

## NEEDS AND BENEFITS

To assess the local, county, and regional trail needs of the areas surrounding the CC2ST, a needs and benefits analysis was completed. This assessment includes an analysis of the socioeconomic characteristics of Wakulla and Leon counties including income, poverty, commuting, and vehicle ownership. The proximity of community features, including libraries, community centers, parks and schools, and major activity centers located within one mile of proposed CC2ST corridors was analyzed. The community features were also evaluated to determine if logical or needed connections exist between community features and the proposed trail system. Additionally, an analysis of the projected number of trail users, as well as user group types, is also discussed.

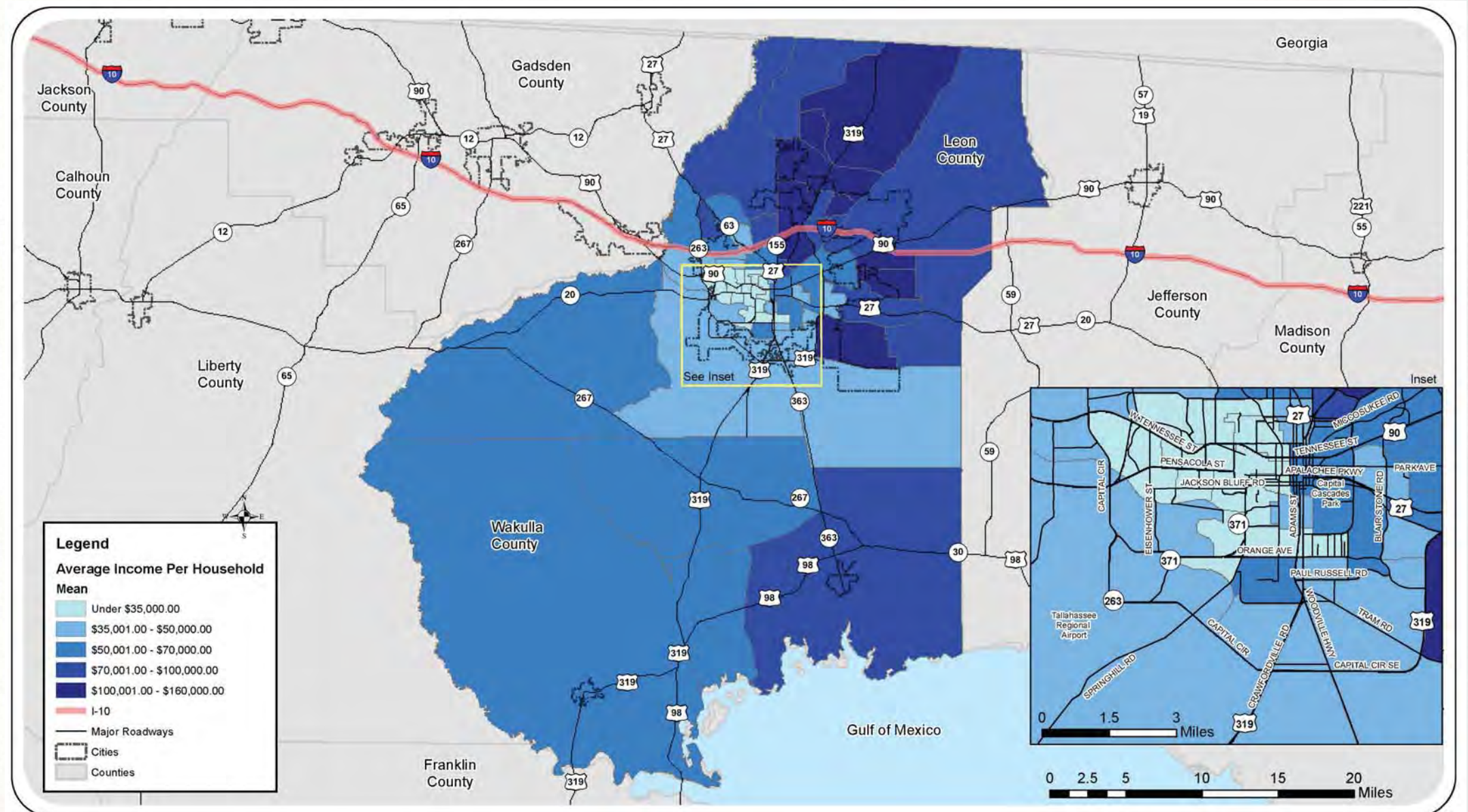
### SOCIOECONOMIC CHARACTERISTICS

The following sections provide information on various socioeconomic characteristics that could affect trail usage on CC2ST, such as income or poverty status. The discussion of these characteristics is not intended to form the basis of necessity for the trail system; rather, this will simply introduce factors that could affect trail usage.

### INCOME

As noted in the existing conditions sections of this Master Plan, there are a wide range of incomes across the study area. Income has a direct effect on the transportation options that individuals and households possess. Households that have relatively higher incomes will have greater access to personal vehicles for transportation; however, as stated previously, the relationship between trail usage and income may not always be linear. The CC2ST trail system connects and bisects areas of varying incomes (Figure 24). Providing these connections allows for users of multiple income groups to have access to the facilities and connect users in low income areas to jobs and services in other areas.

