



# Strategic Regional Transit Plan

***December 2008***

**Chapter 3:**

***Background Data and Preliminary Analysis***

# BACKGROUND DATA AND PRELIMINARY ANALYSIS

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# 1.0 INTRODUCTION

This working paper documents the process of developing preliminary alternatives analyzed during the strategic planning process undertaken by the South Florida Regional Transportation Authority (SFRTA). These alternatives will be assessed and refined as they are advanced through a tiered screening process designed to produce an effective regional system for Palm Beach, Broward, and Miami-Dade Counties.

## 1.1 PROJECT PURPOSE

Due to intense rapid growth, the South Florida region faces complex and diverse transportation, land use, economic, and development issues. Without change, these issues could turn into problems such as increased road congestion and lack of mobility options stemming from continued growth and an essentially suburban pattern of land use and development. Transit is a critical element of South Florida's transportation future and key to promoting economic development and access to jobs, alleviating the congestion that threatens the region with gridlock, and mitigating the isolation of the transportation disadvantaged.

The SFRTA was created on July 1, 2003, with a vision to provide greater mobility in South Florida, thereby improving the economic viability and quality of life of the community, region, and state. The Authority's mission is to coordinate, develop, and implement a viable regional transportation system that endeavors to meet the desires and needs for the movement of people, goods, and services.

Consistent with the SFRTA's legislative mandate to coordinate, develop, and implement a viable regional transportation system for South Florida, the SFRTA began the formal development of a Strategic Regional Transit Plan that focuses on the region's future and develops strategies for the allocation of scarce resources to accomplish the goals and objectives of the agency.

The goal of the Strategic Regional Transit Plan is to:

***Think creatively to define a bold vision and strategic plan for regional transit's role in the overall regional transportation system to ensure mobility, economic viability, and quality of life in the South Florida region for the next generation.***

