only one adjacent hexagon or two non-touching adjacent hexagons unless those hexagons follow a corridor (ex: the hexagons along Main Street in the map to the left)

⬡ Eliminate any hexagons that do not have roadway infrastructure (ex: the hexagon hovering over the waterway in the map to the left)

Split Hexagons

Finally, we split the hexagons into contiguous groups of five square miles or less (35 hexagons or fewer). Factors that influence hexagon splits included:

• Jurisdiction boundaries

• Roadways (ex: Main Street in the map to the left)

• Waterways

• Railroads

APPENDIX B: PEDESTRIAN FOCUS AREAS & CRITERIA

This table includes a list of all 80 Pedestrian Focus Areas as well as the six additional Pedestrian Areas in Chambers and Waller counties. The numbers included for the Focus Area Index, Job + Resident Density, Intersection Density, School Proximity, Transit Proximity, Crashes, and Environmental Justice are the average of the scores for each of the hexagons that make up that Focus Area. For example, if Focus Area A has seven hexagons with Intersection Densities of 20, 24, 32, 18, 12, 42, and 20 intersections per square mile, its Intersection Density score is 24, the average of the seven hexagons.

Focus Area	County	City	Focus Area Index	Job + Resident Density	Intersection Density	School Proximity	Transit Proximity	Crashes	Enviro. Justice
Gulfton	Harris	Houston	98	21,415	58	10.4	55	7.2	3.5
Third Ward	Harris	Houston	98	8,120	147	4.8	72	4.9	2.9
South Park	Harris	Houston	98	6,527	100	3.3	49	4.1	2.9
Kashmere Gardens	Harris	Houston	98	6,779	134	3.6	65	3.0	4.0
Crestmont Park	Harris	Houston	98	6,001	95	3.4	32	2.0	3.2
Sunnyside	Harris	Houston	97	4,922	103	3.9	49	3.6	3.8
Near Northside - Quitman	Harris	Houston	97	6,785	179	4.8	66	3.2	3.9
Cloverleaf	Harris	Cloverleaf	97	9,809	99	2.3	19	3.5	2.8
Northline - Parker	Harris	Houston	97	8,231	82	3.3	43	3.3	3.7
Northline - Commons	Harris	Houston	97	8,608	82	3.2	42	3.4	3.2
Greenspoint	Harris	Houston	97	12,999	41	4.2	28	4.4	4.5
SW - Buffalo Speedway	Harris	Houston	97	6,015	77	3.4	30	3.3	2.4
Old Spanish Trail/ South Union	Harris	Houston	97	6,978	109	3.3	62	4.7	2.9
Baytown	Harris	Baytown	97	7,484	171	3.0	25	1.6	2.1
Acres Home - Gulf Bank	Harris	Houston	97	5,271	89	2.4	43	2.2	2.8
Alief - East	Harris	Houston	97	11,853	61	4.8	30	4.2	2.8
SW - Fondren	Harris	Houston	97	9,770	76	2.8	38	3.6	2.8
Spring Branch	Harris	Houston	97	9,514	89	3.5	35	2.6	2.9
Pecan Park/Park Place	Harris	Houston	96	8,880	101	5.7	34	2.4	3.1
Fifth Ward	Harris	Houston	96	6,424	155	3.6	75	2.8	3.4
Independence Heights	Harris	Houston	96	7,538	98	2.0	49	4.0	3.5
Eastwood	Harris	Houston	96	8,304	127	4.5	43	2.5	3.3
Hobby	Harris	Houston	96	9,629	76	2.3	32	4.7	3.4
Alief - West	Harris	Houston	96	9,824	91	3.1	26	2.3	1.9
Golfcrest	Harris	Houston	96	9,292	87	2.7	44	2.7	3.5
Midtown/Museum District	Harris	Houston	96	21,104	233	3.6	107	18.8	0.2
Uptown - Richmond	Harris	Houston	96	18,833	60	4.5	49	5.8	1.9
Second Ward/ Magnolia Park	Harris	Houston	96	7,150	119	3.6	48	2.6	3.6
Downtown Houston	Harris	Houston	96	63,899	178	2.4	157	26.9	0.8
Chinatown	Harris	Houston	96	18,140	42	3.2	39	6.5	3.5
East Downtown	Harris	Houston	95	10,374	189	3.7	65	1.9	2.1
Downtown Galveston	Galveston	Galveston	95	8,136	168	4.2	44	1.9	2.1

Table 48

PEDESTRIAN FOCUS AREAS AND CRITERIA, CONT'D.

