# Active Community Study

*Mississippi Gulf Coast*

By:


March 2020

# INTRODUCTION

Gulf Coast residents and visitors want to walk and bike. It allows them to be active while enjoying the Gulf Coast's natural scenery. Walking and biking also offer social benefits. The informal interaction that occurs allows people to develop connections and a heightened sense of involvement in their surroundings. Walking and biking are ways for people get exercise and access daily needs if conditions are adequate. Although the standard is changing, historically pedestrian and bicycle projects have been an afterthought in capital improvements planning. Over the years, sidewalks or bike-safe design practices have not been included in roadway or bridge projects on the Gulf Coast. Where sidewalks do exist along roadways, they are often not connected, leaving the sidewalk networks segmented. Our region should have a system of individual pathways and sidewalks that provide safety, access, and comfort connect for pedestrians and bicyclists to important origins and destinations like schools, parks and shopping areas. This system should connect to each Gulf Coast community in the region. Ideally, every urban roadway should be made suitable for pedestrian and bicycle use and be accessible to everyone living within the urban area.

Local agencies should enact policies and facilitate processes to institutionalize the practice of considering and implementing characteristics of active communities.

This report will be a valuable resource providing a framework for identifying and prioritizing areas to focus resources to improve active communities.

The development of the regional system will occur in stages, with priority investment in projects in areas with the most demand, safety concerns, least constraints, areas with gaps in the existing system and improve equity**.** This plan will use analytical methods to identify important areas to fill gaps in the connectivity of the transportation system and developing infrastructure and operational solutions that provide the public, especially the traditionally underserved populations, with adequate access to essential services. This plan will help Gulf Coast communities enhance the following:

CONNECTIVITY - Develop a well-connected network of bicycle and pedestrian facilities that allow people to access community destinations including home, entertainment, shopping, and recreation conveniently, safely, and reliably.

ECONOMIC AND LIVABILITY - Grow economic activity and livability by increasing the vibrancy of areas by integrating land uses that support functions of daily life close together.

SAFETY - Provide integrated transportation options by improving roadway facilities to reduce the occurrence of vehicle related bicycle and pedestrian crashes.

EQUITY – Ensure that pedestrian and bicycle facilities are in place to connect low-income people and communities without access to vehicles to jobs, transit and community destinations.

# BENEFITS OF ACTIVE COMMUNITIES

**Active communities are ideal places to live, work, learn and play because of their ability to enable healthy lifestyles, stimulate economic growth and attract and retain talent.**

## Equity Benefits

Designing communities and transportation systems for cars excludes citizens that do not have regular access to personal vehicles. Vulnerable populations, such as low-income households, minorities, children, persons with disabilities, and older adults typically own fewer vehicles and have longer commutes. Transportation options such as walking and biking, are sometimes the only available and affordable transportation choice. Without adequate facilities, they are more likely to be exposed to unsafe routes for pedestrians and bicycles because they have no other choice.

## Economic Benefits

Research shows that active communities have the potential to create jobs, expand local businesses, and enhance property values. All these factors can help the tourism industry, restaurants, and other retail outlets, bringing in more tax revenue to the jurisdiction. Active communities also motivate local residents to do more of their shopping and entertainment locally, rather than traveling to another city or town. Houses with above average levels of walkability sell for $4,000 to $34,000 more than houses with average levels of walkability. *http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf*

## Desirable Community

Many people believe it is important to live "within an easy walk" of shops, cafes, schools and other community places. Smaller cities are having trouble keeping and attracting businesses that require a millennial workforce. This "brain drain" is adversely affecting smaller cities. Many millennials want a lifestyle where they can live in compact, walkable, bikeable communities. Evidence exists that the baby boomer generation shares a similar desire for more compact, walkable communities. If smaller cities expect to attract or retain both millennials and boomers, planning for denser, walkable and bikeable communities would be an effective formula. Otherwise, economies may stagnate or decline.

## Quality of Life

Active transportation provides the opportunity for an increase in the quality of life for individual residents as well as the community as a whole. Active transportation networks create complete streets that make walking or biking more enjoyable, increase social interactions, improve health, and reduce driving for short trips.

## CHARACTERISTICS OF ACTIVE COMMUNITIES

Two factors that go into a person's decision to walk or bike include the *personal factor* and the *environmental factor*. The relationship of these factors interacts to affect a person to reach a decision to walk or bike or not. When a trip is considered by a person, they will make a choices about walking or driving based on a few factors including: safety on the route being considered, comfort on the route being considered and the time it will take to walk or ride the route and distance. When these factors are improved upon, the result is an "active community".

### Personal Factor

Individuals have varying levels of desire and determination to walk or ride depending on many factors such as their capability, confidence, commitment, lifestyle and attitudes toward health and being active. This disposition interacts with the realities of the environment in their community influences their decision to become and pedestrian or bicyclist. Each person's level of determination to walk or ride is different and must outweigh barriers in the environment and characteristics of the trip being considered.

### Area Characteristics (Environmental Factor)

Origins and destinations. The built environment that includes the types and intensity of land use. The environment can help or hinder pedestrian and bicycle activity that take place in an area.

- Compactness. Land use intensities that generate pedestrian and bike demand based on their proximity to each other. The compactness makes walking and biking feasible choices.
- Completeness. The district should have an array of uses and services that residents and workers patronize frequently.
- Connectivity. A walkable economic district should have good circulation networks with short block lengths and high connectivity which provides route choices for pedestrians and bikes.

### Route Characteristics (Environmental Factor)

The quality of facilities on the route which influence the perception of safety, comfort and the experience of walking and biking. Roads should be safe for bicyclist and pedestrians. Safety mitigation measures should be installed to providing a feeling of security to user's personal safety. Paying attention to aesthetics is also important to making walking enjoyable. Streets should be aesthetically pleasing while meeting standards to accommodate people with disabilities and all other users. Specific attention should be made to the land use context of each area when developing roadway projects.

## TYPE OF USERS

Although predominantly bicyclist and pedestrians, there are many different types of non-vehicle roadway users with varying skill levels and different senses of personal safety. People have different needs for safety and comfort while walking and biking. The varying types of potential pedestrians and bicyclists may have different definitions and tolerance for these factors. For instance, "experienced bicyclists" (also known as "strong and fearless") value speed on their ride. These users would rather be in the roadway on bike lanes or even in the travel lane and be considered a slow-moving vehicle because of conflicts with driveways and slower moving users on the pathway. Families would rather be on a facility separated from the traffic such as a multiuse pathway.

It is not reasonable to create dual networks offering different levels of amenities in order to accommodate the sometimes conflicting needs of various user types and functions, therefore a compromise must be made to install facilities that will have the greatest impact to Gulf Coast users to the extent possible. Planning and designing of infrastructure involves developing localized solutions based on a balance that will provide a good level of service to all users.

As discussed in *AASHTO's Guide for the Development of Bicycle Facilities*, multiuse paths should not be used to preclude the use of bike lanes. However, as cost and right-of-way constraints present themselves and decisions have to be made about which facilities to include.

### Experienced and Advanced

These are serious cyclists (roadies). They are strong and fearless riders that are confident in most road situations. Advanced bicyclists prefer to cycle amongst vehicles because they consider themselves slow moving vehicle. They prefer fast and direct routes regardless of the quality of the environment.

- Choice commuters
- Race competitors

## Basic adult

The basic adult looks for ease of access, adequate facilities and attractive environments. This person is willing to sacrifice directness, in terms of both distance and time for a route with less traffic. This includes people that currently don't ride bicycles but are interested in doing so but concerned about safety due to the lack of proper amenities. This class of rider does not, or will not, like riding amongst vehicles therefore will avoid roadways without adequate facilities.

- Zero car commuters - Low income people that have no available vehicle to serve as an option the access essential services.
- Recreational rider or walker
- Choice commuters – People that choose to ride or walk to work to be more active or save money
- Tourists

## Mature and Disabled

People with mobility, circulatory, respiratory or neurological disabilities use many kinds of devices for mobility. Some use walker, canes, crutches or braces. Some use manual or power wheelchairs or electric scooters.

This user requires level, clearly defined easy access and careful attention in the design and placement of street furniture, including resting points.

- People in wheelchairs
- Adults on tri-cycles
- Users of motorized scooters

## Families and Children

Children require a high level of separation from motorized vehicles. They are the most unpredictable pedestrian or bicyclist. They are also the smallest and don't understand the rules of the road. This group needs smooth surfaces, high visibility and curb ramps.


- Families with strollers
- School children
- Bikes with trailers
- Skateboarders

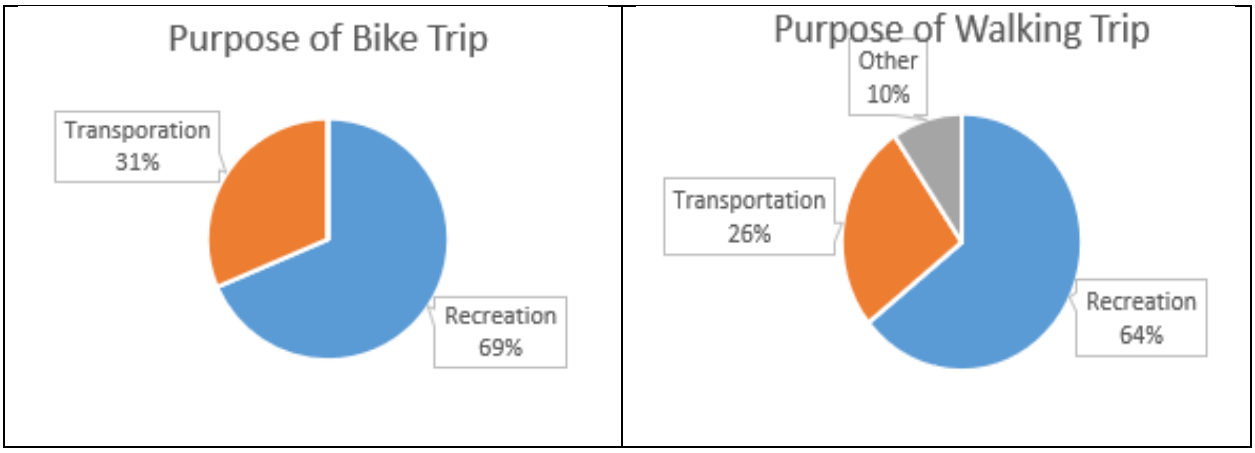
## Purpose of Biking and Walking Trips

The two primary purposes of walking or riding bikes are for recreation/exercise and transportation.