FIGURE 24: AVERAGE INCOME PER HOUSEHOLD



Average Income per Household

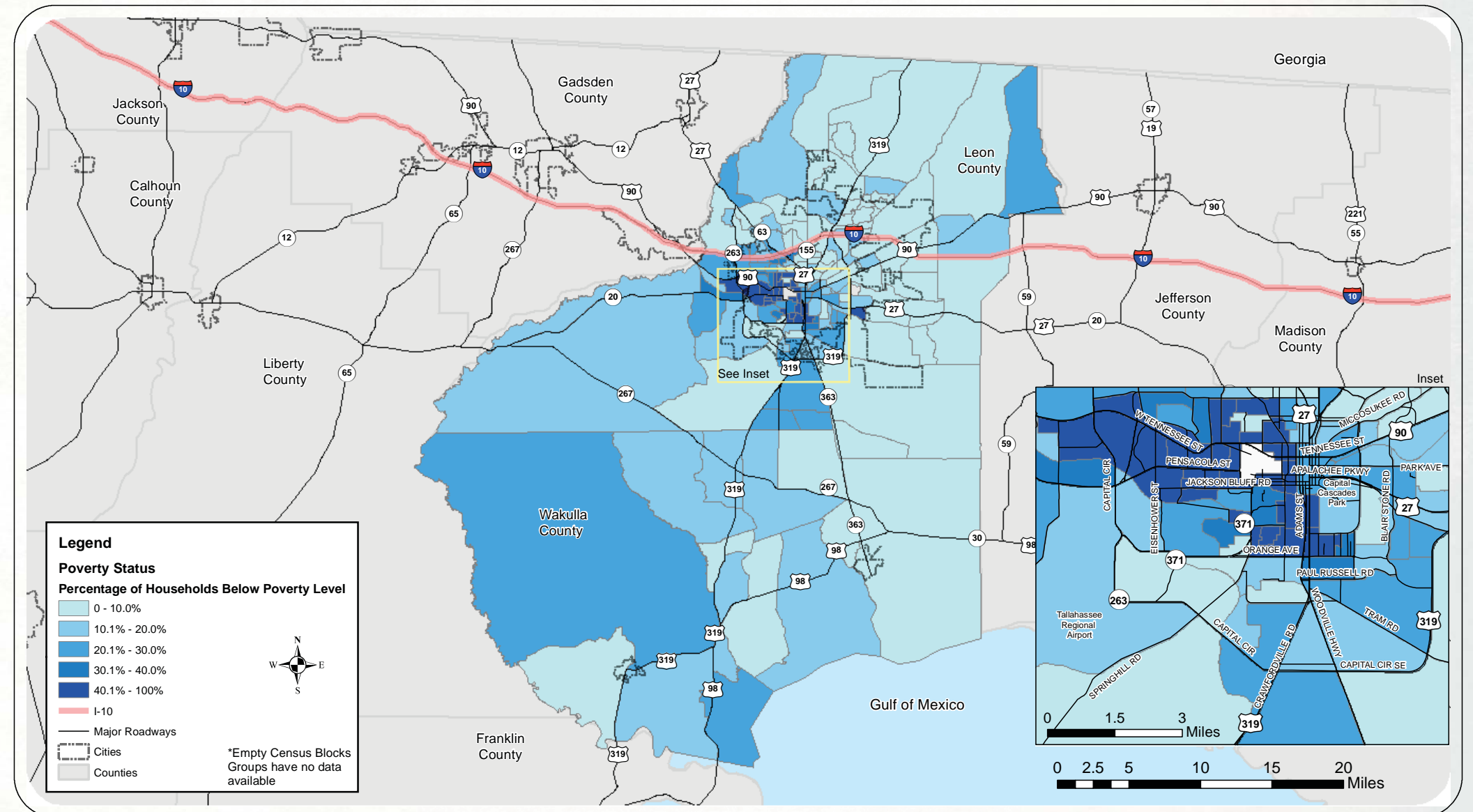


# NEEDS and BENEFITS

## POVERTY

For households that are living at or below the poverty line, dependable vehicular transportation (private vehicle, bus, taxi) may not always be feasible. Similar to the income analysis, areas that have low percentages of households in poverty will likely have greater access to private vehicles. As shown in **Figure 25**, there are concentrations of high poverty areas surrounding downtown Tallahassee and the universities in the area. Providing an alternative mode of transportation throughout Wakulla and Leon Counties could assist in increasing the transportation alternatives for those in poverty. Additionally, providing this transportation link could provide increased access to jobs and consumer options for those without access to private vehicular transportation that may not have been attainable otherwise.

FIGURE 25: PERCENT OF HOUSEHOLDS IN POVERTY



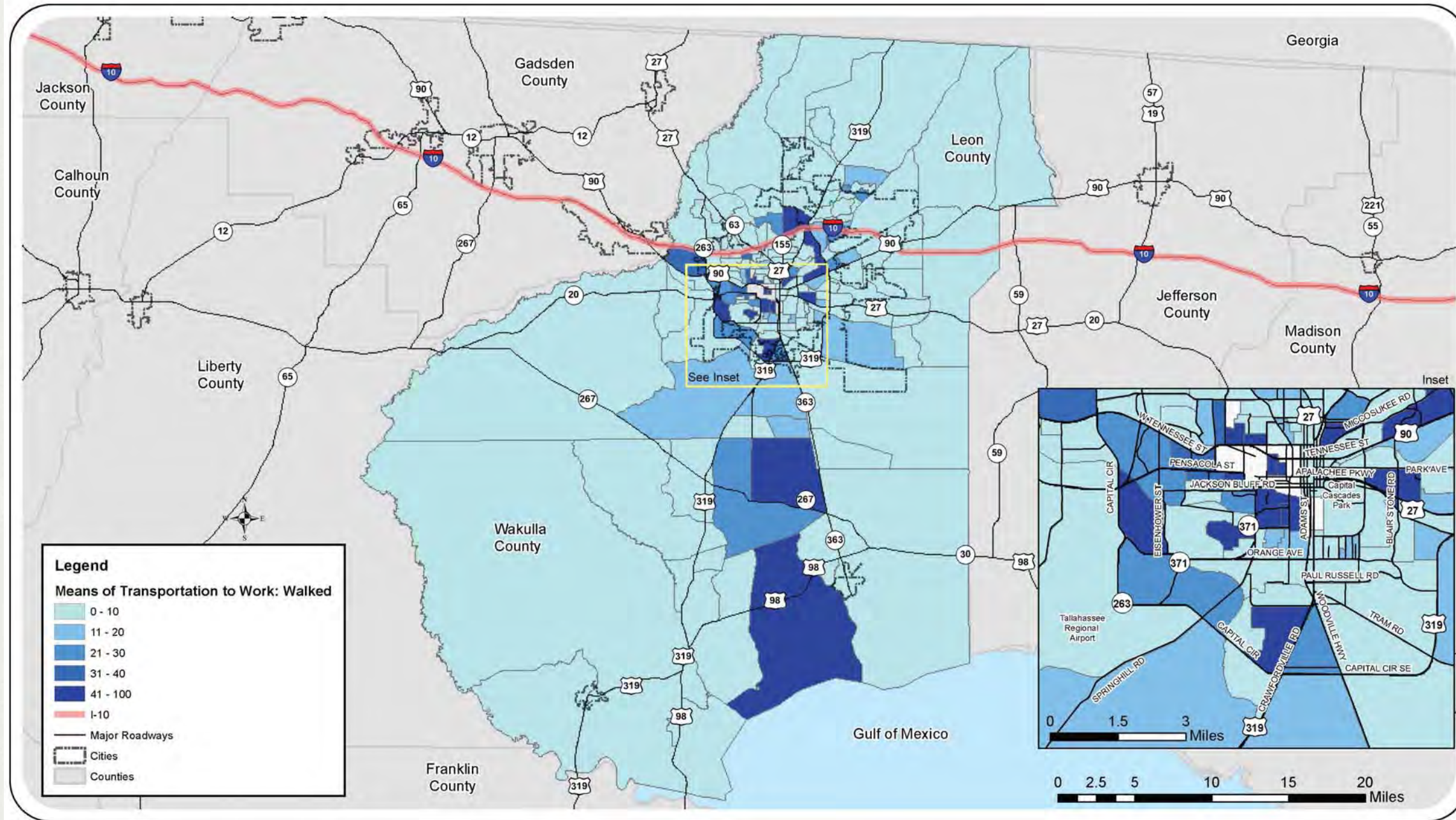
**Percent of Households Below Poverty Level**