Focus Area	County	City	Focus Area Index	Job + Resident Density	Intersection Density	School Proximity	Transit Proximity	Crashes	Enviro. Justice
Beechnut at Bissonnet	Harris	Houston	95	11,661	70	4.7	46	3.6	2.4
Bellaire	Harris	Bellaire	95	12,450	103	5.7	58	3.0	1.0
Upper Kirby/Rice Village	Harris	Houston	95	20,881	129	2.8	74	7.7	-
Near Northside - Cavalcade	Harris	Houston	95	5,814	160	2.1	58	1.1	3.1
Greater Montrose	Harris	Houston	95	21,555	217	2.7	80	7.9	0.1
Greenway Plaza/ Highland Village	Harris	Houston	94	54,773	82	3.9	86	8.0	0.3
Texas Medical Center	Harris	Houston	94	23,595	96	3.9	47	4.8	-
Greater Heights	Harris	Houston	94	9,576	166	3.1	60	3.1	1.1
Sharpstown	Harris	Houston	91	14,711	61	2.7	47	3.7	1.9
Downtown Conroe	Montgomery	Conroe	87	5,434	105	1.9	18	1.4	2.5
UTMB/East Galveston	Galveston	Galveston	86	10,136	98	2.5	18	0.3	1.9
Briargate	Fort Bend	Houston	85	5,006	67	1.7	12	0.7	1.5
Mission Bend	Fort Bend	Mission Bend	84	8,156	98	2.4	3	0.7	1.0
Downtown Texas City	Galveston	Texas City	84	3,722	106	1.9	9	0.4	1.6
SH6 at Keegans Bayou	Fort Bend	-	84	7,269	86	2.2	2	2.0	1.0
Downtown Rosenberg	Fort Bend	Rosenberg	83	4,515	106	1.6	2	0.6	1.8
Ridgegate/Ridgemont	Fort Bend	Houston	83	5,024	63	1.4	10	1.1	1.6
Stewart Rd at 61st	Galveston	Galveston	83	5,705	114	2.2	19	1.4	0.6
Downtown LaMarque	Galveston	LaMarque	82	3,433	95	2.9	9	0.4	1.2
Missouri City - North	Fort Bend	Missouri City	82	5,343	83	1.8	3	0.8	1.4
Freeport - South	Brazoria	Freeport	81	3,265	76	2.2	8	0.1	1.4
Richmond	Fort Bend	Richmond	81	4,311	71	2.1	2	0.9	2.3
Fifth Street	Fort Bend	Fifth Street	81	3,857	67	4.8	1	0.6	1.1
Clute	Brazoria	Clute	81	4,359	50	1.4	13	0.9	0.9
Freeport - North	Brazoria	Freeport	80	3,538	68	1.5	8	0.5	2.7
Downtown The Woodlands	Montgomery	The Woodlands	80	13,615	59	1.7	7	1.3	-
SH6 at Airport Blvd	Fort Bend	Houston	80	5,988	78	1.4	-	1.2	1.0
Bellfort at Eldridge	Fort Bend	-	80	5,772	64	2.2	-	0.9	1.4
Dickinson - East	Galveston	Dickinson	80	3,901	102	1.4	6	0.6	0.9
Cleveland	Liberty	Cleveland	80	2,425	99	1.6	2	0.3	1.2
Texas City - SH3	Galveston	Texas City	79	3,025	55	1.3	6	0.8	2.2
Texas City - West	Galveston	Texas City	79	4,290	82	1.1	7	0.9	0.9
Lake Jackson - East	Brazoria	Lake Jackson	79	4,327	68	1.8	9	0.6	-
Rosenberg - East	Fort Bend	Rosenberg	79	4,467	44	2.5	2	0.5	1.2
Quail Valley	Fort Bend	Missouri City	79	4,998	78	1.3	1	0.4	1.2
Hempstead	Waller	Hempstead	79	3,291	150	1.5	-	0.8	2.6
Sugar Land - Southeast	Fort Bend	Sugar Land	79	5,488	87	1.8	1	0.4	0.1

Focus Area	County	City	Focus Area Index	Job + Resident Density	Intersection Density	School Proximity	Transit Proximity	Crashes	Enviro. Justice
Alvin	Brazoria	Alvin	78	5,069	113	2.9	-	1.4	0.7
Bacliff	Galveston	Bacliff	78	3,357	108	0.8	7	0.9	0.7
Angleton	Brazoria	Angleton	78	3,981	83	1.8	11	0.2	0.5
Conroe - South	Montgomery	Conroe	78	4,832	51	1.0	10	0.7	1.5
Grogans Mill	Montgomery	The Woodlands	78	6,920	67	2.0	0	0.8	0.2
Liberty	Liberty	Liberty	78	2,763	92	1.8	2	0.2	0.7
Conroe - Northwest	Montgomery	Conroe	78	5,142	44	1.5	12	1.1	0.3
Dayton	Liberty	Dayton	77	2,187	61	2.4	2	0.7	0.1
Dewalt	Fort Bend	Missouri City	76	3,705	53	1.6	1	0.4	0.6
Lake Jackson - West	Brazoria	Lake Jackson	76	5,265	69	1.0	12	0.6	0.1
Dickinson - West	Galveston	Dickinson	76	4,036	71	1.3	7	0.7	-

Additional Pedestrian Areas

Pedestrian Area	County	City	Focus Area Index	Job + Resident Density	Intersection Density	School Proximity	Transit Proximity	Crashes	Enviro. Justice
Prairie View	Waller	Prairie View	63	2,544	89	-	-	0.4	2.0
Waller	Waller	Waller	60	2,349	107	1.6	-	-	0.6
Brookshire	Waller	Brookshire	59	907	27	1.3	-	-	2.7
Mont Belvieu	Chambers	Mont Belvieu	55	1,437	66	2.2	-	0.3	-
Anahuac	Chambers	Anahuac	49	1,115	25	5.4	-	-	-
Winnie	Chambers	Winnie	46	783	38	2.5	-	-	-

APPENDIX C: BICYCLE FOCUS AREAS & CRITERIA

This table includes a list of all 80 Bicycle Focus Areas as well as the ten additional Bicycle Areas in Brazoria, Chambers, Liberty and Waller counties. The numbers included for the Focus Area Index, Job + Resident Density, Intersection Density, School Proximity, Transit Proximity, Crashes, and Environmental Justice are the average of the scores for each of the hexagons that make up that Focus Area. For example, if Focus Area A has seven hexagons with Intersection Densities of 20, 24, 32, 18, 12, 42, and 20 intersections per square mile, its Intersection Density score is 24, the average of the seven hexagons.