**Recreational** - trips do not primarily focus reaching a certain destination as it is on being active and getting exercise. Therefore, recreational walking is more affected by residential density and the presence of long, straight stretches of sidewalk rather than where stores and jobs are.

**Transportation** - the primary purpose is to access a destination to serve a purpose such as getting groceries or making a transaction at the bank.

In 2012 the National Highway Traffic Safety Administration (NHTSA) conducted a survey of a total of 7,509 people among a national representative sample of individuals 16 or older and asked what their primary purpose for riding a bike or walking during the previous 30 days. The survey found that the purpose of riding a bicycle was as follows: Recreation – 33%, exercise – 28%, personal errands – 17%, commuting to work – 7%, commuting to school – 4%. The purpose of their walking trip was: Exercise – 39%, personal errands – 17%, recreation – 15%, walk the dog – 7%, visit a friend – 7%, commuting to work – 5%, commuting to school – 3%, required for job – 2%. Combining these reasons into either "transportation" or "recreation/exercise" or "other" shows that more people are choosing non-motorized transportation for recreation or exercise.



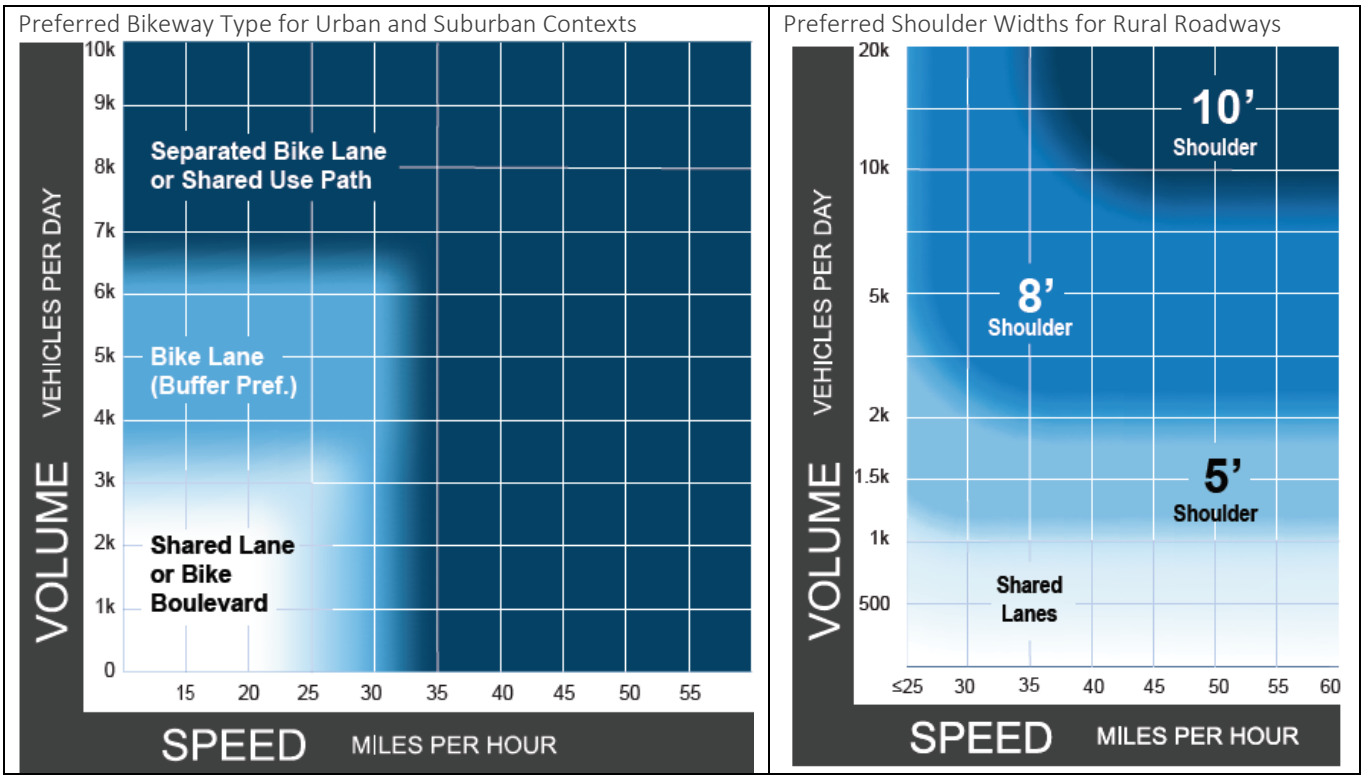

Schroeder, P. & Wilbur, M. (2013, October). *2012 National survey of bicyclist and pedestrian attitudes and behavior, volume 2: Findings report.* (Report No. DOT HS 811 841 B). Washington, DC: National Highway Traffic Safety Administration.

## FACILITY TYPES

Facility types include a wide range of devices and measures such as sidewalk widening, improved pedestrian crossings, new signals and signal modifications, bike lanes and paths, separated bike lanes, and traffic calming. Wherever possible, active transportation projects should be bundled with other transportation projects. Creating an environment that embraces active transportation requires education, encouragement, enforcement, and evaluation programs.

| What type of facility do non-motorized roadway users prefer? | | | | |
|---|---|---|---|---|
| User type | | Bike lane or shoulder | Multiuse pathway or separated facility | Sidewalks |
| Experienced and Advanced | *Choice bike riding commuters* | X | O | - |
| | *Bike race competitors* | X | O | - |
| Basic adult | *Zero-car bike riding commuters* | O | X | - |
| | *Zero-car walking commuters* | - | X | O |
| | *Choice bike riding commuters* | O | X | - |
| | *Choice walking commuters* | - | X | O |
| | *Recreational bike rider* | O | X | - |
| | *Recreational walker or jogger* | - | X | O |
| | *Tourists* | - | X | O |
| | *Dog walkers* | - | X | O |
| Families and Children | *Families with strollers* | - | X | O |
| | *School children riding bikes* | - | X | - |
| | *School children walking* | - | X | O |
| | *Skaters* | - | X | O |
| | *Bikes with trailers* | - | X | - |
| Mature and Disabled | *People in wheelchairs* | - | X | O |
| | *Adults on tri-cycles* | - | X | O |
| | *Users of electric scooters* | - | X | O |
| *Preferred (X)* | | *Sufficient (O)* | | *Not Suitable (-)* |

Planning and designing of infrastructure involve developing localized solutions based on a balance that will provide a good level of service to all users. The demand for walking and bicycling routes is influenced by the need of people to access daily needs. It is important to provide these connections as a priority so that users don't experience long detours to gain access to their needs or to cross busy roads undermining their personal safety. Good safe links to public transit for multi-modal trips, and essential service destinations are important. Based on traffic volume and speed, the matrix included in USDOT's Bikeway Selection Guide will determine which bicycle amenity should be included on a roadway to make it suitable for bicycle travel.




*US DOT's Bikeway Selection Guide. February 2019.*

## Shared Lanes

As *AASHTO's Guide for the Development of Bicycle Facilities* discusses, in many instances, bicyclists and motor vehicles share the same travel lanes. Roadways that carry very low to low volumes of traffic, that also have traffic typically operating at low speeds may be suitable as shared lanes in their present condition. Roadways determined to be suitable for shared lanes should have notifications to alert motorists of the potential presence of bicycles in their lane. This reinforces the right of bicycle travel on the roadway. Section 9C.07 of the *2009 Manual on Uniform Traffic Control Devices (MUTCD)* describes the use of shared lane markings for roadways where a bicyclist and vehicles will share the road. MUTCD describes the purpose of the markings:

- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle,
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,
- Alert road users of the lateral location bicyclists are likely to occupy within the traveled way,
- Encourage safe passing of bicyclists by motorists, and
- Reduce the incidence of wrong-way bicycling.

*NACTO's Urban Bikeway Design Guide* advises that "On streets with posted 35 mph speeds of faster and motor vehicle volumes higher than 3,000 vpd shared lane markings are not a preferred treatment. On these streets other bikeway types are preferred." *AASHTO's Guide for*

*the Development of Bicycle Facilities* indicates that shared lane markings should not be used on roadways that have a speed limit above 35mph.

### Paved shoulders

As *AASHTO's Guide for the Development of Bicycle Facilities,* the determination of the appropriate shoulder width should be based on the roadway's context. It says that on uncurbed cross sections, paved shoulders should be at least 4-ft wide to accommodate bike travel. Shoulder width of 5ft is recommended from the face of guardrails, curbs, or other roadside barriers. (*Section 4.5 GDBF*)

### Bike lanes

Bile lanes are a portion of the roadway designed for preferential use by bicyclists. As *AASHTO's Guide for the Development of Bicycle Facilities,* discusses the importance to understand the difference between bike lanes and paved shoulders. Bike lanes are travel lanes that at intersection approaches, are placed on the left side of right turn lanes because they are intended to serve through movements by bicyclists to avoid right turning vehicles. It says that 5-foot is preferred, 6-7 foot adjacent to narrow parking lanes. 4-foot is acceptable if on low speed roadways with curbs but no gutter. It is also worth noting that the Mississippi Department of Transportation's *Roadway Design Manual* references the AASHTO guidelines mentioned here and says that the minimum width for bicycle lane is 4-feet, but the desirable width is 5-feet.