# NEEDS and BENEFITS

FIGURE 27: MEANS OF TRANSPORTATION TO WORK - WALKED



## Means of Transportation to Work Walked



Capital City to the Sea Trails

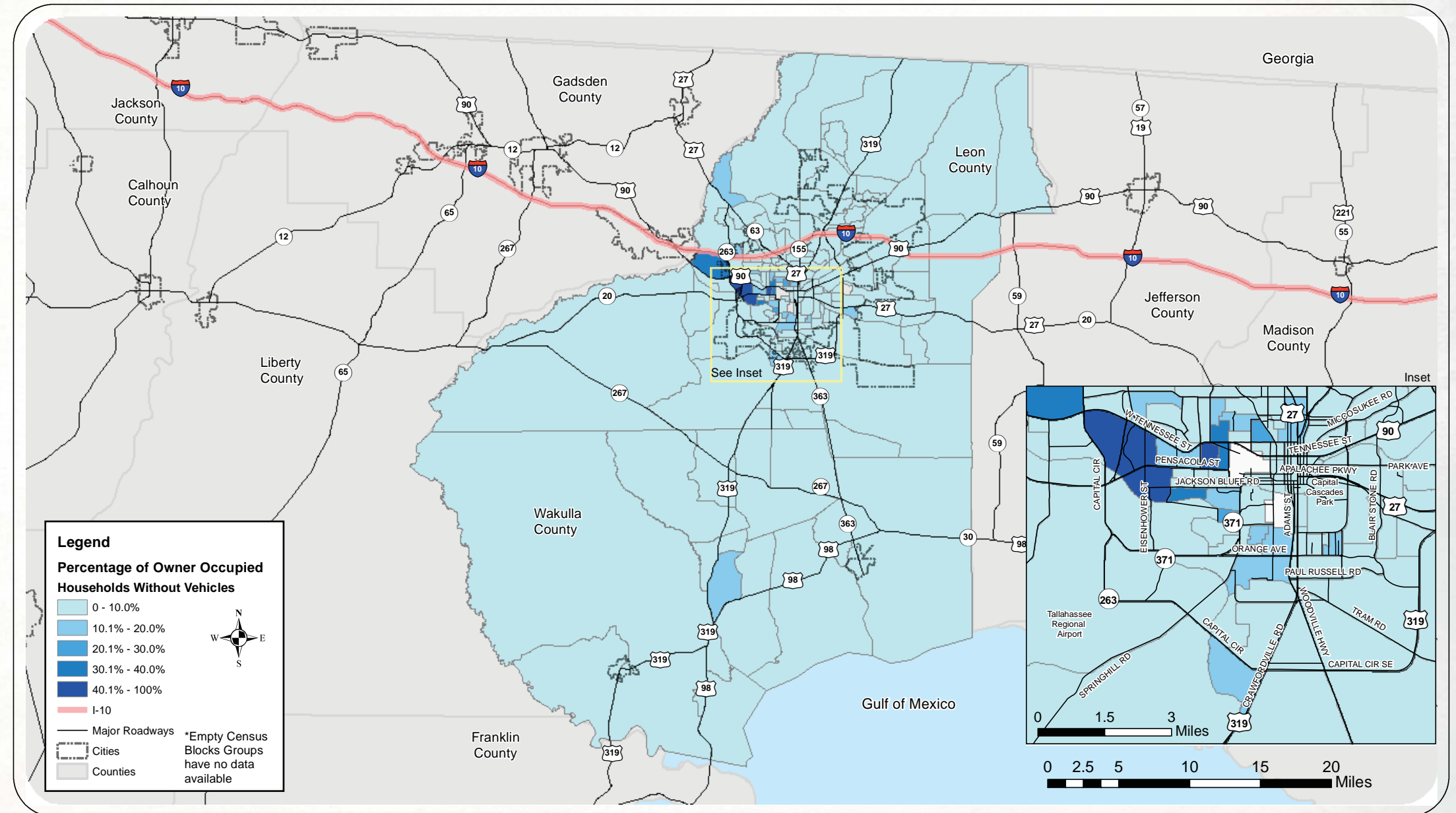
CONNECTING PEOPLE AND PLACES



## VEHICLE OWNERSHIP

This analysis of vehicle ownership evaluates percentage of owner-occupied households without vehicles (Figure 28) and renter occupied households without vehicles (Figure 29). While it is possible that some households, both owner and renter-occupied, choose to not own vehicles, it is more likely that these households are dependent on non-personal vehicular modes of transportation. Providing trail connections throughout Leon and Wakulla County will allow for increased transportation options for those who do not have access to personal vehicles, as well as provide increased connections to employment and commercial centers.