Focus Area	County	City	Focus Area Index	Job + Resident Density	Intersection Density	School Proximity	Transit Proximity	Crashes	Enviro. Justice
Near Northside - Quitman	Harris	Houston	99	6,913	184	29	721	2.2	4.2
Sunnyside - Cullen	Harris	Houston	99	5,654	106	26	396	2.3	3.3
Acres Home - East	Harris	Houston	99	4,703	97	23	339	2.1	3.1
Eastwood	Harris	Houston	98	8,141	124	33	469	1.2	3.1
Third Ward	Harris	Houston	98	8,047	144	34	701	2.6	2.9
Southmore and Pasadena	Harris	Pasadena	98	12,327	105	30	3	2.0	3.0
Crosstimbers and Lockwood	Harris	Houston	98	4,368	77	18	357	1.9	3.4
Vince Bayou at Southmore	Harris	Pasadena	98	8,779	102	26	30	1.6	3.0
Halls Bayou at Little York	Harris	Houston	98	6,418	68	15	164	2.1	2.8
South Park - MLK	Harris	Houston	98	6,455	93	27	366	1.3	3.0
Second Ward/ Magnolia Park	Harris	Houston	98	7,007	117	28	397	1.7	3.6
Cloverleaf	Harris	Cloverleaf	97	9,343	101	15	42	1.8	3.1
Acres Home - West	Harris	Houston	97	5,131	77	24	269	2.2	1.8
Northline - Commons	Harris	Houston	97	8,451	79	22	392	1.1	3.2
Trinity Gardens	Harris	Houston	97	4,231	72	12	340	2.4	3.0
Aldine-Westfield at Jensen	Harris	Houston	97	5,203	66	18	274	1.4	3.6
Northline - Parker	Harris	Houston	97	8,512	83	22	343	1.1	3.8
Greenspoint	Harris	Houston	97	19,009	24	18	129	1.6	4.7
Independence Heights	Harris	Houston	97	7,502	97	24	445	1.5	3.4
Edgebrook	Harris	Houston	97	10,768	78	21	82	1.9	2.1
Kashmere Gardens	Harris	Houston	97	6,387	111	26	515	1.3	3.9
Spring Branch	Harris	Houston	97	8,900	90	23	276	1.7	2.8
Hobby	Harris	Houston	97	9,517	77	23	210	1.4	3.3
Gulfgate	Harris	Houston	97	9,630	74	29	369	1.1	3.4
Gulfton	Harris	Houston	97	20,092	65	52	474	2.0	3.3
Fifth Ward	Harris	Houston	97	6,339	152	26	543	1.5	3.4
East Downtown	Harris	Houston	97	9,189	188	36	781	1.6	2.1
Griggs at Cullen	Harris	Houston	97	7,212	106	26	486	1.1	2.8
Bissonnet at BW8	Harris	Houston	97	15,716	31	35	310	2.3	3.0
Alief - West	Harris	Houston	97	9,608	83	27	206	1.3	2.3
Pecan Park/Park Place	Harris	Houston	96	9,504	107	26	302	0.8	3.1

Table 49

Focus Area	County	City	Focus Area Index	Job + Resident Density	Intersection Density	School Proximity	Transit Proximity	Crashes	Enviro. Justice
Westpark at SH6	Harris	Houston	96	8,430	65	21	141	2.2	2.7
Sunnyside - Scott	Harris	Houston	96	4,991	114	22	400	1.1	3.9
Midtown/Museum District	Harris	Houston	96	20,320	215	29	812	6.8	0.2
SW - Fondren	Harris	Houston	96	9,769	79	27	347	1.8	2.4
Chinatown	Harris	Houston	96	16,884	50	29	365	1.9	3.2
Golfcrest	Harris	Houston	96	8,843	99	27	313	0.7	3.6
Near Northside - Cavalcade	Harris	Houston	96	5,442	130	28	507	1.2	2.7
Uptown - Richmond	Harris	Houston	96	17,581	59	34	404	2.3	1.8
South Side - Scott	Harris	Houston	96	7,411	104	26	600	1.3	2.7
Downtown Galveston	Galveston	Galveston	95	8,136	168	15	171	2.7	2.1
Downtown Conroe	Montgomery	Conroe	91	5,548	109	11	92	1.3	2.3
Keegans Bayou at Fort Bend Co. Line	Fort Bend	-	90	7,032	81	19	81	0.1	1.2
Stewart Rd at 61st	Galveston	Galveston	89	6,075	121	11	120	1.6	0.7
Mission Bend	Fort Bend	Mission Bend	88	7,315	92	15	32	0.2	1.0
UTMB/East Galveston	Galveston	Galveston	87	7,087	74	7	77	1.3	2.3
Ridgegate/Ridgemont	Fort Bend	Houston	86	4,608	56	10	73	0.4	1.6
Downtown Texas City	Galveston	Texas City	86	3,691	106	8	40	0.8	1.6
Briargate	Fort Bend	Houston	86	3,993	53	11	71	0.4	1.5
Missouri City - North	Fort Bend	Missouri City	86	4,145	64	14	48	0.5	1.1
Brightwater	Fort Bend	Missouri City	86	5,947	79	15	4	0.1	1.1
Texas City - SH3	Galveston	Texas City	86	2,844	50	11	43	0.4	2.4
Downtown Richmond	Fort Bend	Richmond	85	3,874	79	10	9	0.4	2.4
Fifth Street	Fort Bend	Fifth Street	85	4,021	54	14	8	0.1	1.6
Texas City - SH146	Galveston	Texas City	85	4,222	85	8	49	0.9	1.0
Four Corners	Fort Bend	Four Corners	85	5,156	64	14	16	0.3	1.0
Sugar Land - North	Fort Bend	Sugar Land	85	5,719	69	13	15	0.4	1.0
Dickinson - East	Galveston	Dickinson	85	4,368	108	7	28	0.8	1.1
Quail Valley - West	Fort Bend	Missouri City	84	4,873	75	13	6	0.4	1.0
Meadows Place	Fort Bend	Meadows Place	84	7,491	88	20	63	0.0	0.3
Downtown LaMarque	Galveston	LaMarque	84	2,921	84	10	39	0.2	1.1
Downtown Rosenberg	Fort Bend	Rosenberg	84	3,912	96	9	9	0.5	1.8
Quail Valley - East	Fort Bend	Missouri City	84	4,090	67	10	12	0.4	1.0
Stafford - West	Fort Bend	Stafford	83	8,109	33	11	19	0.3	1.2
Rosenberg - East	Fort Bend	Rosenberg	83	4,074	39	13	10	0.5	1.1
Stafford - East	Fort Bend	Stafford	83	5,214	44	14	31	0.3	0.7
Conroe - South	Montgomery	Conroe	82	4,910	53	9	68	0.3	1.7
Freeport - North	Brazoria	Freeport	82	3,174	57	6	26	0.1	2.7
Research Forest	Montgomery	The Woodlands	82	6,444	47	9	12	1.3	0.0
Freeport - South	Brazoria	Freeport	82	2,702	65	6	26	0.5	1.3
Dickinson - West	Galveston	Dickinson	82	3,075	81	9	36	0.7	0.3