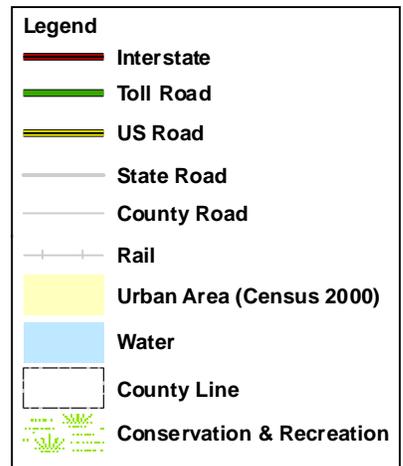
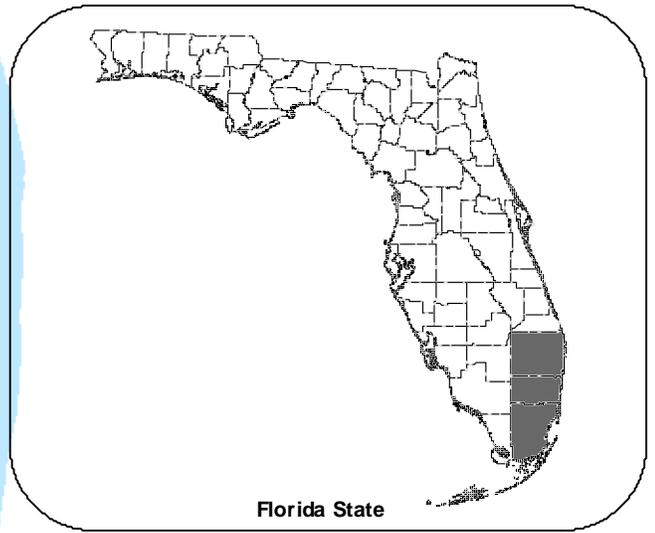
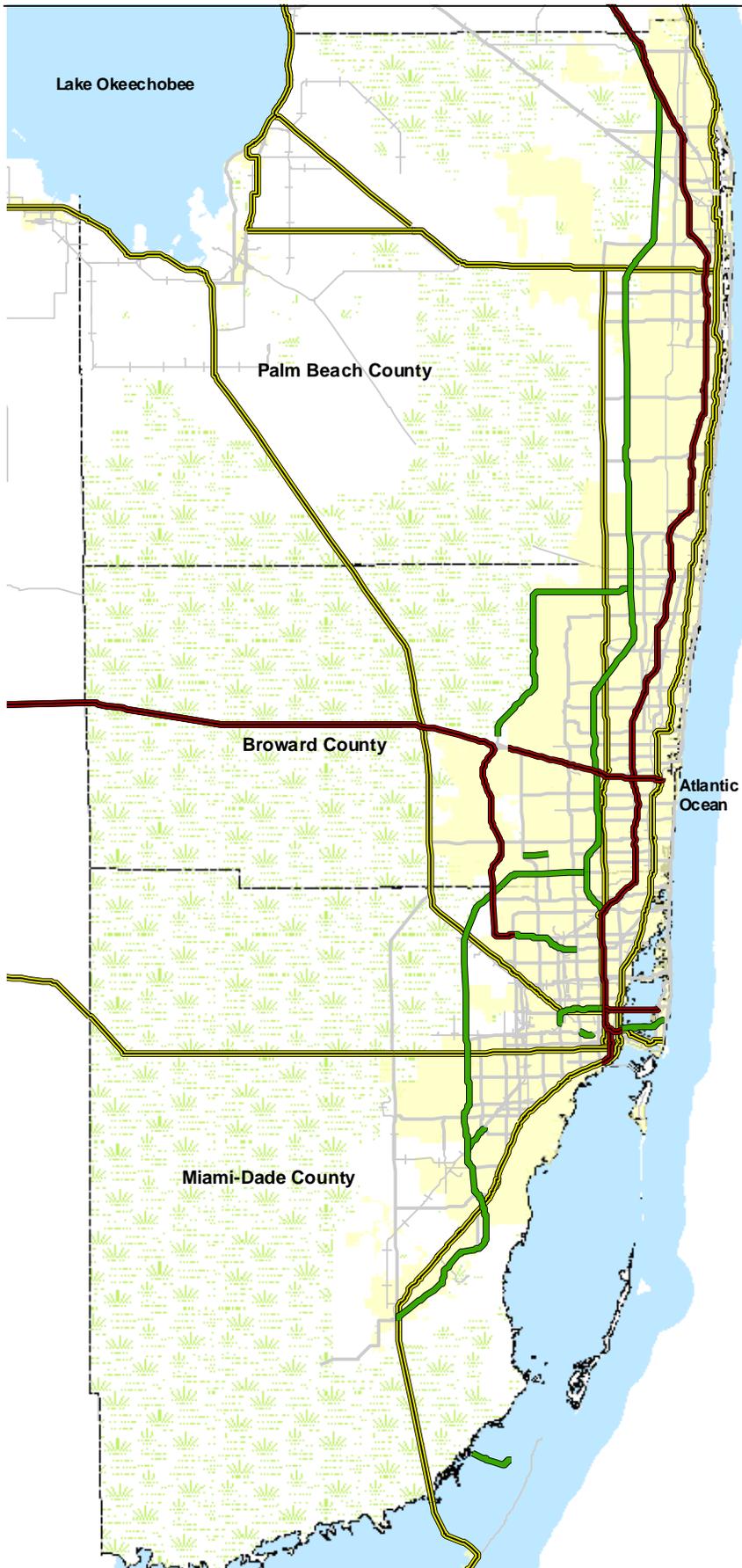
The Objectives of the Strategic Regional Transit Plan are to:

1. Identify key regional transit corridors and infrastructure needs.
2. Define regional transit investment strategies.
3. Positively impact future development patterns in the region.
4. Assess the region's current and future trends.
5. Identify a safe and cost-effective regional transit system.
6. Define SFRTA's role in the development, funding, and operations of regional transit services.

## **1.2 STUDY AREA**

The Strategic Regional Transit Plan study area is made up of the South Florida region, which includes Palm Beach, Broward, and Miami-Dade Counties. Bound by the Everglades National Park and conservation lands to the west and the Atlantic Ocean to the east (**Figure 1**), natural barriers limit this region's physical expansion. The region covers a land area of approximately 5,126 square miles, of which 2,890 square miles, or 56 percent, was designated as urbanized area. Based on the US Census Bureau, the total population of the South Florida region in 2000 was 5,007,564.

In addition to the natural growth boundaries, Miami-Dade County has designated an Urban Growth Boundary and Palm Beach County has designated an Urban Service Area in their Comprehensive Plans. These boundaries serve as administrative constraints to the region's spatial expansion. The area's natural and policy containment of development indicates future population and employment growth will occur within this limited supply of urban land.