FIGURE 28: PERCENTAGE OF OWNER OCCUPIED HOUSEHOLDS WITHOUT VEHICLES

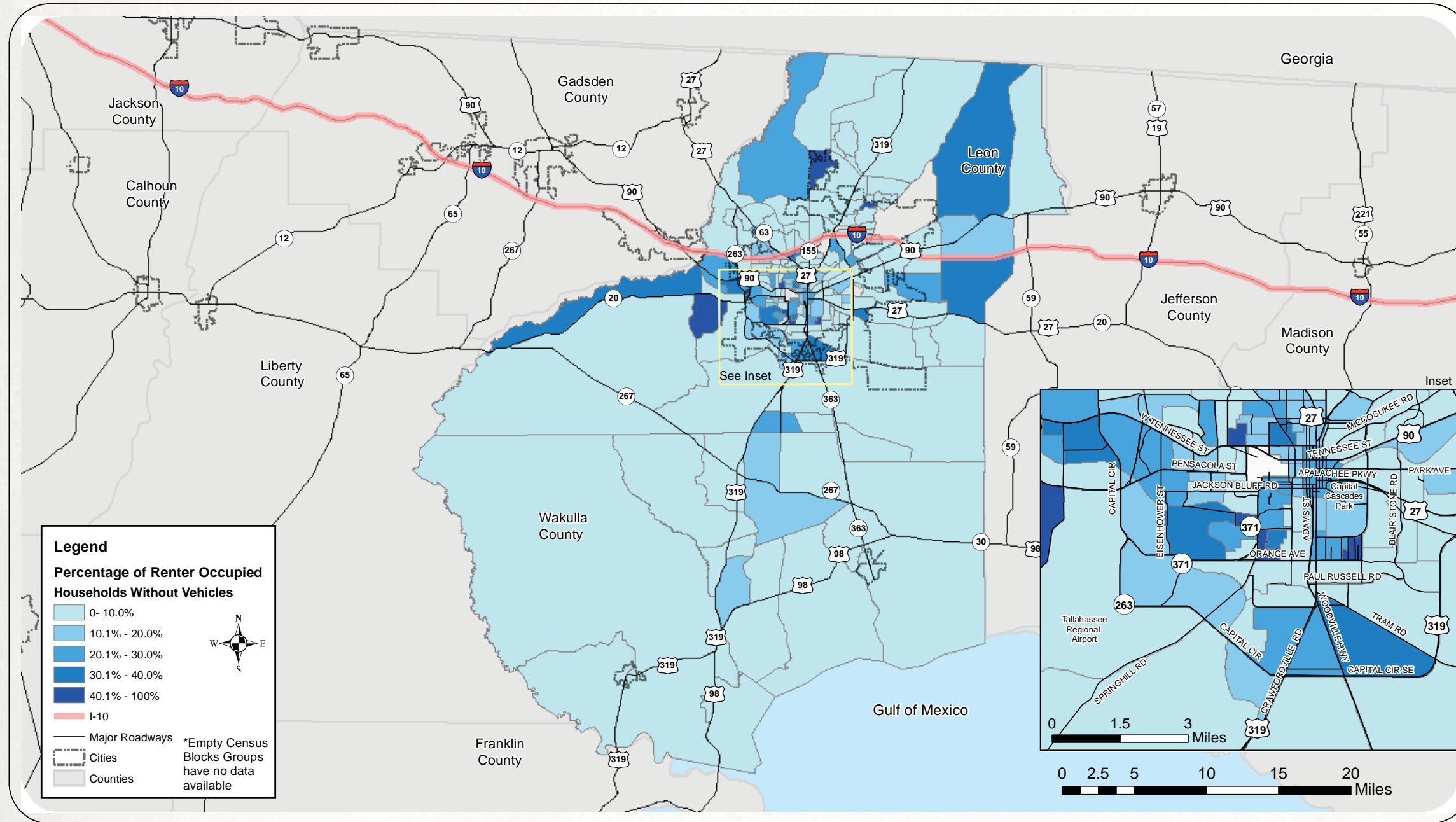


## Percent of Owner Occupied Households without Vehicles



# NEEDS and BENEFITS

FIGURE 29: PERCENTAGE OF RENTER OCCUPIED HOUSEHOLDS WITHOUT HOUSEHOLDS



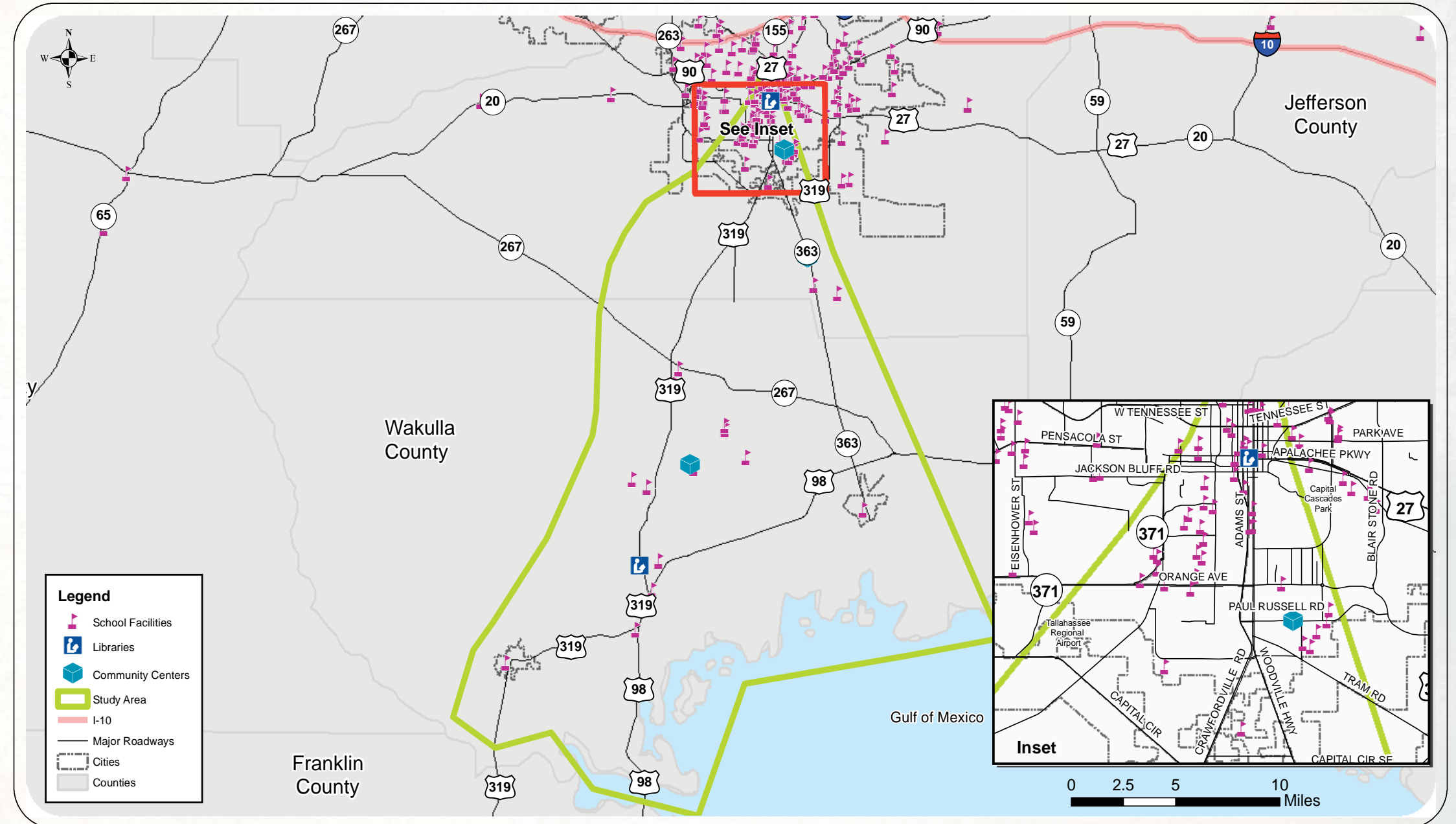
## Percent of Renter Occupied Households without Vehicles



## COMMUNITY FEATURES

Connecting the CC2ST to community features, including schools, libraries, community centers, and parks, will provide residents and visitors with safe, multimodal access throughout Leon and Wakulla County. Many of these features are often accessed by children or families who require enhanced safety options (this will be discussed further in the User Groups Analysis section later in this report. For example, during the development of this Master Plan, it was noted that in the area around Wakulla High School, students have been crossing U.S. 98 and walking along the undesignated right-of-way to access Medart Recreation Park and Wildwood Golf Course. Having a designated connection between these community features will provide increased safety for those wishing to access these community features. As shown in *Figure 30*, the proposed CC2ST will connect to numerous community features throughout Leon and Wakulla County. Understanding how these socioeconomic characteristics and community features correspond to trail usage will help to develop a trail system that can be used as a transportation network, as well as a recreational facility.

FIGURE 30: SCHOOLS, LIBRARIES, AND COMMUNITY CENTERS





Capital Region  
Transportation  
Planning Agency



Kimley-Horn  
and Associates, Inc.

## Schools, Libraries, and Community Centers



Capital City to the Sea Trails  
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# NEEDS and BENEFITS

## FUTURE DEMAND

In addition to providing transportation options, shared-use paths, as proposed for CC2ST, are one of the most popular forms of recreation for both residents and visitors in Florida. Florida's Statewide Comprehensive Outdoor Recreation Plan (SCORP) – Outdoor Recreation in Florida 2013, created by the Office of Greenways and Trails (OGT) presents user data for various recreational facilities, including shared-use paths, and what their projected demand will be in the future. According to the Outdoor Recreation in Florida 2013, 40 percent of residents and 13 percent of tourists used shared-use paths statewide in 2011, accounting for 18,427,044 users of shared-use paths statewide.

For the North Central Region of Florida (defined by FDEP/OGT as Gadsden, Leon, Wakulla, Jefferson, Madison, Taylor, Hamilton, Suwannee, Lafayette, Dixie, Columbia, Gilchrist, Levy, Union, Bradford, and Alachua Counties), 28 percent of residents and 13 percent of visitors used shared-use paths in 2011. Those percentages resulted from 469,542 visitors using roughly 60 miles of paved shared-use trails in the North Central Florida in 2011. The existing 20-mile St. Marks Trail contributed to 197,809 of these visits, representing 42 percent of the visits on shared-use paths in North Central Florida. It should be noted that in 2010, the St. Marks Trail had 266,579 users; the reason for the decrease between 2010 and 2011 is due to the construction associated with widening and repaving the trail. The 266,579 users would represent 57 percent of all shared-use path users in North Central Florida using the data from the SCORP.

The Outdoor Recreation in Florida 2013 estimated that the number of users of shared-use paths in the North Central Region would increase by 13 percent to 530,513 in 2020, which, if proportions remain the same, would mean that the St. Marks Trail would have 222,815 users using the 2011 ridership numbers, and 302,392 users using the 2010 ridership numbers. This increase in users is expected with no increase in the number of available trail miles, only with the expected increase in population and tourism.

Shared-use path facilities are limited in the North Central Florida region. If a trail system such as the proposed CC2ST is constructed, it would more than double the number of miles of shared-use paths available for use. It could be anticipated that this increase will cause an even greater increase in the number of users than projected by OGT. In order to determine what the expected increase would be by constructing CC2ST, a regression analysis was completed using trail ridership and length data from around Florida to determine if there is a relationship between the length of a trail segment and the number of potential users of the trail. Using the data received

from OGT, a regression analysis was completed using the 2010 and 2011 ridership numbers. The data for these years is provided in *Figure 31*.