Focus Area	County	City	Focus Area Index	Job + Resident Density	Intersection Density	School Proximity	Transit Proximity	Crashes	Enviro. Justice
Downtown The Woodlands	Montgomery	The Woodlands	81	14,852	66	9	18	0.7	0.0
Sugar Land - East	Fort Bend	Sugar Land	81	6,523	81	14	2	0.5	0.1
Grogans Mill	Montgomery	The Woodlands	81	6,703	81	8	17	0.6	0.1
Cleveland	Liberty	Cleveland	81	2,079	86	5	4	0.4	1.6
Dewalt	Fort Bend	Missouri City	81	3,838	61	8	5	0.4	0.8
Sugar Land - Southeast	Fort Bend	Sugar Land	81	5,164	87	13	3	0.4	0.3
Oak Ridge North	Montgomery	Oak Ridge North	81	5,926	54	8	17	0.6	0.0
Lake Woodlands	Montgomery	The Woodlands	80	5,283	87	8	13	0.8	0.0
Cinco Ranch - Westheimer Pkwy	Fort Bend	Katy	80	6,157	74	14	0	2.1	0.0

Additional Bicycle Areas

Pedestrian Area	County	City	Focus Area Index	Job + Resident Density	Intersection Density	School Proximity	Transit Proximity	Crashes	Enviro. Justice
Lake Jackson	Brazoria	Lake Jackson	80	4,432	69	8	56	0.5	0.1
Alvin	Brazoria	Alvin	80	5,331	132	13	0	1.4	1.0
Liberty	Liberty	Liberty	77	2,131	86	4	4	0.2	1.2
Dayton	Liberty	Dayton	75	2,489	73	7	4	0.5	0.1
Hempstead	Waller	Hempstead	74	2,568	122	3	0	0.5	2.2
Brookshire	Waller	Brookshire	73	2,195	74	5	0	0.5	2.0
Waller	Waller	Waller	71	2,439	115	4	0	0.7	1.0
Anahuac	Chambers	Anahuac	49	1,600	74	3	0	0.0	0.0
Mont Belvieu	Chambers	Mont Belvieu	49	1,078	26	7	0	0.1	0.0
Winnie	Chambers	Winnie	47	1,576	57	3	0	0.0	0.0

APPENDIX D: PROGRAMMED PROJECTS

The tables in this appendix show the status of active transportation projects included in the Transportation Improvement Program (TIP) and the Ten-Year Plan. The TIP is a fiscally constrained financial plan of transportation projects approved to receive federal funding over the next four years. H-GAC's Transportation Policy Council oversees development of and adopts the TIP. Following adoption, the TPC monitors implementation of the TIP and approves significant changes to projects contained in the TIP. New projects are added to the TIP on a periodic basis and a Call for Projects is conducted approximately every two years.

The projects listed here range in scope, funding source, cost, and geography. Project information is based on data from May 2019 and includes projects funded by H-GAC, TxDOT, local governments, and a combination of the three.

COLUMN HEADER DEFINITIONS

Project Sponsor The entity that applied for and is responsible for execution of the project

Project Description Information related to the type of project; can include details such as infrastructure dimensions, location, material type, etc.

Street (From/To) The name of the streets where the project will be constructed; an alternative location description is noted in cases where the project is not on a street, or will involve multiple streets

Status The current state of the project

> **TIP** the project is scheduled in the TIP, but has not yet been let
> **LET** the funding for this project has been allocated to the project sponsor to begin execution of the project
> **COMPLETED** the project was fully executed

Funding Type The source of funds for this project; some projects have multiple sources and appear on multiple lines

> **3** Locally-funded project or state/federal project with funding not traditionally used for transportation projects
> **5** Congestion Mitigation/Air Quality improvement
> **7** Surface Transportation Program - Metro Mobility (STP-MM)
> **8** Safe Routes to School
> **9** Transportation Enhancements, Transportation Alternatives Program or Transportation Alternatives Set Aside
> **10** Miscellaneous
> **11** TxDOT District discretionary
> **TRANSIT** Transit funding