Source: Florida Department of Transportation (FDOT), Florida Geographic Data Library (FGDL), US Census Bureau



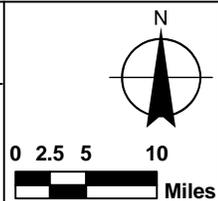
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### LOCATION MAP

Figure 1

## **2.0 EXISTING TRANSIT SERVICE**

The transit agencies responsible for providing public transportation within the study area include Palm Tran, Broward County Transit (BCT), Miami-Dade Transit (MDT), and SFRTA. The three county agencies provide transit service within their respective counties, with limited extension of services beyond county boundaries, while the SFRTA provides commuter rail and associated services across all three counties.

The region's transit agencies also provide complimentary demand-response paratransit service. Additional services supporting regional trips throughout the region include:

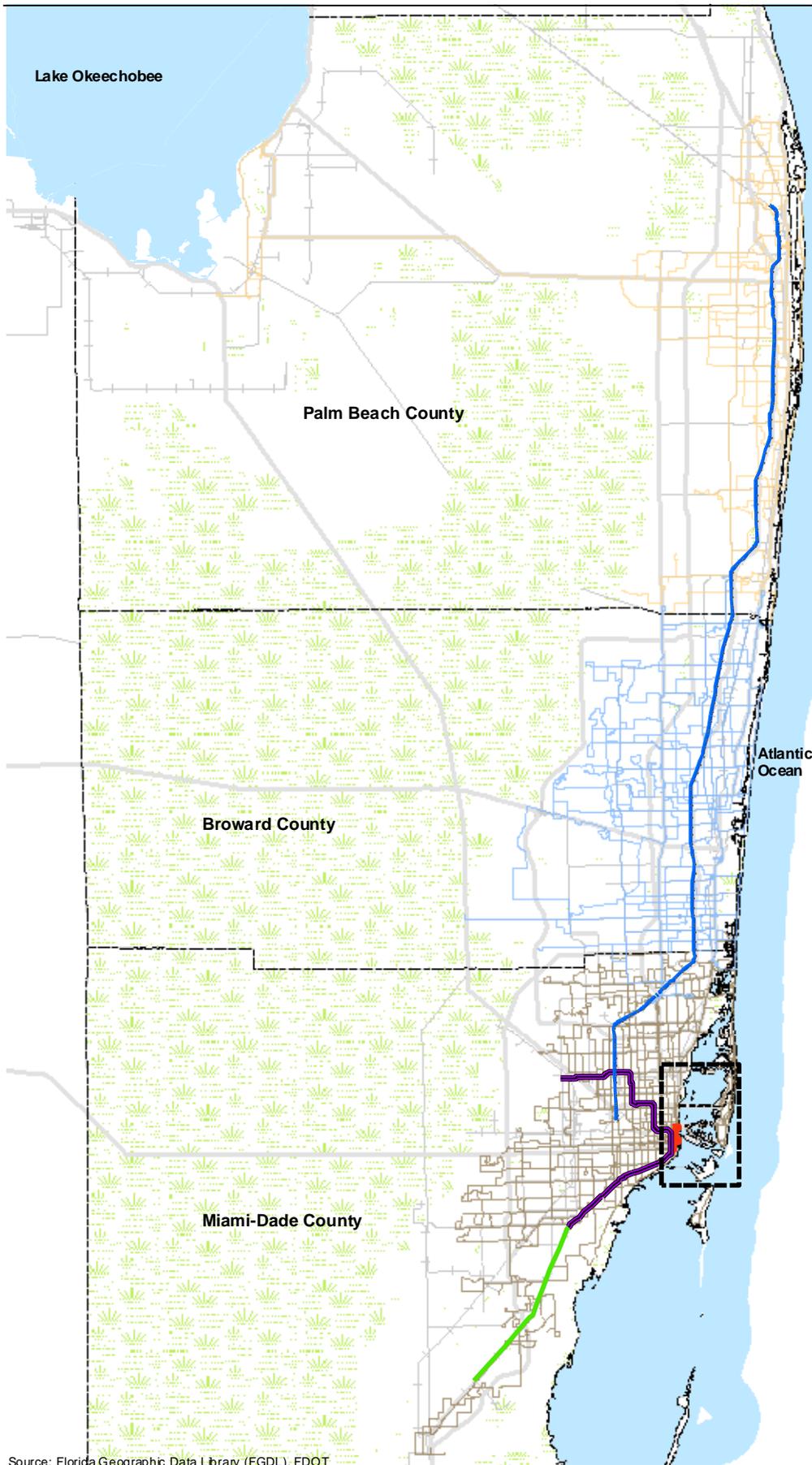
- Neighborhood shuttle services
  - Operated by SFRTA
  - Provides connection between Tri-Rail stations and many of South Florida's destinations and attractions
- Community bus service
  - Provided by local municipalities for the benefit of residents
  - Connects to fixed-route bus service at key bus stops