### Shared Use Pathways

Separated pathway, shared use pathway, and multiuse pathway all refer to paved facilities that are adjacent to a roadway separated from motorized traffic by open space or a barrier. *AASHTO's Guide for the Development of Bicycle Facilities* states in Sec 5.2.1 that shared use pathways should be designed at a minimum width of 10-feet. This width will comfortably accommodate two-way bicycle traffic. In the same section AASHTO says that in very rare circumstances, a reduced width of 8-feet may be used is bicycle and pedestrian volumes are expected to be low. It is also worth noting that the Mississippi Department of Transportation's *Roadway Design Manual* references the AASHTO guidelines mentioned here and says that the minimum width for a two directional bicycle path is 8-feet but the desirable width is 10-feet. Some pros and cons of multiuse pathways include:

- Multiuse paths are not integrated with traffic signals as bike lanes are. When bicyclists use a bike lane, they are expected to follow all traffic laws. A bicyclist on a multiuse pathway are not necessarily compelled to since they are not on the road.
- Motorists entering or crossing the roadway at intersections and driveways are more likely to notice bicyclists using bike lanes than on multiuse pathways.
- Motorists entering or crossing the roadway at intersections and driveways will often block the multiuse pathway as they pull forward to get a view of oncoming traffic.
- Bicycles are relatively quiet and pedestrians who are deaf or hard of hearing may not be aware of a bicycle approaching from behind even when riders indicate their presence with a bell or horn. Individuals with limited mobility who may be alert to bicyclists may find it difficult to move aside in time to avoid collision. *US Access Board via www.access-board.gov*

# ACTIVE COMMUNITY ANALYSIS

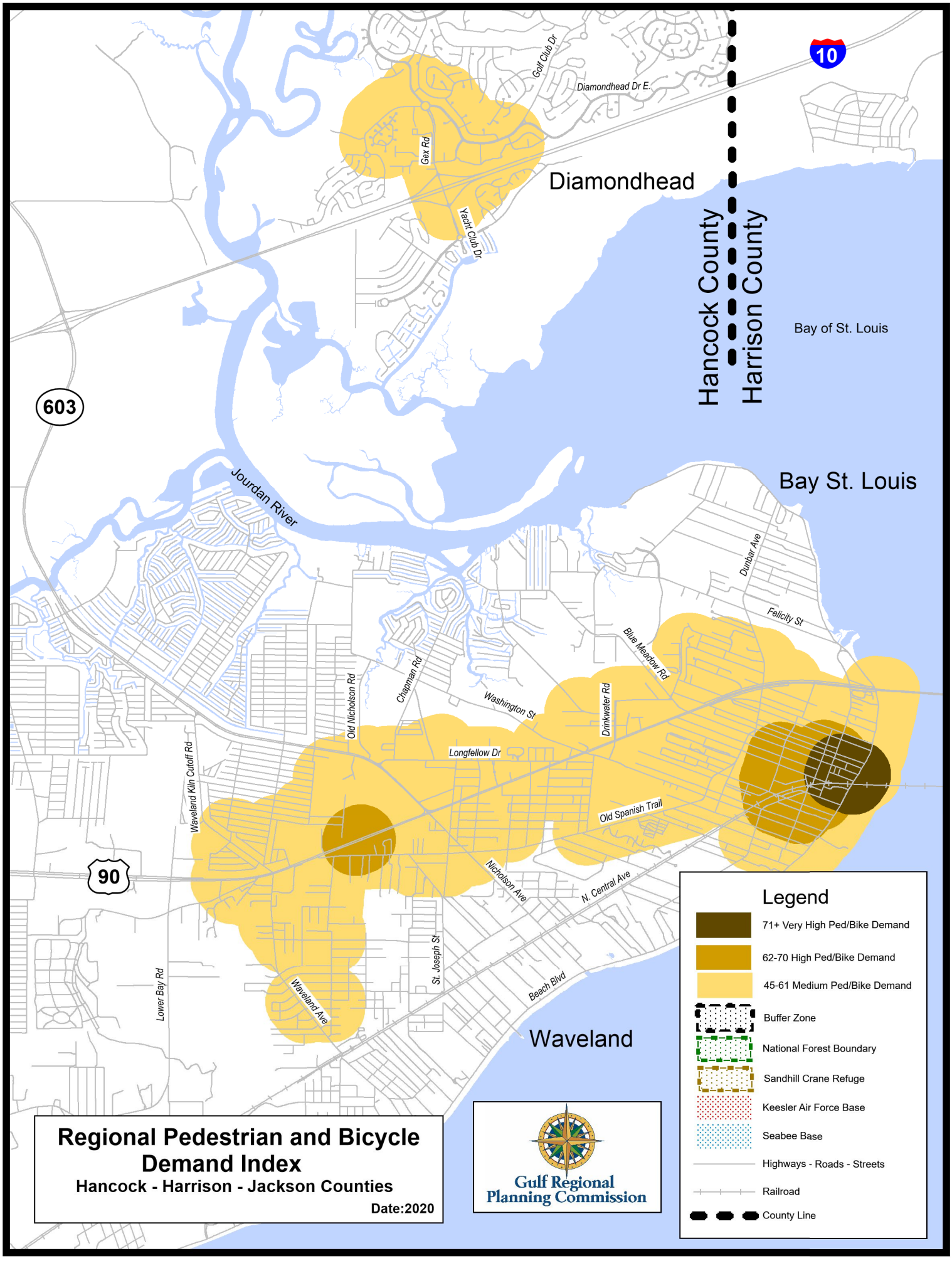
## Gulf Coast Demand Analysis

This plan focuses on the "environmental factors" described above. In order to better understand area characteristics that support the existing and potential demand for pedestrian and bicycle trips, a demand analysis is conducted that illustrates existing and latent demand based on characteristics of the existing built environment, location of major attractors, and demographics. Pedestrian and bicycle activity are directly related to the frequency, magnitude, and proximity of trip generators and attractors to a roadway segment. A demand analysis is performed as a representation of the existing and potential pedestrian and bike activity around a roadway based on the mix and compactness of land uses in the study area.

Once demand is quantified, areas can be prioritized to focus resources to make improve the community through additional land uses, improved street networks and the addition of sidewalks, pathways, crosswalks, lighting and other measures to encourage pedestrian and bicycle activity.

Each generator is assigned a "weight" based on the level of activity that it would generally attract compared to the other land uses. The sum of the weights for each type of generator that is within the buffer is compiled. The buffers used represent the distance (¼ mile to ½ mile) a typical pedestrian will walk to a destination. Maps depict existing and potential pedestrian and bicycle trip activity surrounding the generators and attractors.