Federal (1,000s) The amount of dollars (in the thousands) from federal sources

State (1,000s) The amount of dollars (in the thousands) from state sources

Local (1,000s) The amount of dollars (in the thousands) from local sources

Total Cost (1,000s) The total cost of the project

Sub-category A description of the type of project

> **STUDY** A plan or study to identify active transportation improvements in a determined project area
> **STRIPED LANE** An active transportation facility (usually a bike lane) requiring road striping
> **SIDEWALKS** A sidewalk or network of sidewalks
> **SHARED-USE PATH** A shared-use path/trail or network of shared-use paths/trails
> **PED/BIKE SAFETY** Safety treatment, or set of safety treatments to a roadway or intersection (e.g., crosswalk improvements)
> **OTHER** Any other active transportation projects (e.g., bridge or bike share infrastructure)

MPO ID The reference ID used by H-GAC for TIP projects

APPENDIX D: PROGRAMMED TIP PROJECTS

42 Total number of Pedestrian and Bicyclist Projects listed in the TIP and Ten-Year Plan

$272,705,000 Total Funding for Pedestrian and Bicyclist Projects Allocated in the Ten-Year Plan

Funding Source of Projects in Ten-Year Plan
Figure 18

- Local — 51%
- Federal — 47%
- State — 2%
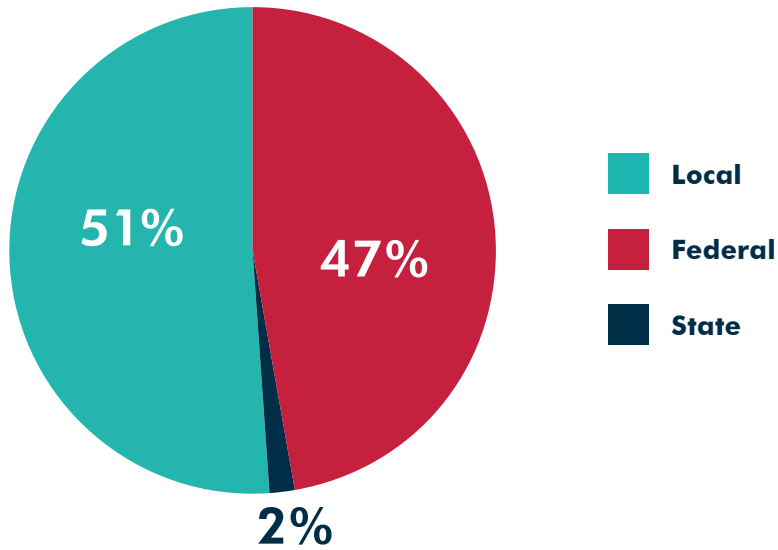
Projects by County in Ten-Year Plan
Figure 19

- Brazoria — 14%
- Chambers — 2%
- Galveston — 14%
- Harris — 55%
- Montgomery — 10%
- Waller — 2%
- Multiple — 2%

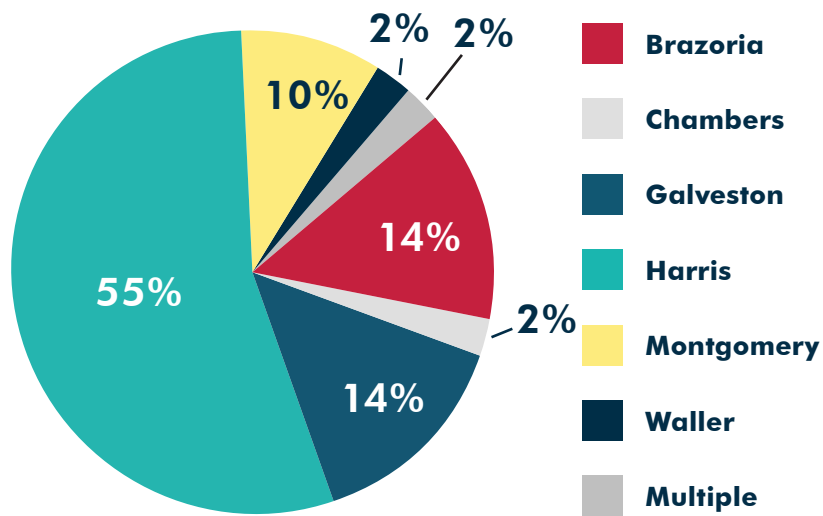| Project Sponsor	County	Project Description	Street	Street From	Street To	Status	Funding Type	Federal (1,000s)	State (1,000s)	Local (1,000s)	Total Cost (1,000s)	Fiscal Year	MPO ID
MIDTOWN MANAGEMENT DISTRICT	Harris	RECONSTRUCT BACK OF CURB INFRASTRUCTURE (SIDEWALKS, CURBS, ADA RAMPS, PEDESTRIAN LIGHTING AND LANDSCAPING)	WHEELER ST	SS 527	CAROLINE ST	TIP	7	$1,250	$-	$312	$1,562	2020	5050
CITY OF WALLER	Waller	SIDEWALK AND ADA RAMP CONSTRUCTION	CS	FARR ST, CHERRY ST TO BRAZEAL ST &	WALLER ST, FM 362 TO FARR ST	TIP	9	$1,107	$171	$106	$1,485	2020	5055
CITY OF PEARLAND	Brazoria	ENGINEERING FOR CONSTRUCTION OF 10 FT MULTIUSE TRAIL	CLEAR CREEK TRAIL	UH CLEAR LAKE PEARLAND CAMPUS	N OF HUGHES RD	TIP	9	$788	$-	$197	$10,100	2020	7127
CITY OF PEARLAND	Brazoria	CONSTRUCT 10 FT MULTIUSE TRAIL	CLEAR CREEK TRAIL	UH CLEAR LAKE PEARLAND CAMPUS	N OF HUGHES RD	TIP	9	$6,478	$-	$1,620	$10,634	2022	7641
HARRIS COUNTY	Harris	CONSTRUCT MULTIUSE TRAIL	SPRING CREEK HIKE & BIKE TRAIL	US 59	TOWNSEN PARK AND RIDE	TIP	5	$2,662	$-	$665	$4,200	2020	7814
UPTOWN HOUSTON DISTRICT	Harris	ON-STREET SHARED-USE LANES, SHARED-USE PATHS, IMPROVED CROSSINGS, A SHARED-USE BRIDGE OVER IH-10, A SHARED-USE CROSSING UNDER IH-610, A SHARED-USE BRIDGE CONNECTING SHARED-USE PATHS ALONG IH-610 AND A BRIDGE OVER BUFFALO BAYOU.	UPTOWN HOUSTON DISTRICT	POST OAK BLVD/DETERING	RICHMOND AVE	TIP	3	$-	$-	$27,700	$27,700	2021	13200
CITY OF LA PORTE	Harris	CITY OF LA PORTE STREETSCAPE IMPROVEMENTS: MAIN, SAN JACINTO, 'E' STREETS AND FAIRMONT PKWY	W & E MAIN ST, SAN JACINTO ST, FAIRMONT PARKWAY, PARK ST, E ST.	W MAIN ST & SH 146 TO E MAIN ST & SAN JACINTO ST, UP	FROM E. MAIN, SAN JACINTO ST TO PARK ST & FAIRMONT PARKWAY	UTP	3	$-	$-	$8,015	$8,015	2029	13828