### **2.1 FIXED-ROUTE BUS SERVICE**

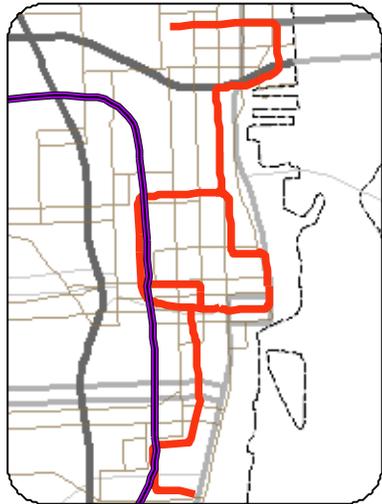
Palm Tran, BCT, and MDT operate fixed-route bus service throughout the urbanized areas of their respective county with some intercounty/connecting services (**Figure 2**). Palm Tran operated approximately 36 bus routes on its fixed route network in FY 2005, while BCT and MDT operated 43 and 102 bus routes, respectively. BCT Routes 18 and 441 offer limited service and serve both Broward and Miami-Dade Counties. Additionally, BCT routes interface with MDT buses in northern Miami-Dade County at several locations, including Aventura Mall, Dolphin Stadium, and Golden Glades interchange. BCT also provides connections to Palm Tran buses in Palm Beach County at Boca Raton Town Center, Mizner Park, and alongside Hillsborough Boulevard in north Broward County. The three transit agencies support and coordinate community bus service throughout their respective jurisdictions, and provide connections to Tri-Rail stations through fixed-route bus service.

### **2.2 FIXED-GUIDEWAY TRANSIT SERVICE**

SFRTA and MDT both operate fixed-guideway transit systems in the study area. The SFRTA provides commuter rail service (Tri-Rail), while MDT provides multiple fixed guideway modes (Metrorail, Metromover, and South Miami-Dade Busway).



Florida State



Inset A: Downtown Miami

**Legend**

**Fixed Guideway Transit**

- Stage 1 Metrorail
- Existing Busway
- Metromover
- Tri-Rail

**Fixed Route Bus Service**

- Palm Tran
- Broward County Transit (BCT)
- Miami-Dade Transit (MDT)
- Interstate/Toll Road
- US Road
- State Road
- County Road
- Rail

■ Conservation & Recreation

■ Water

Source: Florida Geographic Data Library (FGDL); FDOT



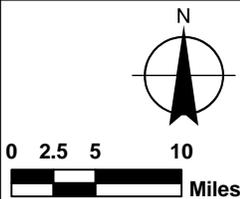
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**EXISTING TRANSIT FACILITIES:  
FIXED GUIDEWAY TRANSIT &  
FIXED ROUTE BUS SERVICE**

Figure 2

**Metrorail:** Metrorail is Miami-Dade County's heavy rail system, in service since May 1984. The 22-mile long system is grade separated (elevated) with 22 stations spaced approximately one-mile apart. The alignment runs from Kendall through South Miami, Coral Gables, and Downtown Miami; to the Civic Center/Jackson Memorial Hospital area; and to Brownsville, Liberty City, Hialeah, and Medley in northwest Miami-Dade (**Figure 2**). Riders access Metrorail via different modes including walking, biking, auto (kiss and ride, park and ride), and Metrobus. The North Corridor Extension is currently planned and competing for discretionary federal funding.

**Metromover:** Metromover is an electrically powered and fully automated people-mover system. It is designed to provide circulation service to Downtown Miami and has been in service since April 1986. The initial Metromover alignment was 1.9 miles long and is completely grade separated (elevated). There are nine stations located at approximately two block intervals. The Omni and Brickell extensions, opened in 1994, added 1.4 miles and 1.1 miles respectively, to the initial alignment. The expansion of the system included 12 new stations, six stations on each loop. Currently, Metromover is comprised of an inner downtown loop and two outer loops – Omni and Brickell. The total system is 4.4 miles long, completely elevated with 21 stations (**Figure 2**).

Metromover serves major destinations in the Downtown Miami, Brickell and Omni areas. The inner loop serves central downtown while the outer loops serve Brickell and Omni. It links many of Downtown Miami's major office buildings, hotels, retail centers, the Stephen P. Clark Government Center, the Cultural Plaza (Miami Art Museum, Historical Museum, Main Library), and the Brickell business district.