| Pedestrian/Bicycle Demand Weighting | |
|---|---|
| Population, jobs and students per acre | 1 to 30 |
| Within ½ mile of popular destinations | 1 to 15 |
| Senior (65+) and youth (<15) population per acre | 1 to 10 |
| No vehicle households | 1 to 25 |
| Intersections per square mile | 1 to 20 |
| Parks | 2 |
| Major recreation centers | 2 |
| Beaches | 5 |
| Schools | 5 |
| Libraries | 1 |
| Hospitals | 5 |
| Grocery stores | 2 |
| Convenience stores | 2 |
| Restaurants/bars | 1 |
| Hotels/motels | 2 |
| Military bases | 10 |
| Universities | 10 |
| Casinos | 5 |
| Pharmacies | 2 |
| Intersections per square mile | 2 |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Washington St
Drinkwater Rd
Longfellow Dr
Waveland Kiln Cutoff Rd
Old Spanish Trail
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Lower Bay Rd
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71+ Very High Ped/Bike Demand
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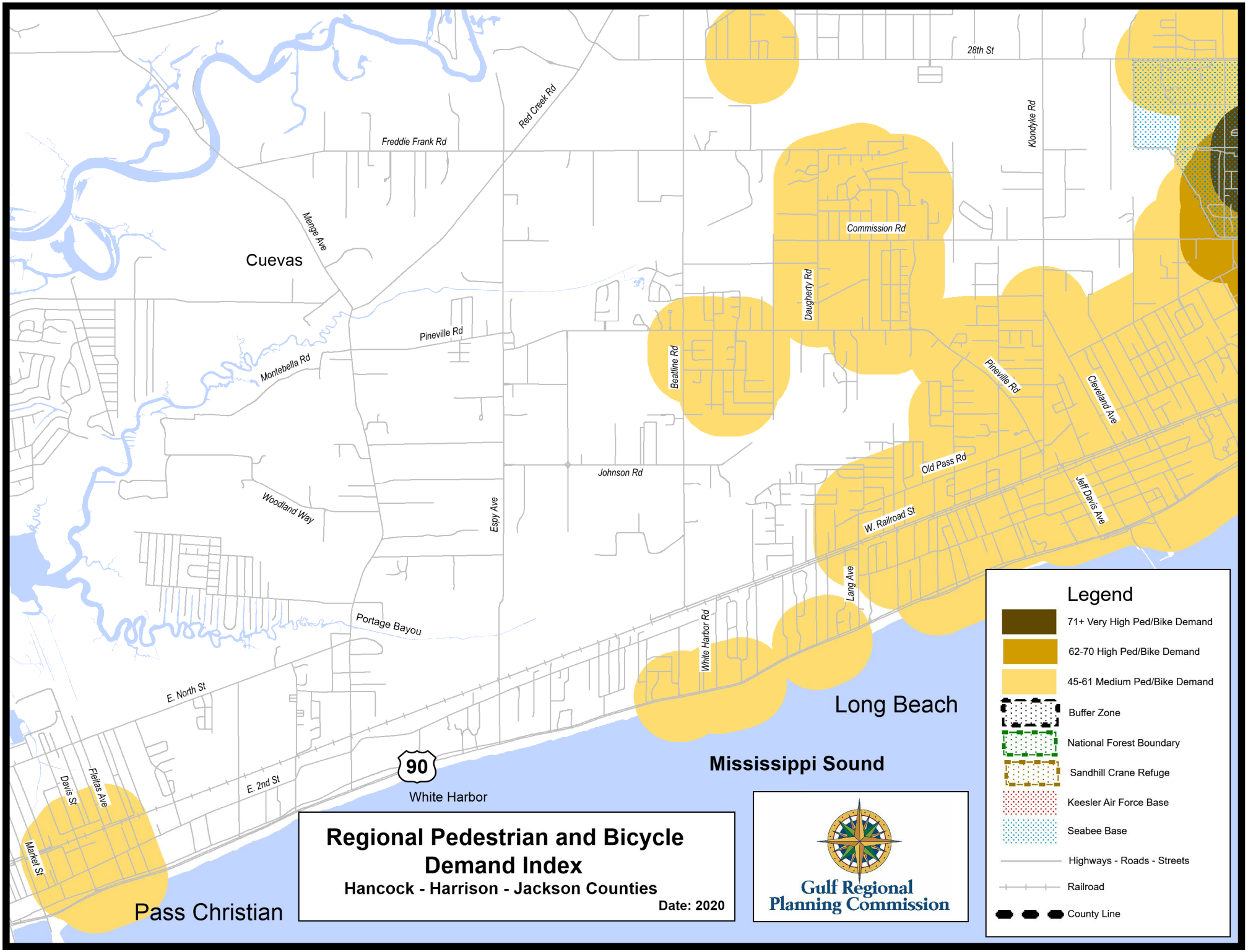
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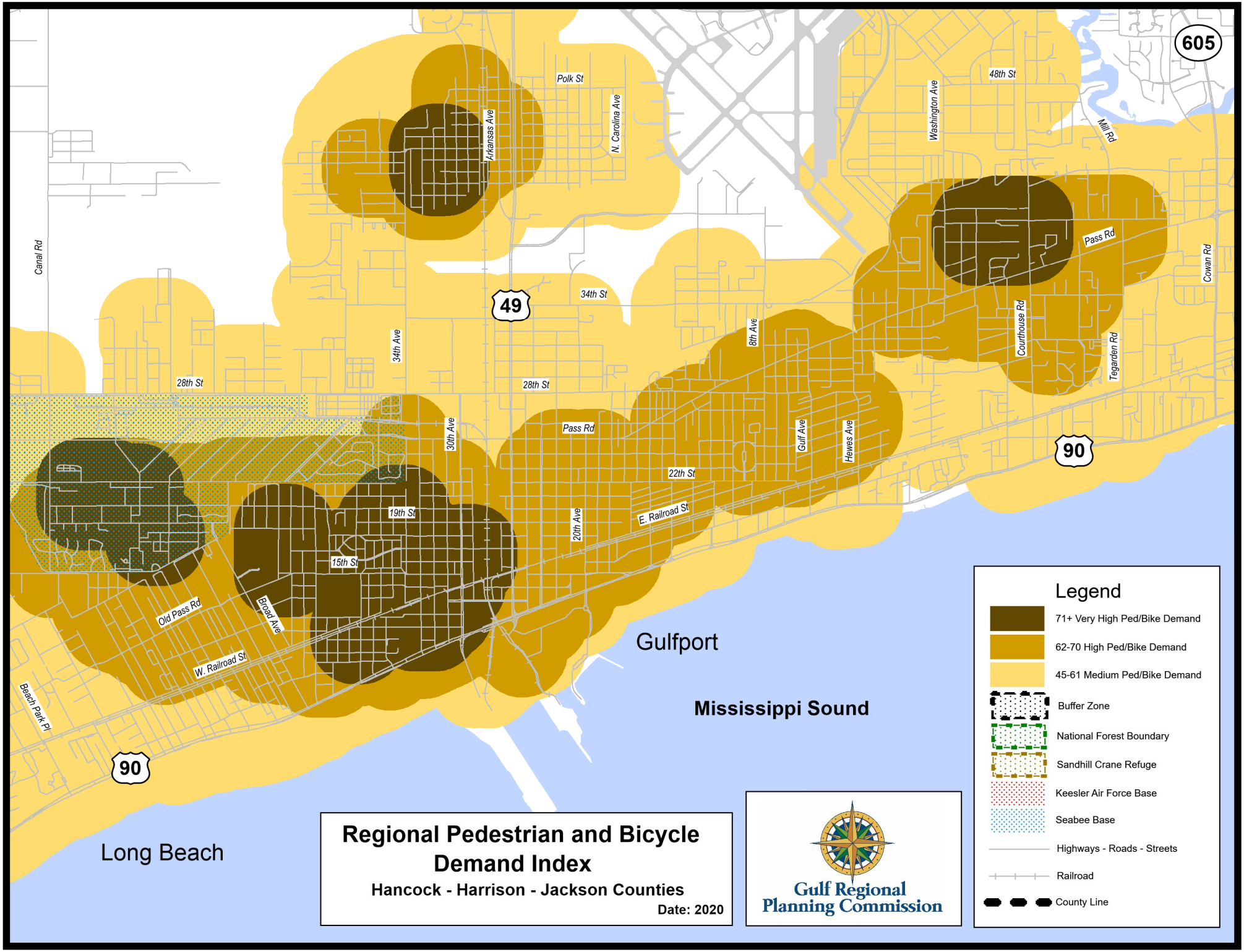
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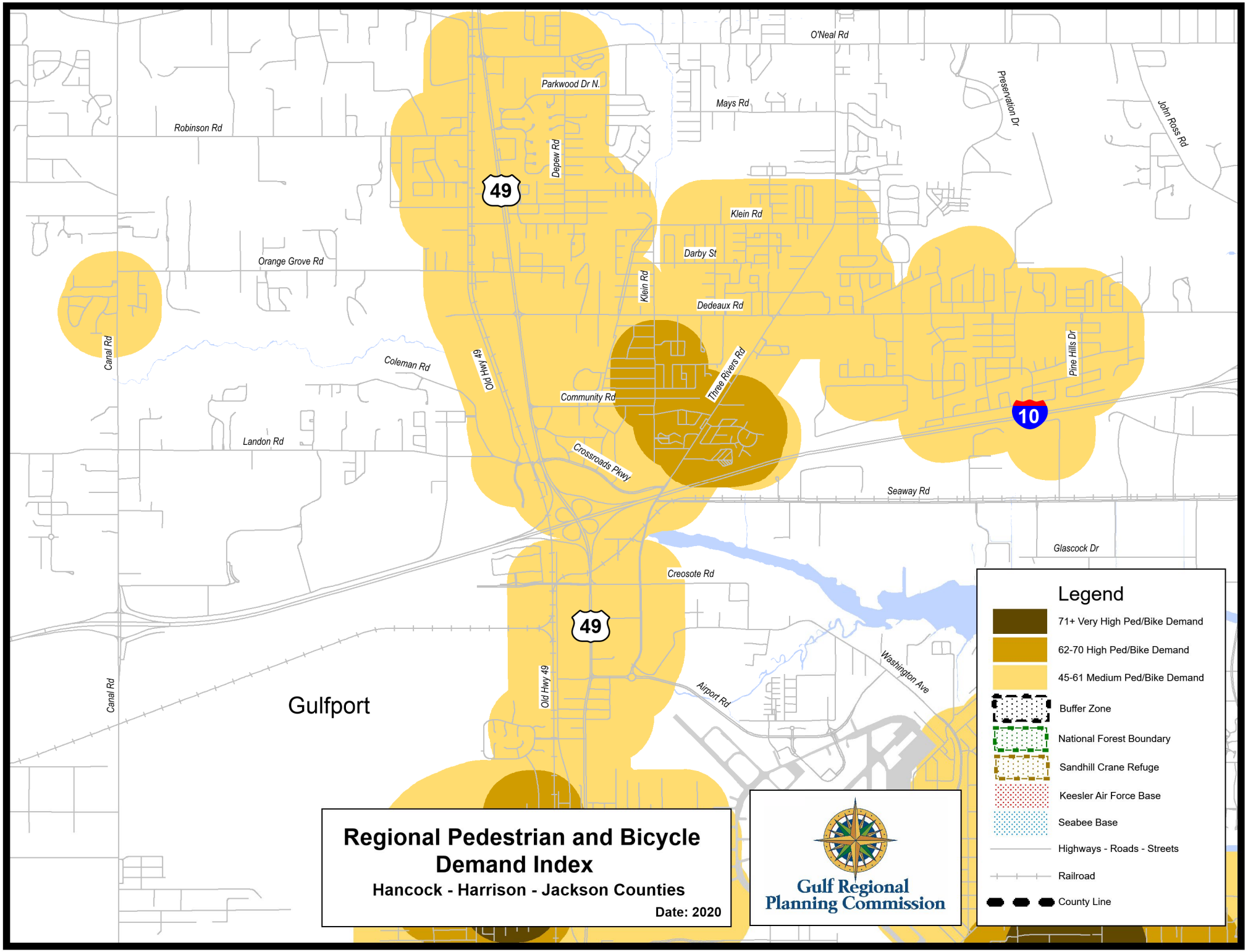
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Canal Rd
Coleman Rd
Old Hwy 49
Three Rivers Rd
Pine Hills Dr
Community Rd
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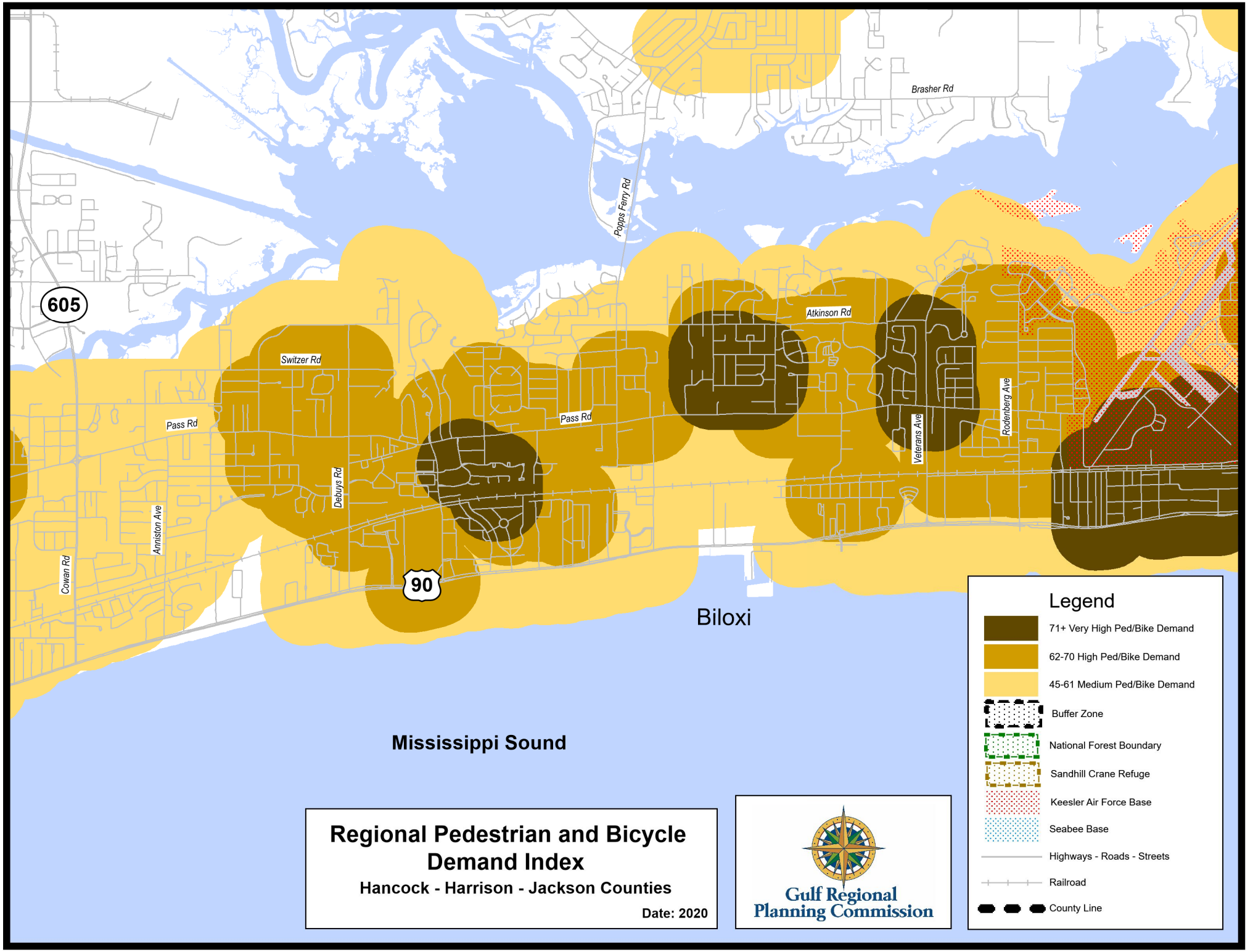
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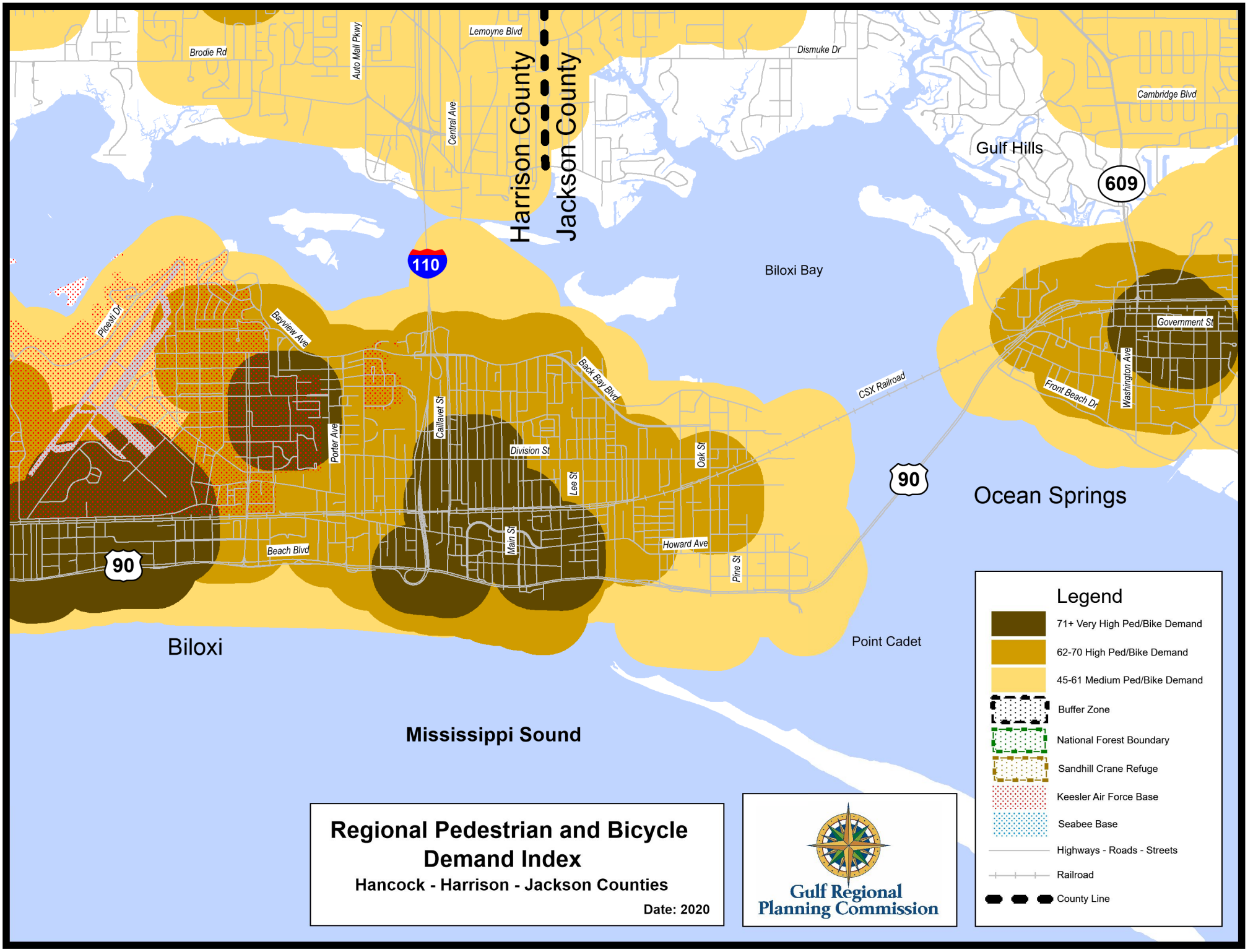
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Jackson County
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Cambridge Blvd
Gulf Hills
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Ploesti Dr
Bayview Ave
Porter Ave
Caillavet St
Back Bay Blvd
Division St
Lee St
Oak St
CSX Railroad
Government St
Front Beach Dr
Washington Ave
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Ocean Springs