**FIGURE 31 – TRAIL DISTANCES AND NUMBER OF USERS**

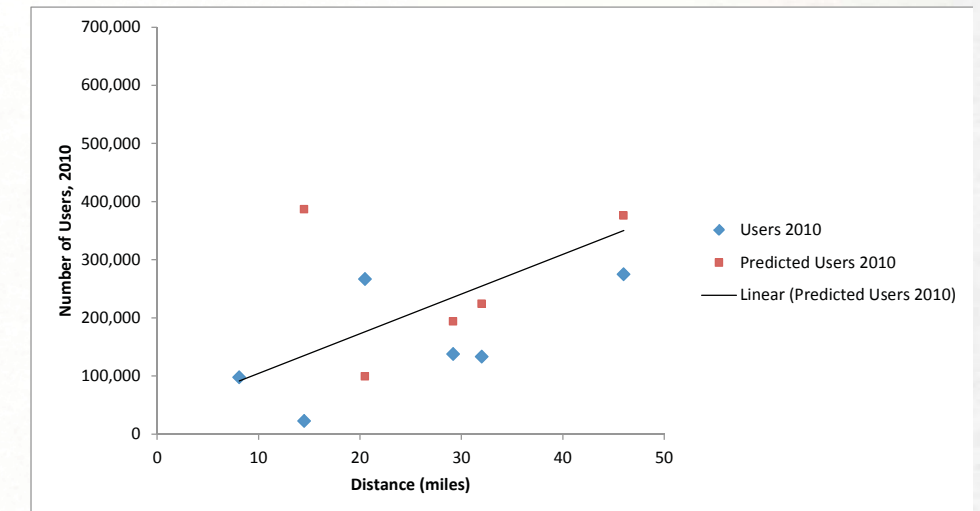
Trail	Distance	Users 2010	Users 2011	Users per Mile (2011)
Palatka-Lake Butler State Trail	14.5	22,326	72,112	4,973
Blackwater Heritage Trail	8.1	97,624	82,643	10,203
Nature Coast State Trail	32	133,242	95,400	2,981
General James A. Van Fleet State Trail	29.2	137,773	136,260	4,666
Tallahassee-St. Marks Historic Railroad State Trail	20.5	266,579	197,809*	9,649
Withlacoochee State Trail	46	274,754	287,635	6,253

Source: FDEP, Office of Greenways and Trails

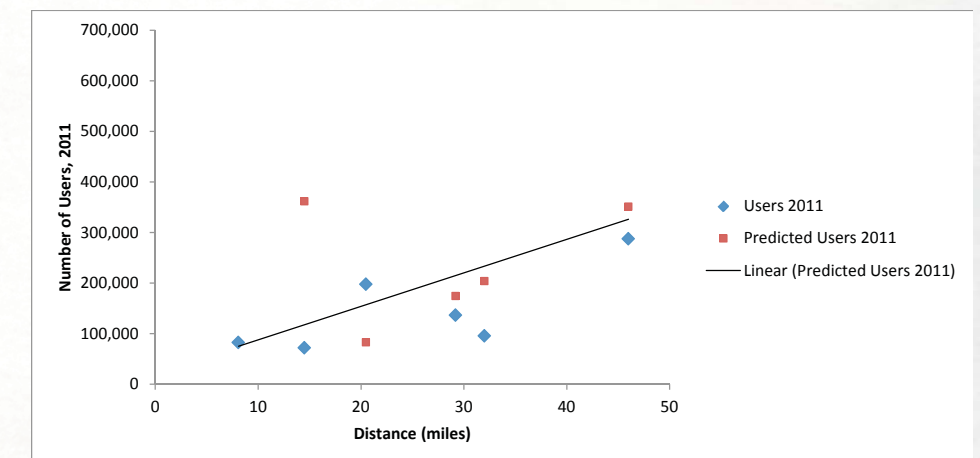
\*Decrease due to trail construction

The regression analysis for using the 2010 ridership statistics found that there was an R<sup>2</sup> value of 0.38, this shows a correlation between the number of available miles of trails and the number of users. The regression analysis using the 2011 ridership statistics provided an R<sup>2</sup> of 0.55. Graphs of the observed and predicted data is shown in *Figure 32* and *Figure 33*.

**FIGURE 32 – REGRESSION ANALYSIS - 2010**



**FIGURE 33 - REGRESSION ANALYSIS - 2011**



Using the data provided by the OGT and the regression analysis, it can be determined that adding additional trail facilities, such as the CC2ST, will attract more users to the area. Assuming that the final CC2ST corridor is 120 miles, it could be anticipated that there would be 1,154,838 trail users (average using 2010 and 2011 number of users).



## USER GROUP ANALYSIS

With the increase in demand that is anticipated, it is likely that the increase will be across all user groups. The following user groups have been identified as being frequent users of CC2ST:

- Bicyclists
- Mountain bikers
- Pedestrians, including persons with disabilities and inline skaters
- Equestrians

Within these user groups, each will have various levels of users who will require different levels of facilities in order to feel comfortable. In general, these user groups will encompass highly skilled/technically trained users, beginners, and families. The following section will describe the levels of users that exist for various user groups.

### BICYCLING

The 2012 American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities (Guide)* provides some qualitative guidance on choosing the appropriate facility type, but largely suggests that bicycle facility selection is a policy decision to be made by State and local agencies. The facility selection guidance is largely centered on the skill levels of bicyclists and what types of facilities they prefer. The *Guide* defines two bicycle user types:

1. Experienced and Confident
2. Casual and Less Confident

The following descriptions are from the *Guide* and describe how the abilities of user groups vary:

#### Experienced and Confident

This group includes bicyclists who are comfortable riding on most types of bicycle facilities, including roadways without any special treatments for bicyclists. This group also includes utilitarian and recreational riders of many ages who are confident enough to ride on busy roads and navigate traffic to reach their destination. However, some may prefer to travel on low-traffic residential streets or shared-use paths. Such bicyclists may deviate from the most direct route to travel in their preferred riding conditions. Experienced bicyclists may include commuters, long-distance road cyclists, racers, and those who regularly participate in rides organized by bike clubs.

#### Casual and Less Confident

This group includes a majority of the population, and includes a wide range of people: (1) those who ride frequently for multiple purposes; (2) those who enjoy bicycling occasionally but may only ride on paths or low-traffic and/or low-speed streets in favorable conditions; (3) those who ride for recreation, perhaps with children; and (4) those for whom the bicycle is a necessary mode of transportation. In order for this group to regularly choose bicycling as a mode of transportation, a physical network of visible, convenient, and well-designated bicycle facilities is needed. People in this category may move over time to the “experienced and confident” category. *Figure 34* outlines general characteristics of experienced versus casual bicyclists.

FIGURE 34: CHARACTERISTICS OF CYCLISTS

Experienced/Confident Riders	Casual/Less Confident Riders
Most are comfortable with riding with vehicles on streets, and are able to navigate streets like a motor vehicle, including using the full width of a narrow travel lane when appropriate and using left-turn lanes.	Prefer shared-use paths, bicycle boulevards, or bike lanes along low-volume, low-speed streets.
While comfortable on most streets, some prefer on-street bike lanes, paved shoulders, or shared-use paths when available.	May have difficulty gauging traffic and may be unfamiliar with rules of the road as they pertain to bicyclists; may walk bikes across intersections.
Prefer a more direct route.	May use less direct route to avoid arterials with heavy traffic volumes.
Avoid riding on sidewalks. Ride with the flow of traffic on streets.	If no on-street facility is available, may ride on sidewalks.
May ride at speeds up to 25 mph on level grades, up to 45 mph on steep descents.	May ride at speeds around 8 to 12 mph.
May cycle longer distances	Cycle shorter distances: 1 to 5 miles is a typical trip distance.