**South Miami-Dade Busway:** This 8.2-mile transitway has a 40 minute travel time from end to end. Built by Florida Department of Transportation (FDOT) in 1997, this alignment provides exclusive bus lanes running parallel to US Highway 1 (US 1) from the Dadeland South Metrorail Station to SW 264<sup>th</sup> Street (**Figure 2**). Three out of 16 busway stations provide Park-n-Ride facilities. Buses operating on the Busway and in adjacent neighborhoods enter the exclusive lanes at major intersections. Local and limited-stop service is offered between Florida City and the Dadeland South Metrorail Station. The 5.0-mile extension from SW 112<sup>th</sup> Street to SW 264<sup>th</sup> Street began service in April 2005. This extension is Segment 1 of the Phase II MDT Busway Extension to Florida City.

**Tri-Rail:** This commuter rail line is operated by the SFRTA. Tri-Rail operates along the 72-mile South Florida Rail Corridor that generally runs parallel to Interstate 95 (I-95), connecting Palm Beach, Broward, and Miami-Dade Counties (**Figure 2**). Tri-Rail provides commuter rail service to passengers traveling within the tri-county area. To the south, Tri-Rail service begins at the Miami International Airport (MIA) Station in Miami-Dade County east of NW 42<sup>nd</sup> Avenue and south of State Road 112 (SR 112) and terminates in the north, in Palm Beach County at the Mangonia Park Station, near 45th Street, ½ -mile east of I-95. The system includes six stations in Palm Beach County, seven stations in Broward County, and five stations in Miami-Dade County. Tri-Rail operates free shuttle service (13 routes) throughout the tri-county area.

## 3.0 LAND USE, DEMOGRAPHICS, AND MARKET TRENDS

To determine what areas would be key candidates for regional transit demand and success, the SFRTA Strategic Regional Transit Plan effort examined existing and projected market trends, travel patterns, and demographic characteristics that affect transit use.

### 3.1 POPULATION AND EMPLOYMENT

#### 3.1.1 Population and Workers Distribution

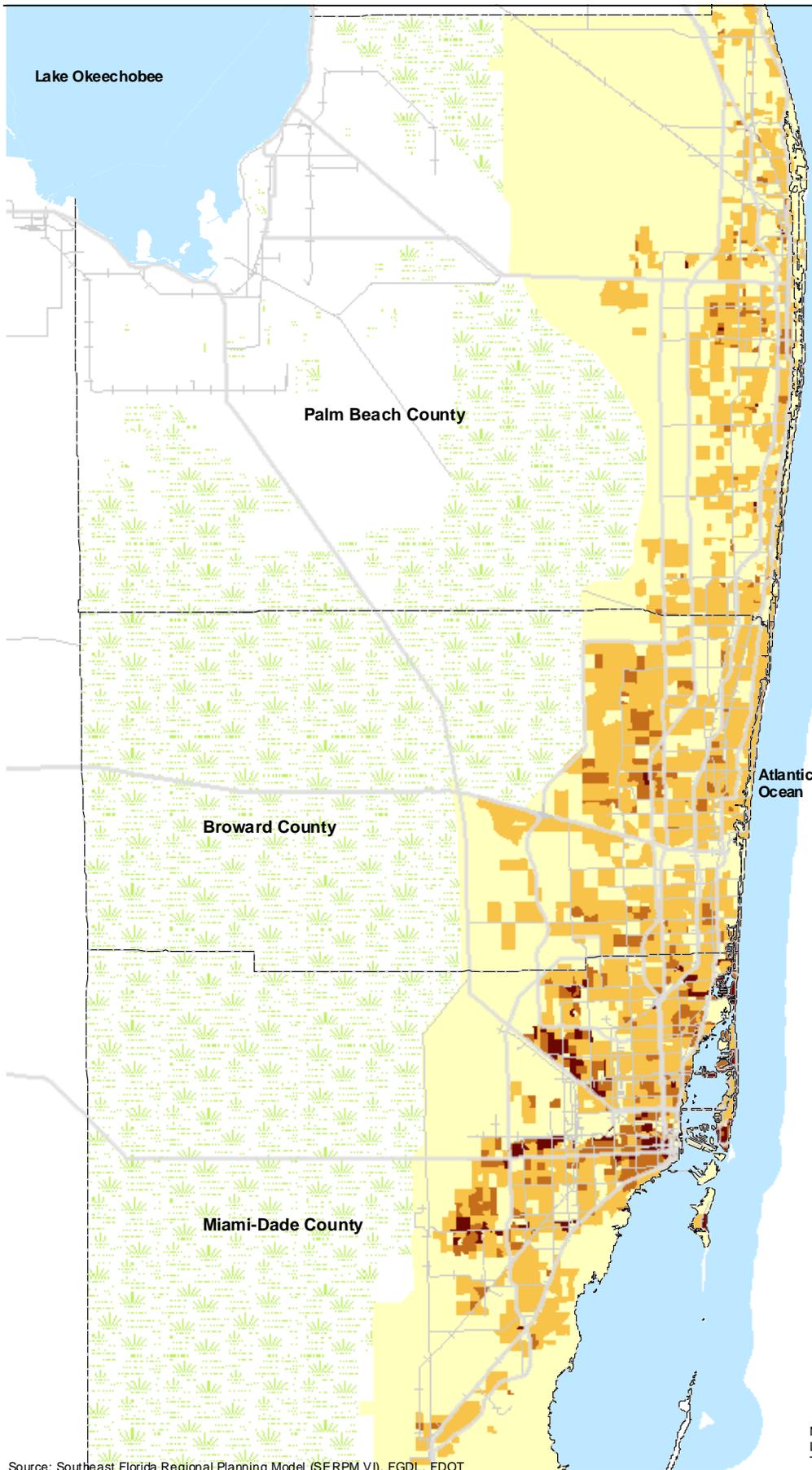
Over recent years, Florida's population has had a net increase of approximately 1,000 persons per day. This sustained influx of people has had a profound effect on the South Florida region. The total population of the South Florida region was 5,007,564 in the year 2000, which accounted for approximately 31 percent of the state's population (15.98 million). In the past four decades this region has more than tripled in population from 1,497,099 in 1960 to 5,007,564 in 2000. Regional population projections indicate that the South Florida region will continue to have dramatic growth over the next 30 years.