Table 50

Project Sponsor	County	Project Description	Street	Street From	Street To	Status	Funding Type	Federal (1,000s)	State (1,000s)	Local (1,000s)	Total Cost (1,000s)	Fiscal Year	MPO ID
METRO	Harris	TRANSIT CENTER MODIFICATIONS (FY 2020)	METRO SERVICE AREA	VA	VA	TIP	3	$-	$-	$1,420	$1,420	2020	15296
CITY OF LEAGUE CITY	Galveston	CONSTRUCT 10-FT WIDE SHARED USE PATH ADJACENT TO HOT WATER CANAL WITH a "T" INTERSECTION EAST OF FM 2094 AND PATH TO FM 518	FM 518 BYPASS BIKEWAY	FM 270	SOUTH SHORE BLVD & FM 518	TIP	9	$3,566	$-	$891	$6,200	2020	15318
DOWNTOWN MANAGEMENT DISTRICT	Harris	REHABILITATE, RECONSTRUCT AND WIDEN SIDEWALKS WITHIN A 56 BLOCK AREA BOUND BY POLK, PIERCE, HAMILTON AND FANNIN STREETS	COH SIDEWALKS SE CBD	FANNIN ST	HAMILTON ST	TIP	5	$2,247	$-	$562	$3,952	2021	15321
CITY OF CONROE	Montgomery	CONSTRUCT BIKE FACILITY	LONGMIRE RD	LP 336 N	LP 336 S	TIP	3	$-	$-	$2,000	$2,000	2019	15503
CITY OF CONROE	Montgomery	CONSTRUCT BIKE FACILITY	FM 3083	FM 105	FM 1484	TIP	3	$-	$-	$2,000	$2,000	2020	15504
CITY OF MONT BELVIEU	Chambers	CONSTRUCTION OF SIDEWALKS ON FM 565, PERRY AVE, WILBURN RANCH DR, SH 146 AND EAGLE DRIVE.	VA	ON FM 565, SH 146, EAGLE DR	ON WILBURN RANCH DR, PERRY AVE	TIP	9	$1,194	$-	$298	$1,492	2019	16121
HOUSTON PARKS BOARD	Harris	CONSTRUCT MULTI-USE PATH	HALLS BAYOU TRAIL	JENSEN DR TO HIRSH RD	BRETSHIRE DR TO TIDWELL/WAYSIDE DR	LET	5	$3,183	$-	$796	$5,012	2019	16126
CITY OF PEARLAND	Brazoria	CONSTRUCT SHADOW CREEK RANCH BIKE/PED TRAIL.	SHADOW CREEK BIKE/PED TRAIL	VA	VA	TIP	7	$1,300	$-	$325	$2,278	2019	16169
CITY OF PEARLAND	Brazoria	CONSTRUCT GREEN TEE TERRACE BIKE/PED TRAIL.	GREEN TEE TERRACE BIKE/PED TRAIL	VA	VA	TIP	7	$2,906	$-	$727	$4,940	2019	16171