The 1999 edition of the AASHTO *Guide* identified three categories of cyclists, A-Advanced, B-Basic, and C-Children and families. Generally, Category A is represented by the experienced confident group, while Categories B and C are represented by the casual and less confident group.

#### Capital City Cyclists - A Recreational Rider Club

The Capital City Cyclists categorize cyclists into four rider groups. These include fast-paced, intermediate, moderate, and novice and are based upon the following riding levels:

Fast Paced: ride 20 mph average or faster

- Intermediate: ride 17-19 mph pace
- Moderate: ride 12-16 mph, conversational pace where the road allows.
- Novice: first time riders

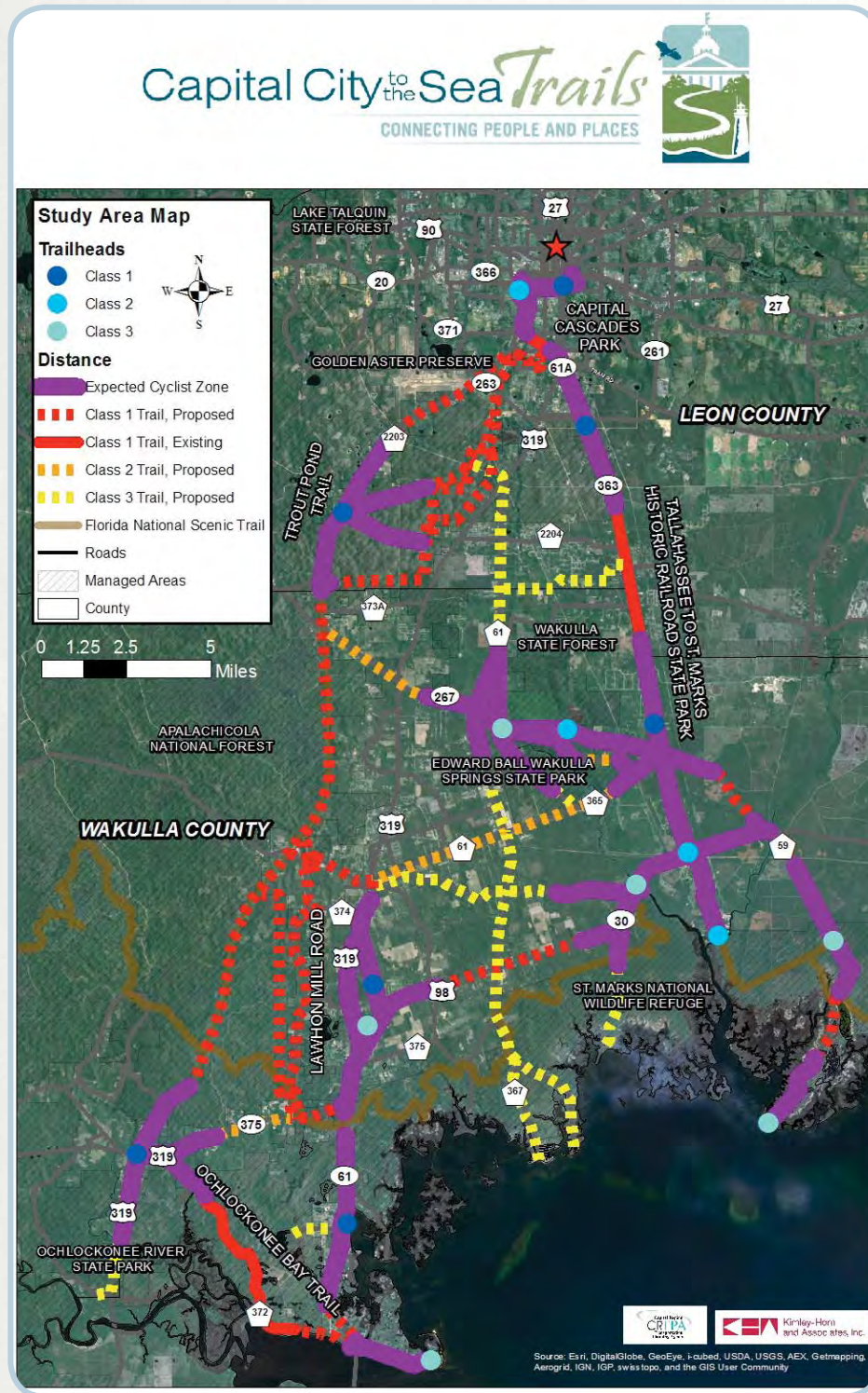
Generally, the AASHTO category for less confident riders includes the novice and moderate ride speeds (less than 16 mph) and the AASHTO category for more confident riders includes the intermediate and fast-paced ride speeds (16 mph and higher).

#### Expected Cyclist Zone

An expected cyclist zone was created around each of the existing and proposed CC2ST trailheads in order to determine where bicyclist facilities and amenities should be prioritized. The expected cyclist zones were based upon the casual and less confident riders, in which the project team expects cyclists to ride approximately five miles round trip. Thus, the expected cyclist zones extended 2.5 miles from each trailhead along the Class 1, Class 2, and Class 3 trails. As depicted in *Figure 35*, the expected cyclist zones do not cover the entirety of most trails, but represent areas of higher anticipated usage near trailheads and urban areas. This is not to say that these empty trail segments will not be utilized by cyclists, rather, the casual and less confident riders will likely not frequently access these segments. The experienced and confident riders, however, will be the ones to most likely utilize these segments outside the expected cyclist zones. It is also likely that mountain bikers will be seen in the expected cyclist zones as well as along the trails; however, they will predominately utilize the unpaved trails within the CC2ST network. Mountain bikers will be described in the following section.

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FIGURE 35: EXPECTED CYCLIST ZONE



## Mountain Bikers

Mountain bikers will also use the CC2ST facilities. One of the primary ways that mountain bikers will use the facility is to access non-paved mountain biking facilities, such as Munson Hills, located near the trail system. Because of this, it is important to connect mountain bikers to these mountain biking opportunities. Mountain bikers using shared-use paths are likely to fall within the AASHTO user groups as described in the bicycling section.

## PEDESTRIANS

The 2004 AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (Guide) provides some qualitative guidance on choosing the appropriate facility type for pedestrians. The facility selection guidance is largely centered on the characteristics of pedestrians and their needs. As part of this analysis, user characteristics for persons with disabilities are also included. The Guide defines three pedestrian characteristics:

1. Walking speeds
2. Spatial needs
3. Mobility issues

Pedestrian characteristics defined in the AASHTO Guide are primarily related to how pedestrians behave in traffic situations. This will be an important factor in getting pedestrian users to the trail system as well as at driveway crossings and roadway crossings. The following descriptions of pedestrian characteristics are from the 2004 AASHTO Guide:

## Walking Speeds

Pedestrian walking speeds range from approximately 2.5 to six feet per second. The *Manual for Uniform Traffic Control (MUTCD)* recommends a normal walking speed of 4.0 feet per second calculating pedestrian clearance intervals for traffic signals. Pedestrian age has the greatest impact on walking speed. Older pedestrians and pedestrians with physical impairments will generally walk at speeds in the lower end of the speed range. In areas where there is an older population and/or a large number of pedestrians with physical impairments, a slower walking speed such as three feet per second may be considered for design if substantiated by an engineering study. Other factors that affect walking speed include air temperature, precipitation (rain, snow, and ice), time of day, and trip purpose. Walking speeds are also typically faster at midblock locations than at intersections. At locations where it is apparent that pedestrians are having difficulty crossing during the

allocated time, the signal timing should be adjusted to account for slower walking speeds. Audible pedestrian signals have been shown to increase walking speed and decrease the time needed to cross a street.