About 2.39 million additional residents are expected by the year 2030 according to projections available from the Metropolitan Planning Organizations (MPOs). About 1.11 million new workers are projected to be added to the local economy by 2030. The number of jobs is expected to increase approximately 1.4 times, an increase of 971,572 between the year 2000 (2.33 million) and the year 2030 (3.31 million). Furthermore, MPOs project vehicle growth of 49 percent (3.22 million in 2000 to 4.80 million in 2030), which translates into an estimated 1,576,498 more autos on South Florida's roadways. The daily vehicle miles traveled is expected to increase 68 percent, from 104.8 million in 2000 to 175.9 million in 2030.

Population and employment growth is not expected to grow uniformly across the region (**Figures 3, 4, 5, 6, 7, and 8**). **Figures 5 and 8** exhibit projected population and employment growth between 2000 and 2030. **Figure 5** illustrates significantly high concentrations of population growth expected in Miami-Dade County, while Palm Beach and Broward Counties will experience relatively moderate to moderate-high growth. In 2030, Miami-Dade, Broward, and Palm Beach Counties will account for 43 percent, 33 percent and 24 percent, respectively, of the total population of the South Florida region. The growth of workers, which is a function of population growth, and is distributed in the same pattern spatially, with Miami-Dade, Broward, and Palm Beach Counties expecting to house 46 percent, 32 percent, and 22 percent, respectively, in the year 2030 (**Figures 9, 10, and 11**).

**Figure 4** shows the following areas having a higher concentration of residents in 2030 in the South Florida region:

- Areas along I-95 between Congress Avenue and Intracoastal Waterway in City of West Palm Beach, Palm Beach County



**Legend**

**Population Density (persons/acre)**

- < 4 (Fixed Route Bus Service)
- 5 - 13 (Fixed Route Bus Service)
- 14 - 24 (Frequent Bus Service)
- > 25 (Rail Transit Service)

— Interstate/Toll Road

— US Road

— State Road

— County Road

— Rail

— County Line

Conservation & Recreation

Water

Note: Feasibility of Transit Service based on Urban Density, A Guide to Land Use and Public Transportation for Snohomish County, Washington, The Snohomish County Transportation Authority, December 1989