Project Sponsor	County	Project Description	Street	Street From	Street To	Status	Funding Type	Federal (1,000s)	State (1,000s)	Local (1,000s)	Total Cost (1,000s)	Fiscal Year	MPO ID
CITY OF GALVESTON	Galveston	CONSTRUCT ON-STREET BICYCLE NETWORK (SIGNAGE, PAVEMENT MARKINGS AND STRIPING) AND INSTALL 200 BICYCLE RACKS	CITY OF GALVESTON ON-STREET BICYCLE NETWORK	VA	VA	TIP	5	$286	$-	$72	$462	2020	16203
CITY OF GALVESTON	Galveston	DOWNTOWN PEDESTRIAN TRANSIT CONNECTIVITY IMPROVEMENTS	CITY OF GALVESTON	VA	VA	TIP	9	$402	$-	$101	$649	2019	17006
WESTCHASE MANAGEMENT DISTRICT	Harris	RECONSTRUCT BACK OF CURB INFRASTRUCTURE (WIDER SIDEWALKS, STREET FURNITURE, BOLLARDS, PEDESTRIAN LIGHTING AND ENHANCED TRANSIT STOPS)	WESTHEIMER ST	KIRKWOOD DR S	WESTERLAND DR	TIP	9	$10,321	$-	$2,580	$16,100	2019	17028
CITY OF WEBSTER	Multiple	MILL AND ASPHALT OVERLAY OF SHOULDERS, SHOULDER WIDENING, PAVEMENT MARKINGS, STRIPING AND SIGNAGE FOR BIKE FACILITY	SH 3	RICHEY ST S	FM 518	TIP	9	$6,741	$1,685	$-	$10,500	2019	17061
CITY OF HOUSTON	Harris	CONSTRUCT 10 FT SHARED USED PATH AND 5-6 FT SIDEWALKS IN SECTIONS	FM 526	WOODFOREST BLVD TO IH 10	AND FM 526 TO GREENS BAYOU ALONG IH 10 AND NORMANDY ST	TIP	9	$1,967	$492	$-	$3,098	2020	17074
NEAR NORTHWEST MANAGEMENT DISTRICT	Harris	RECONSTRUCT BACK OF CURB INFRASTRUCTURE (SIDEWALKS, CURBS, ADA RAMPS, PEDESTRIAN LIGHTING AND LANDSCAPING) AND MULTIUSE TRAIL CONNECTOR TO WHITE OAK BAYOU TRAIL	LITTLE YORK RD W	HOLLISTER DR	HOUSTON-ROSSLYN N	TIP	7	$2,194	$-	$549	$2,743	2020	17078

Project Sponsor	County	Project Description	Street	Street From	Street To	Status	Funding Type	Federal (1,000s)	State (1,000s)	Local (1,000s)	Total Cost (1,000s)	Fiscal Year	MPO ID
TXDOT HOUSTON DISTRICT	Brazoria	CONSTRUCT BRAZORIA COUNTY BICYCLE LOOP BY WIDENING SHOULDERS, MODIFYING TRAFFIC SIGNALS AND REMOVING SOME RAISED MEDIANS	FM 1462, FM 2403, FM 2917, FM 762, SH 332, FM 521, FM 2004, FM 523, FM 528	VA	VA	TIP	9	$3,226	$807	$-	$5,100	2020	17086
CITY OF HOUSTON	Harris	CONSTRUCT SHARED USE PATH	FM 1960	MILLS RD	SH 249	TIP	9	$424	$106	$-	$684	2020	17087
MIDTOWN MANAGEMENT DISTRICT	Harris	RECONSTRUCT BACK OF CURB INFRASTRUCTURE (SIDEWALKS, CURBS, ADA RAMPS, PEDESTRIAN LIGHTING AND LANDSCAPING)	BRAZOS ST	ELGIN ST	PIERCE ST	TIP	7	$4,115	$-	$1,029	$5,144	2021	17092
CITY OF HOUSTON	Harris	CONSTRUCT 10FT MULTI-USE TRAIL WITHIN CENTERPOINT UTILITY CORRIDOR	MEMORIAL TO SAN FELIPE HIKE & BIKE TRAIL	MEMORIAL DR	SAN FELIPE ST	TIP	9	$9,107	$-	$2,277	$14,200	2021	17103
CITY OF PEARLAND	Brazoria	CONSTRUCT SIDEWALKS, INTERSECTION, AND SIGNAGE IMPROVEMENTS IN VICINITY OF CARLESTON ELEMENTARY, COCKRELL ELEMENTARY AND PEARLAND JUNIOR HIGH (SAFE ROUTES TO SCHOOL)	CITY OF PEARLAND	VA	VA	TIP	9	$2,698	$-	$674	$4,200	2021	17117
CITY OF LEAGUE CITY	Galveston	CONSTRUCT BIKE LANE (MILLING AND ASPHALT OVERLAY OF SHOULDERS, SHOULDER WIDENING, PAVEMENT MARKINGS, STRIPING) WITH SIGNAGE, SIDEWALK AND ASSOCIATED INTERSECTION IMPROVEMENTS	VA	ON SH 96, FM 270 AND FM 2094	SH 146	TIP	9	$1,959	$-	$490	$3,100	2021	17118