## Spatial Needs

Two people walking side-by-side or passing one another generally require 4.67 feet of space, while two people in wheelchairs need a minimum of five feet to pass one another.

When pedestrian volumes increase within a given amount of space, walking rates become slower due to the decreased square footage available per person. A means of conveying this principal is the spatial bubble, which is the preferred distance of unobstructed forward vision while walking under various circumstances.

## Mobility Issues

In 1994 an estimated 7.4 million persons in the United States used assistive technology devices for mobility impairments, 4.6 million for orthopedic impairments, 4.5 for hearing impairments, and 0.5 million for visual impairments. These numbers are expected to increase, because there is a positive correlation between an increase in age and an increase in the prevalence of device usage. For example, persons who are 65 years and over use mobility, hearing, and vision assistive devices at a rate four times greater than the total population. Pedestrian facilities should safely accommodate those people who rely upon assistive devices to negotiate the transportation network.

Additional user groups that should be accounted for include:

**Pedestrians with ambulatory impairment:** these users may require increased space and time to maneuver around obstructions and at traffic crossings and driveways.

**Wheelchair and scooter users:** these users may require a more level surface at driveways and intersections; they will also require an increased width for ease of maneuverability.

**Walking-aid users:** these users may require a higher surface quality and may experience a reduced ability to react quickly to situations.

**Prosthesis users:** these users may have a slower walking speed than persons without disabilities; increased signal times and level facilities may be more important for these users.

**Pedestrians with hearing impairments:** these users may need increased sight distances to be able to safely navigate across intersections and driveways.

**Pedestrians with visual impairments:** these users may require auditory signals to safely navigate facilities.

**White cane users:** these users use canes to navigate and may require a more level and well-kept surface, as well as auditory signals at intersections and driveways.

**Dog guide users:** these users use guide dogs to travel, and may require enhanced facilities at intersections and driveway crossings.

**Pedestrians with cognitive impairments:** these users may have a reduced ability to perceive, recognize, understand, interpret, and respond to information; users such as children and non-native English speakers may also fall into this category.

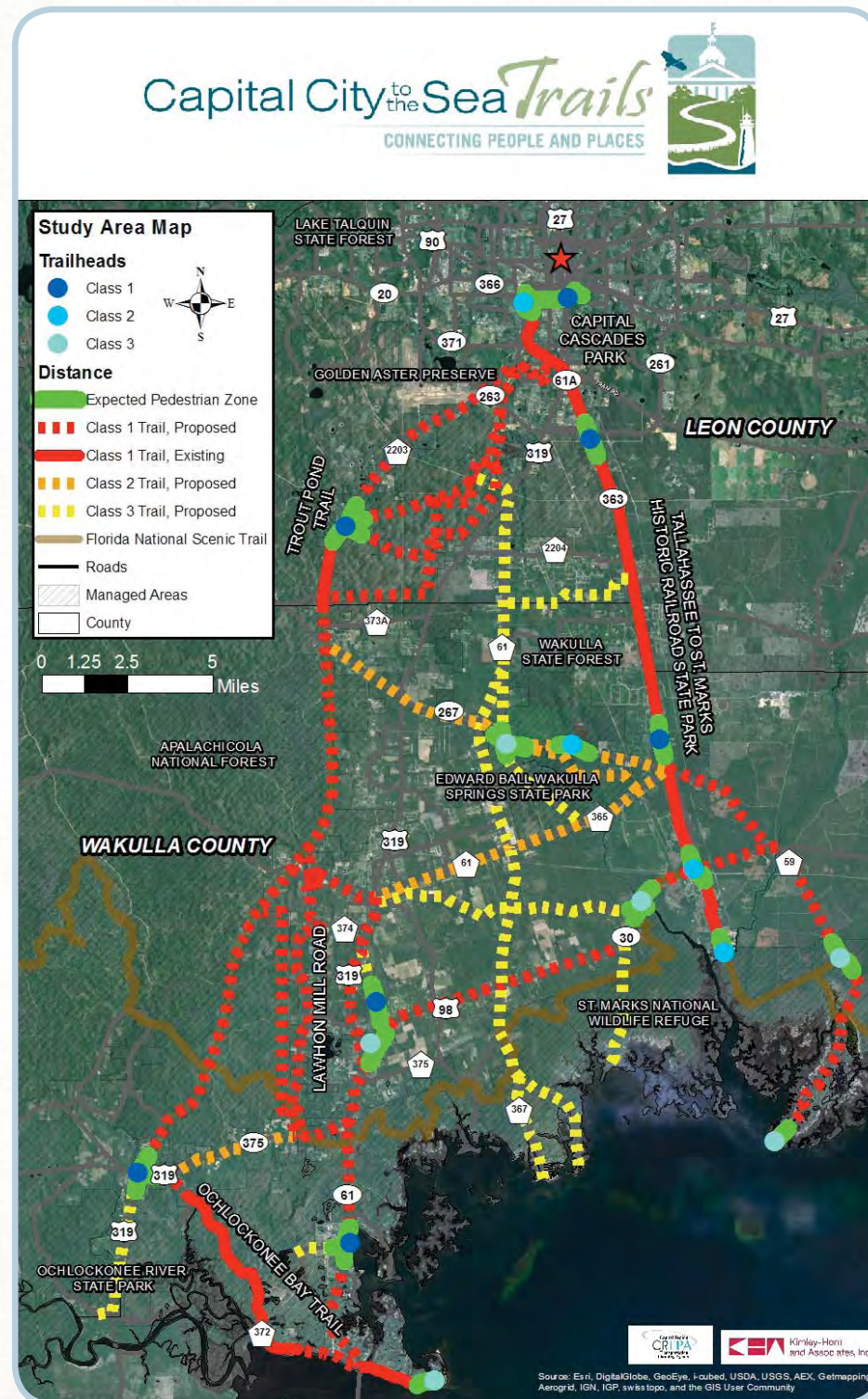
## Inline Skaters

Shared-use paths that accommodate pedestrians and bicyclists are likely to attract inline skaters as well. Inline skaters require the same trail width (minimum of 10 feet) and hard surfaces as bicyclists, and the same vertical clearance as pedestrians (seven feet).