Source: Southeast Florida Regional Planning Model (SERPM VI), FGD, FDOT

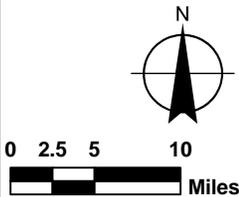
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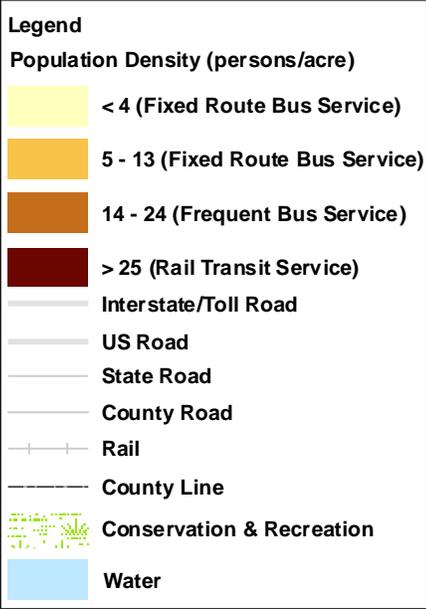
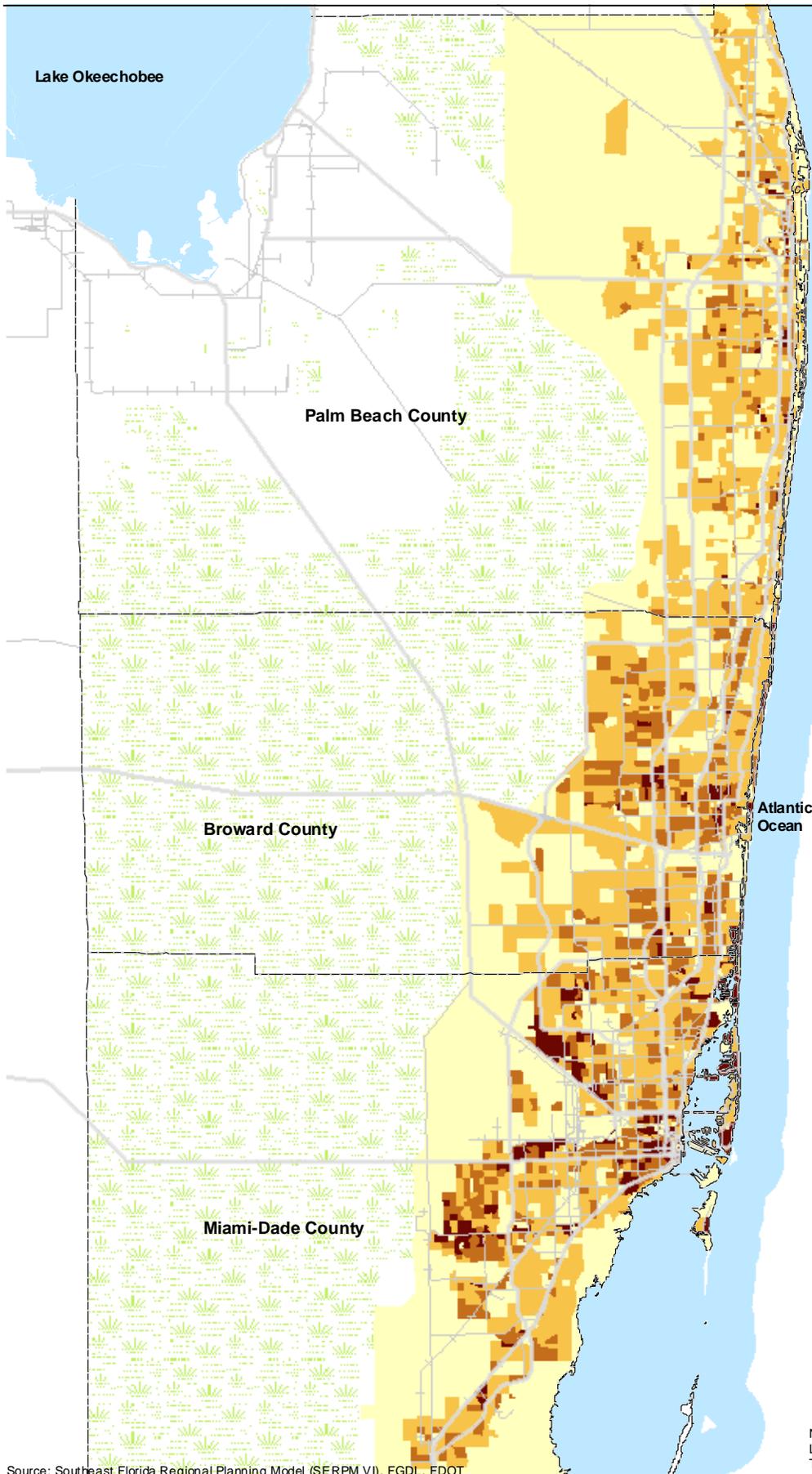
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**POPULATION DENSITY, 2000**