Project Sponsor	County	Project Description	Street	Street From	Street To	Status	Funding Type	Federal (1,000s)	State (1,000s)	Local (1,000s)	Total Cost (1,000s)	Fiscal Year	MPO ID
CITY OF SOUTH HOUSTON	Harris	Construct concrete sidewalks along several sections of City-owned roadway: 6th Street from Texas Avenue to Avenue G, 11th Street from Avenue N to Avenue G, 8th Street from Avenue N to Avenue G, and 13th Street From Avenue N to Avenue G.	SOUTH HOUSTON ROADWAYS	VA	VA	TIP	5	$1,242	$-	$310	$1,955	2019	17119
CITY OF HOUSTON	Harris	CONSTRUCT 10-FOOT MULTIUSE TRAIL AND ASSOCIATED INTERSECTION, SAFETY, SIGNAGE, AND AMENITIES (LANDSCAPING, BENCHES, ETC.).	HCFCD CHANNEL	DAIRY ASHFORD RD S	BW 8/ ARTHUR STOREY PARK	UTP	9	$2,051	$-	$513	$3,200	2023	17120
CITY OF CONROE	Montgomery	CONSTRUCT BIKE LANE (MILLING AND ASPHALT OVERLAY OF SHOULDERS, SHOULDER WIDENING, PAVEMENT MARKINGS, STRIPING) WITH SIGNAGE AND ASSOCIATED INTERSECTION IMPROVEMENTS	VA	ON SH 75, SH 242, FM 1484,	FM 2432, FM 3083 AND FM 830	UTP	9	$5,427	$1,357	$-	$8,500	2024	17121
CITY OF LEAGUE CITY	Galveston	CONSTRUCT 8-FOOT WIDE SHARED PATH WITH INTERSECTION IMPROVEMENTS AND PEDESTRIAN CROSSINGS	FM 518	MAGNOLIA ESTATES DR	PALOMINO RD	UTP	5	$4,031	$-	$1,008	$6,300	2023	17122
CITY OF HOUSTON	Harris	DESIGN FOR 10-FOOT MULTIUSE TRAIL AND ASSOCIATED INTERSECTION, SAFETY, SIGNAGE, AND AMENITIES (LANDSCAPING, BENCHES, ETC.).	HCFCD CHANNEL	DAIRY ASHFORD RD S	BW 8/ ARTHUR STOREY PARK	TIP	9	$351	$-	$88	$3,200	2020	17123

Project Sponsor	County	Project Description	Street	Street From	Street To	Status	Funding Type	Federal (1,000s)	State (1,000s)	Local (1,000s)	Total Cost (1,000s)	Fiscal Year	MPO ID
CITY OF CONROE	Montgomery	CONSTRUCT SIDEWALKS ALONG SILVERDALE DR, SGT. ED HOLCOMB BLVD, RIVER POINTE DR, CAMELOT ST AND WESTVIEW BLVD.	CITY OF CONROE	VA	VA	TIP	3	$-	$-	$2,209	$2,783	2019	17132
TXDOT HOUSTON DISTRICT	Harris	CONSTRUCT 10' SHARED USE PATH	MKT-WHITE OAK BAYOU BICYCLE PEDESTRIAN CONNECTION	MKT TRAIL	WHITE OAK BAYOU TRAIL	TIP	9	$2,390	$-	$597	$2,987	2022	18018
TXDOT HOUSTON DISTRICT	Harris	WIDEN EXISTING SIDEWALK TO 10'. INCLUDE 10' WIDE CONCRETE PATH ALONG THE I 610 FRONTAGE ROAD, STRIPING, PAVEMENT MARKINGS, SIGNAGE, LANDSCAPE/ HARDSCAPE AND ASSOCIATED INTERSECTION IMPROVEMENTS.	NORTHWEST TRANSIT CONNNECTION	W 12TH ST	OLD KATY RD	TIP	9	$880	$-	$219	$1,100	2022	18024
WESTCHASE MANAGEMENT DISTRICT	Harris	UPGRADE AND REPLACE EXISTING 3' SIDEWALK WITH AN 8' SHARED-USE PATH. INSTALL A FULLY-SIGNALIZED TRAFFIC SIGNAL AT RICHMOND AND ELMSIDE.	ELMSIDE SIDEPATH	WESTHEIMER ST	WESTPARK TRAIL	TIP	9	$1,780	$-	$501	$2,281	2022	18025
TXDOT HOUSTON DISTRICT	Galveston	CONSTRUCT BIKE LANE BY WIDENING BRIDGE, INSTALLING PHYSICAL BARRIER AND 48" BRIDGE RAILING WITH SIGNAGE.	SIMS BAYOU BRIDGE	SIMS BAYOU NORTH BANK	SIMS BAYOU SOUTH BANK	TIP	9	$589	$-	$147	$737	2022	18030
TXDOT HOUSTON DISTRICT	Harris	CONSTRUCT 10' CONCRETE SHARED USE PATH INCLUDES STRIPING, BRIDGE RAILING, PAVEMENT MARKINGS, SIGNAGE, LANDSCAPE/ HARDSCAPE AS WELL AS ASSOCIATED INTERSECTION IMPROVEMENTS.	MEMORIAL PARK BICYCLE PEDESTRIAN CONNNECTION	WESTCOTT ST	COHN ST	TIP	9	$2,580	$-	$645	$3,225	2022	18146

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METRO	Harris	CONSTRUCT NEW SIDEWALKS WHERE THERE ARE NONE, UPGRADE SIDEWALKS IN DISREPAIR, ADA ACCESSIBLE BUS PADS, ACCESSIBLE BUS SHELTER-READY PADS, AND ADA RAMPS	METRO SERVICE AREA	VA	VA	TIP	5	$30,000	$-	$75,287	$105,287	2022	18013
TXDOT HOUSTON DISTRICT	Harris	CONSTRUCTION OF ADA ACCESSIBLE SIDEWALKS.	FM 1960/ CYPRESS CREEK PKWY SIDEWALKS	SH 249	IH 45	TIP	9	$6,646	$-	$1,661	$8,307	2022	18049
WESTCHASE MANAGEMENT DISTRICT	Harris	CONSTRUCT 8' SHARED USE PATH REPLACING EXISTING SIDEWALK IN SECTIONS. REPAIR SIDEWALK AND SHARED USE PATH IN SECTIONS. INSTALL SUPPLEMENTAL BIKEWAY/WAY-FINDING SIGNAGE	(Various) Citywest Blvd, Briar Forest Dr., Walnut Bend Ln., Blue Willow, Deerwood, BW-8	Westheimer and Citywest Blvd	Terry Hershey Trai	TIP	9	$1,125	$-	$281	$1,406	2022	18038