## Expected Pedestrian Zone

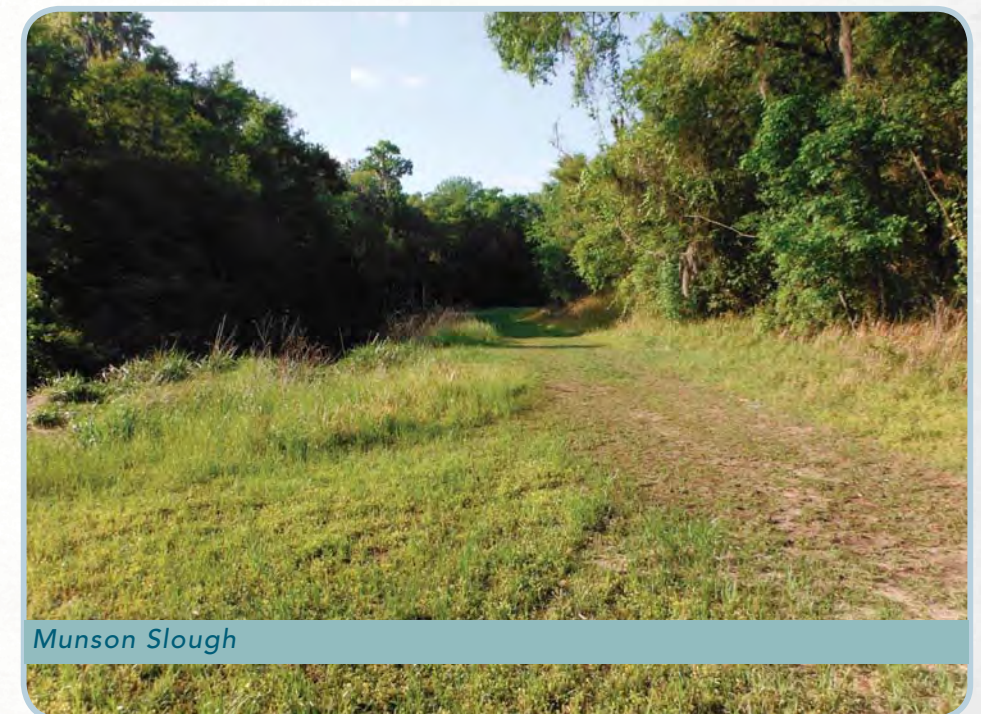
An expected pedestrian zone was created around each of the existing and proposed trailheads in order to determine where pedestrian facilities and amenities should be prioritized. Because of the varying pedestrian walking speeds and mobility issues, the project team assumes a typical pedestrian would walk a one-mile round trip along each trail. Thus, the expected pedestrian zone per each trailhead extends 0.5 miles along each direction of the nearest trail. As **Figure 36** shows, these expected pedestrian zones extend across a very small portion of each of the trails, but are in areas of higher anticipated usage near trailheads. This is not to say that pedestrians will not walk farther than a one-mile round trip; rather, that most pedestrians will be concentrated in the 0.5-mile distance from the trailheads. Because these zones are where the pedestrians will concentrate, pedestrian facilities and amenities should be primarily concentrated in these zones, but could extend further along each trail.

FIGURE 36: EXPECTED PEDESTRIAN ZONE



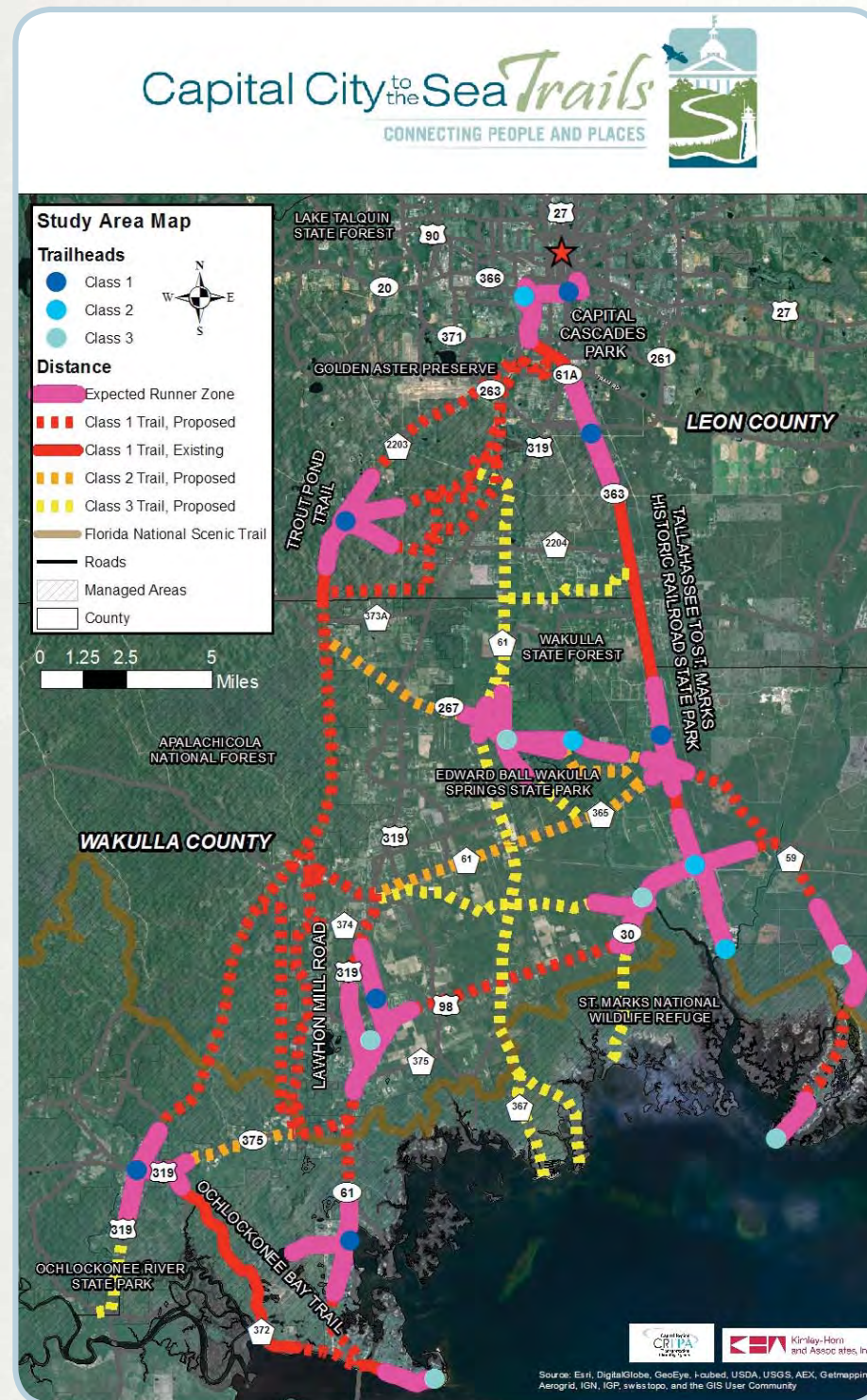
## Expected Runner Zone

Runners, as well as some pedestrians, are expected to utilize more of the trail than pedestrians. The project team assumes that an average runner may run a three-mile round trip, or 1.5 miles outward from a trailhead. Thus, facilities and amenities that accommodate runners and pedestrians should be prioritized within the expected runner zones. **Figure 37** displays the expected runner zones along each trail per trailhead. Again, though the expected runner zones do not extend the entirety of any trail, some pedestrians or runners may access the remaining portions of the trail. While pedestrian or runner facilities and amenities should be prioritized within these zones, they may still be located outside these zones if deemed necessary.



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FIGURE 37: EXPECTED RUNNER ZONE



## EQUESTRIANS

It is likely that equestrians will also use CC2ST, so identifying their user group characteristics will help to further develop usage needs along the trail. The Long Riders Guild Academic Foundation provides some qualitative guidance on choosing the appropriate user group and facility type for equestrian users. The facility selection guidance is largely centered on the characteristics of equestrians and their needs. One of the missions of the Office of Greenways and Trails is to provide accommodations for equestrians. CC2ST will strive to achieve this goal by providing equestrian trailer parking at the trailheads along the network.