Beach Blvd
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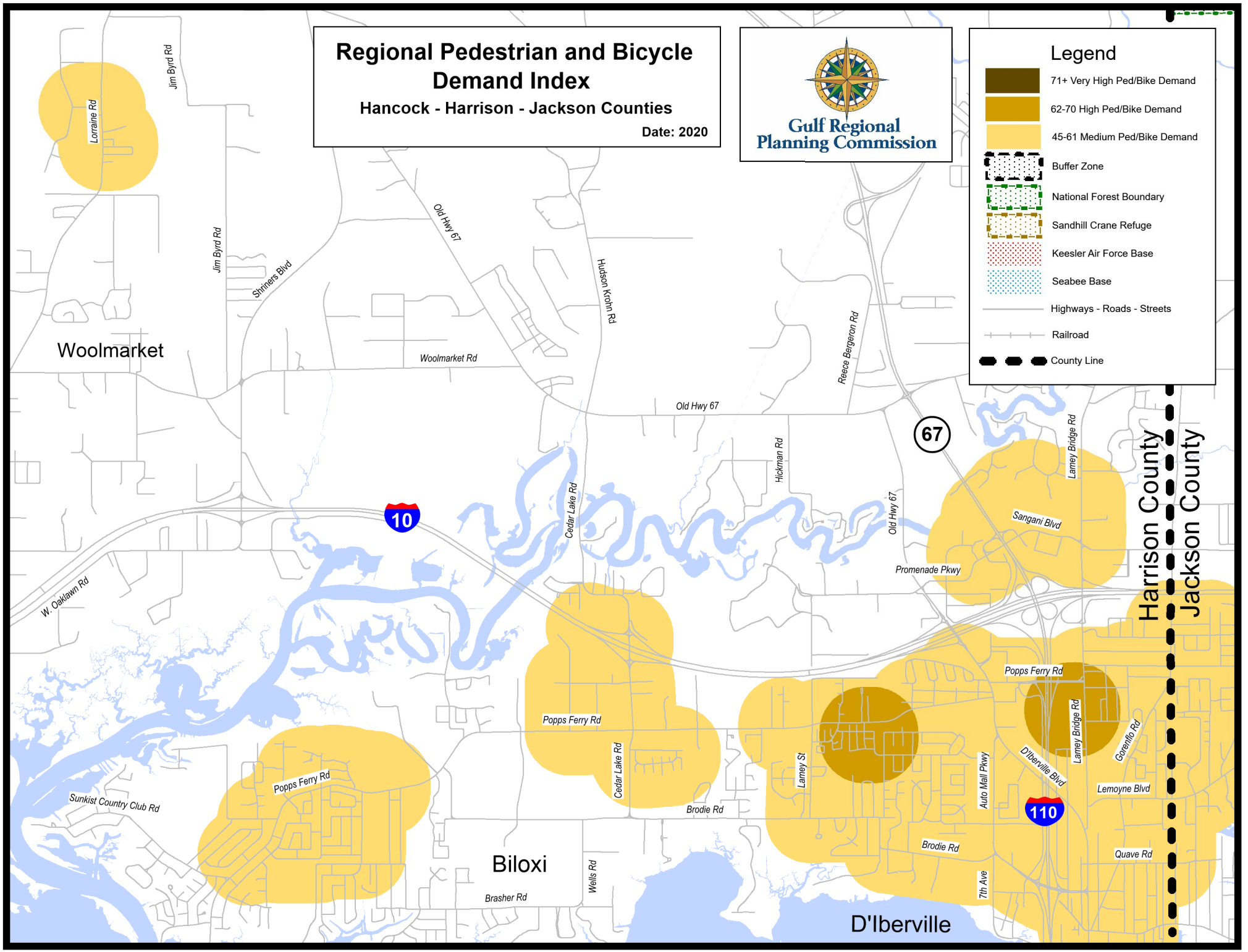
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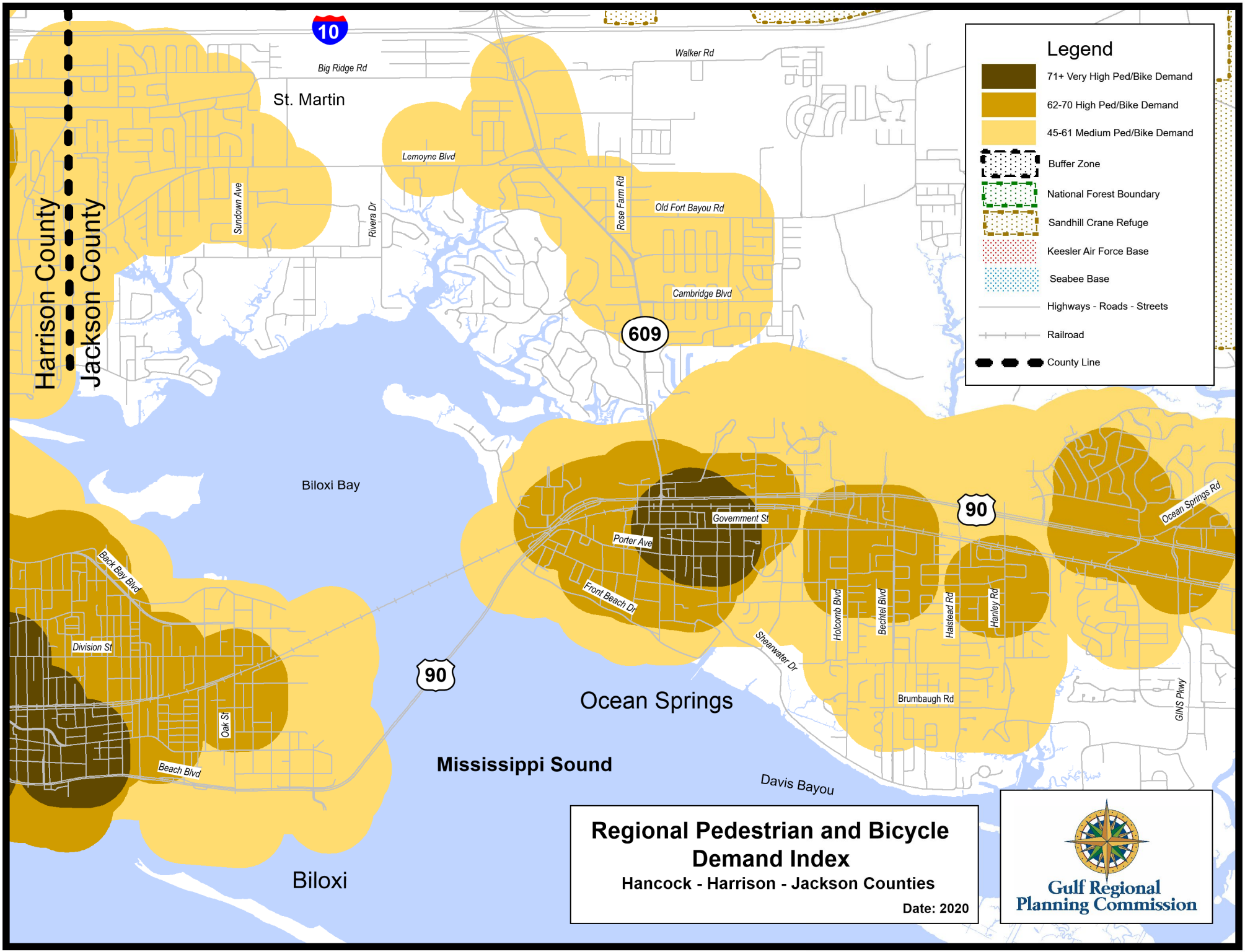
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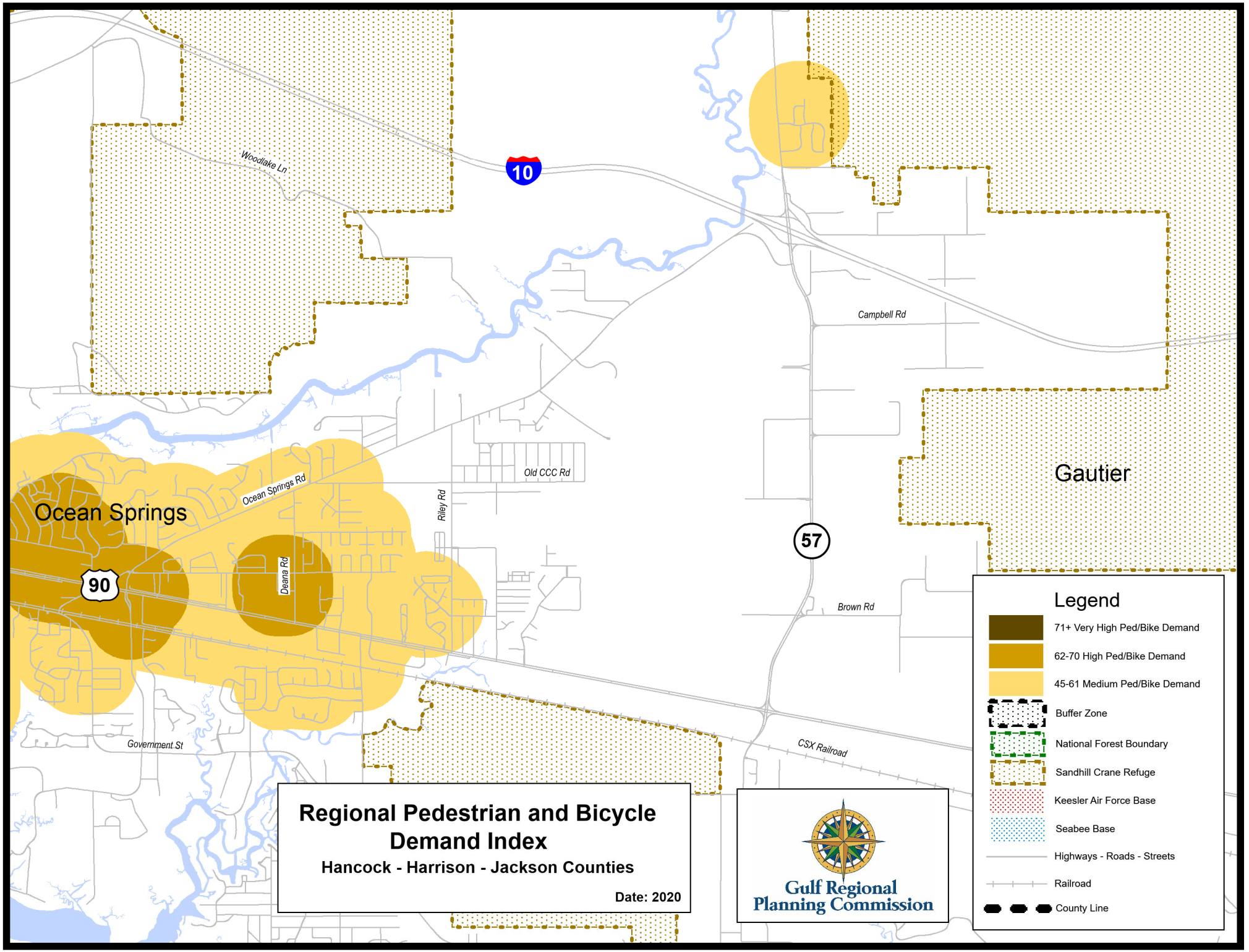
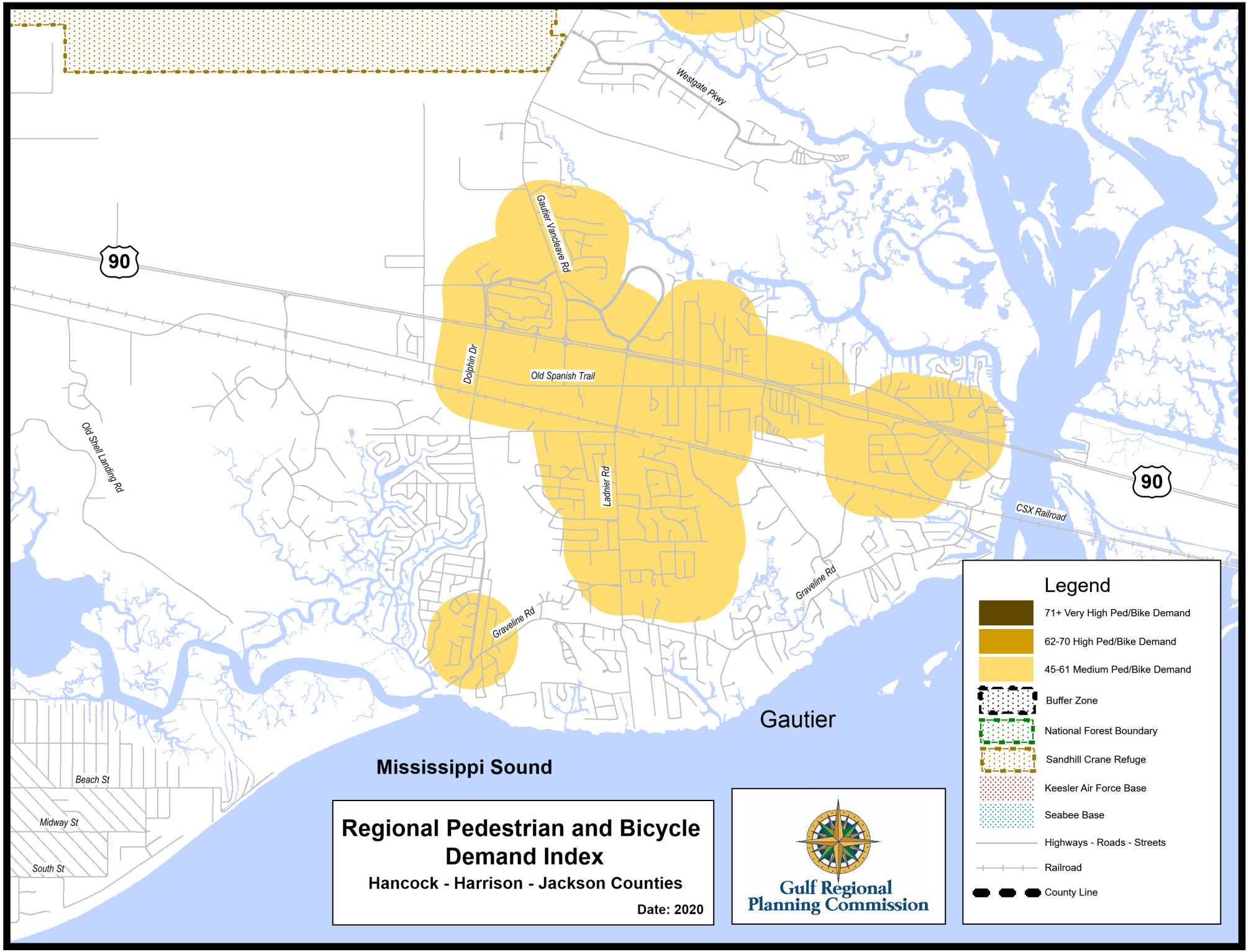
Seabee Base
Highways - Roads - Streets
Railroad
County Line
Harrison County
Jackson County
St. Martin
Big Ridge Rd
Walker Rd
Lemoyne Blvd
Sundown Ave
Rivera Dr
Rose Farm Rd
Old Fort Bayou Rd
Cambridge Blvd
609
Biloxi Bay
90
Government St
Porter Ave
Front Beach Dr
Ocean Springs Rd
Holcomb Blvd
Bechtel Blvd
Halstead Rd
Hanley Rd
Shearwater Dr
Brumbaugh Rd
GINS Pkwy
Back Bay Blvd
Division St
Oak St
Beach Blvd
Ocean Springs
Mississippi Sound
Davis Bayou
Biloxi
Regional Pedestrian and Bicycle Demand Index
Hancock - Harrison - Jackson Counties
Date: 2020
Gulf Regional Planning Commission


Woodlake Ln
10
Campbell Rd
Old CCC Rd
Riley Rd
Ocean Springs Rd
Ocean Springs
Deana Rd
90
57
Gautier
Brown Rd
Government St
CSX Railroad
Legend
71+ Very High Ped/Bike Demand
62-70 High Ped/Bike Demand
45-61 Medium Ped/Bike Demand
Buffer Zone
National Forest Boundary
Sandhill Crane Refuge
Keesler Air Force Base
Seabee Base
Highways - Roads - Streets
Railroad
County Line
Regional Pedestrian and Bicycle Demand Index
Hancock - Harrison - Jackson Counties
Date: 2020
Gulf Regional Planning Commission

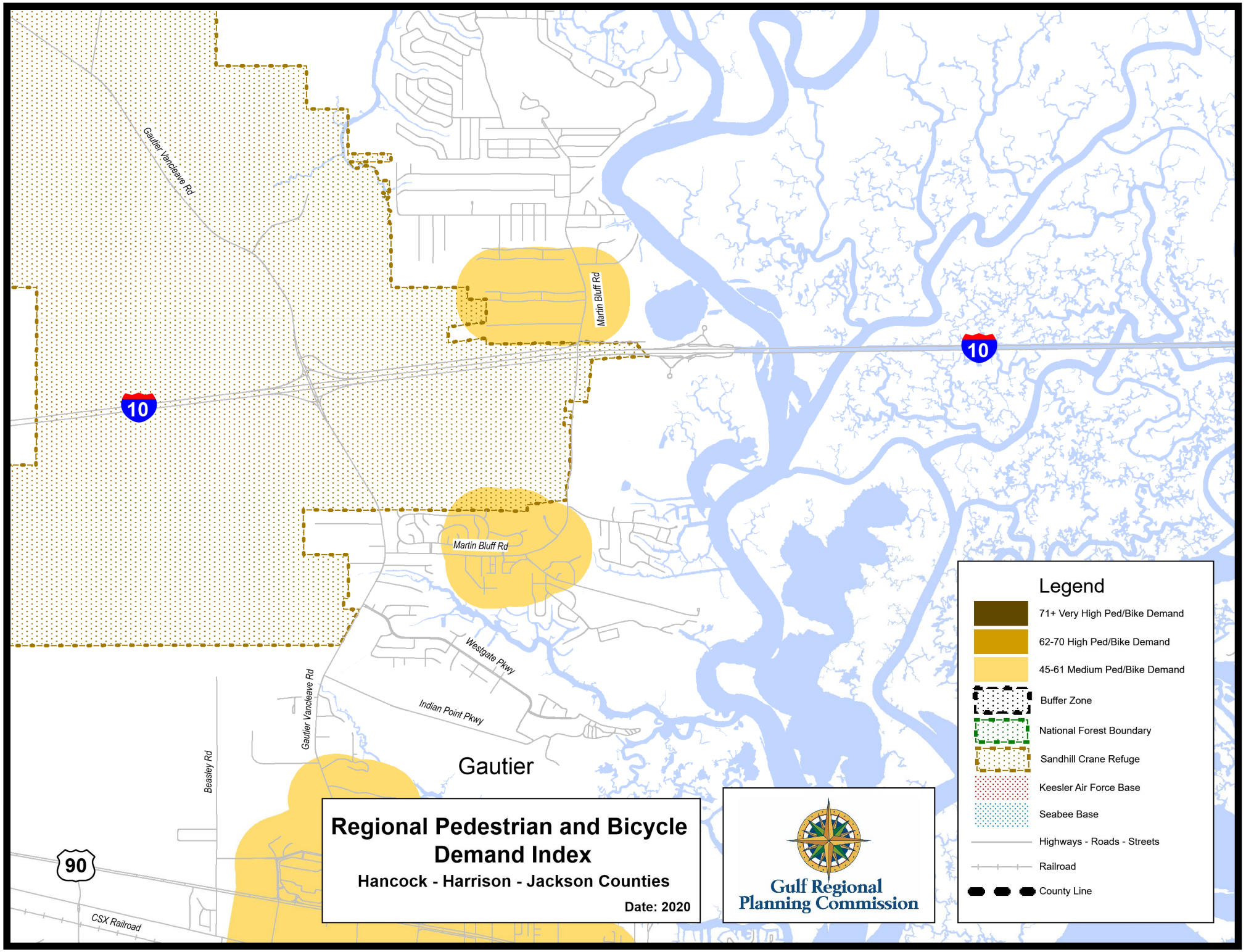



# Regional Pedestrian and Bicycle Demand Index

**Hancock - Harrison - Jackson Counties**

**Date: 2020**

Gulf Regional Planning Commission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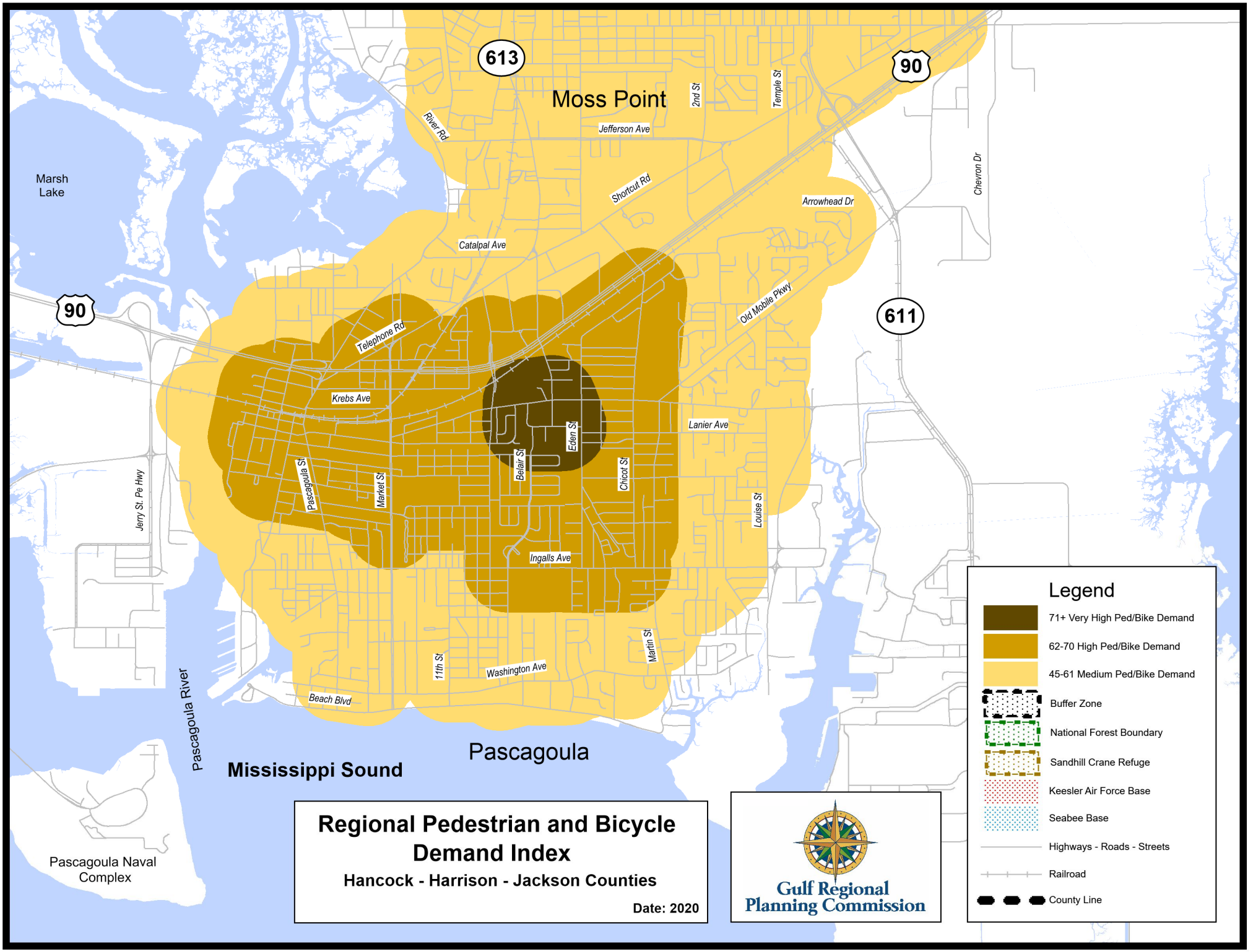
Martin Bluff Rd
10
Martin Bluff Rd
10
Westgate Pkwy
Indian Point Pkwy
Gautier Vancleave Rd
Gautier
Beasley Rd
90
CSX Railroad
Regional Pedestrian and Bicycle Demand Index
Hancock - Harrison - Jackson Counties
Date: 2020
Gulf Regional Planning Commission
Legend
71+ Very High Ped/Bike Demand
62-70 High Ped/Bike Demand
45-61 Medium Ped/Bike Demand
Buffer Zone
National Forest Boundary
Sandhill Crane Refuge
Keesler Air Force Base
Seabee Base
Highways - Roads - Streets
Railroad
County Line


613
90
Moss Point
River Rd
Jefferson Ave
2nd St
Temple St
Chevron Dr
Marsh Lake
Shortcut Rd
Arrowhead Dr
Catalpal Ave
90
611
Old Mobile Pkwy
Telephone Rd
Krebs Ave
Lanier Ave
Eden St
Belair St
Chicot St
Louise St
Pascagoula St
Market St
Jerry St. Pe Hwy
Ingalls Ave
Martin St
11th St
Washington Ave
Beach Blvd
Pascagoula River
Pascagoula
Mississippi Sound
Pascagoula Naval Complex
Legend
71+ Very High Ped/Bike Demand
62-70 High Ped/Bike Demand
45-61 Medium Ped/Bike Demand
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Hancock - Harrison - Jackson Counties
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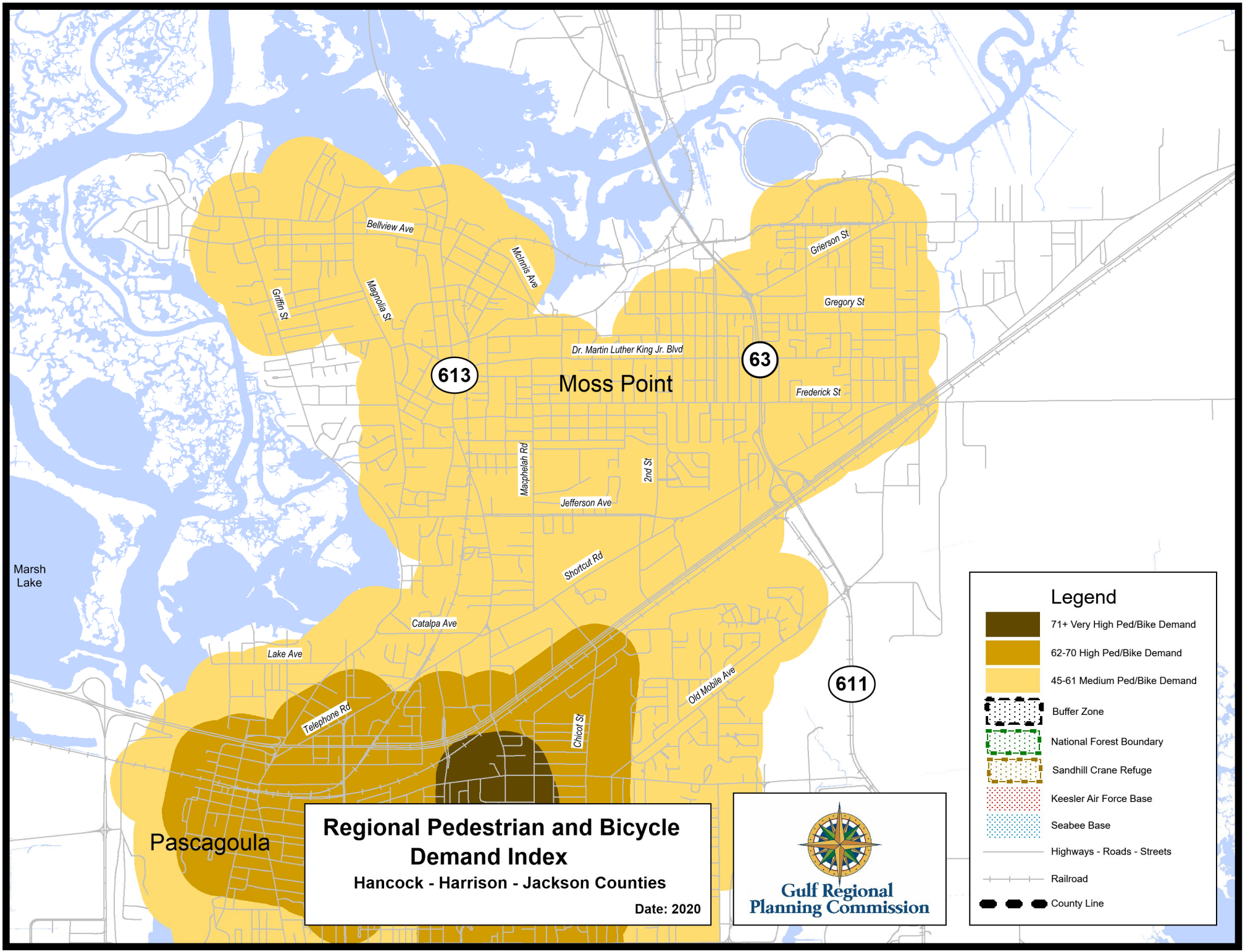
Bellview Ave
McInnis Ave
Griffin St
Magnolia St
Grierson St
Gregory St
Dr. Martin Luther King Jr. Blvd
613
63
Moss Point
Frederick St
Macphelah Rd
2nd St
Jefferson Ave
Shortcut Rd
Marsh Lake
Catalpa Ave
Lake Ave
Telephone Rd
Chicot St
Old Mobile Ave
611
Pascagoula
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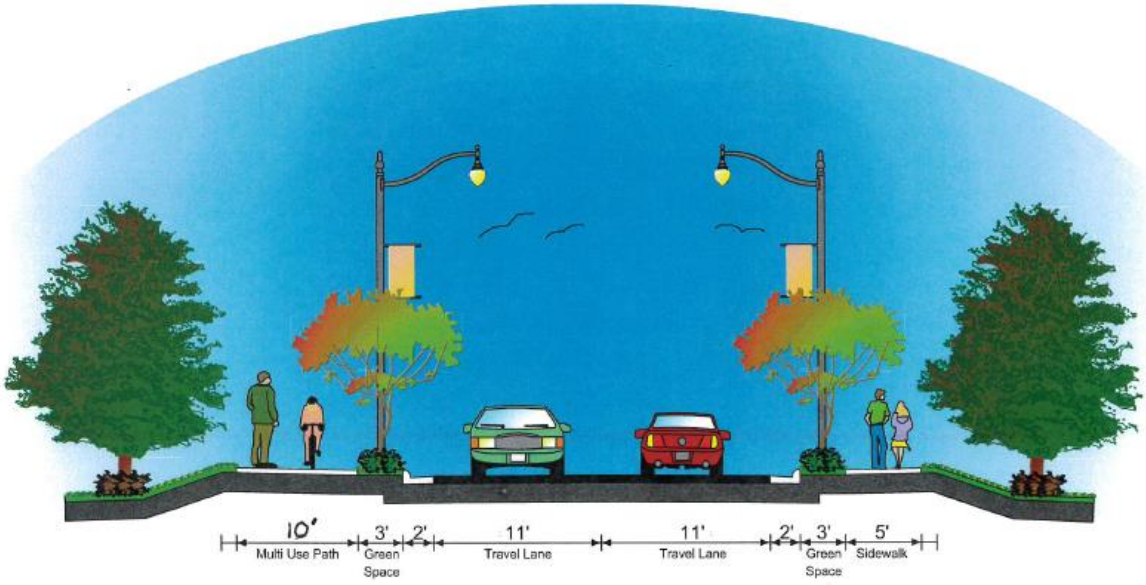
# APPENDIX:

## Ideal street cross section




TWO-LANE ROAD WITH MULTI-USE PATH AND SIDEWALK
*45-Foot Minimum Right-of-Way*

## References:


Federal Highway Administration. "Manual on Uniform Traffic Control Devices." Federal Highway Administration, U.S. Department of Transportation, Washington, DC.

National Association of City Transportation Officials (NACTO). Urban Bikeway Design Guide.

*Guide for the Planning, Design, and Operation of Pedestrian Facilities. American Association of State Highway and Transportation Officials (AASHTO), 2004*

*AASHTO's Guide for the Development of Bicycle Facilities*

Transportation Research Board. "Highway Capacity Manual", Washington, DC. 2000

Mississippi Department of Transportation's *Roadway Design Manual.* 2001

Network Connectivity

| Score | Network Connectivity | |
|---|---|---|
| 0 - 20 | Very Low | Almost none of the local streets connect. |
| 21 - 40 | Low | Streets rarely connect. Streets loop around and connect back where they started |
| 41 - 60 | Medium | Most block lengths are grater than 1000 feet creating limited choices for pedestrians and bicyclists |
| 61 - 80 | High | Streets form an inconsistent grid with many block lengths greater than 700 feet. |
| 81 - 100 | Very high | Blocks are short (300 to 400 feet) providing lots of options for pedestrians and bicyclists |

| Intersections per square mile | Points |
|---|---|
| < 10 | 10 |
| 11 - 30 | 20 |
| 31 - 50 | 30 |
| 51 - 100 | 40 |
| 101 - 150 | 50 |
| 151 - 200 | 60 |
| 201 - 250 | 70 |
| 251 - 300 | 80 |
| 301 - 400 | 90 |
| > 400 | 100 |