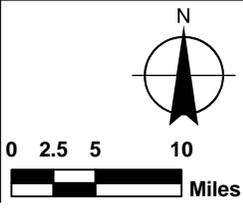
**Figure 3**



Note: Feasibility of Transit Service based on Urban Density, A Guide to Land Use and Public Transportation for Snohomish County, Washington, The Snohomish County Transportation Authority, December 1989

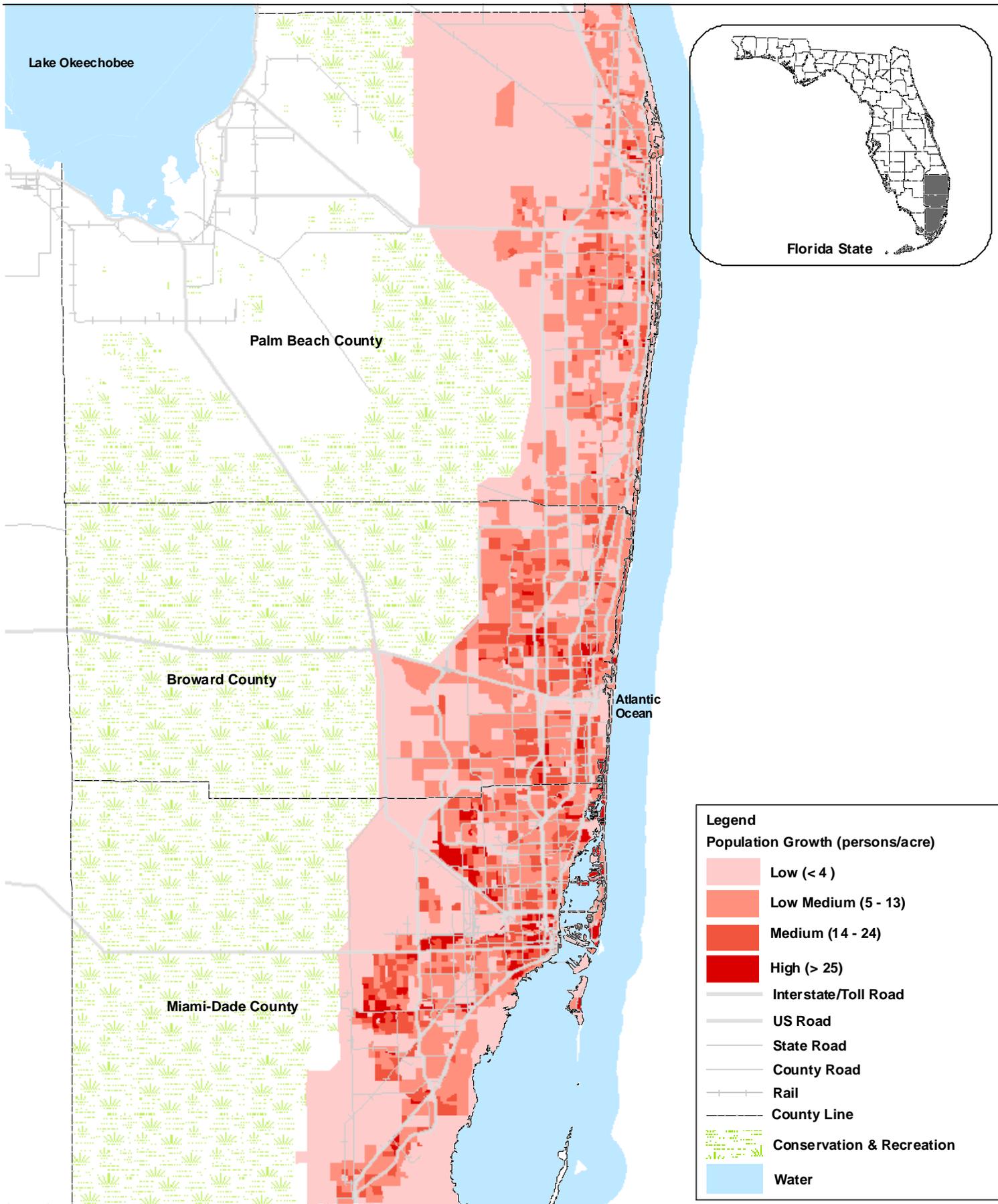
Source: Southeast Florida Regional Planning Model (SERPM VI), FGDL, FDOT

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**POPULATION DENSITY, 2030**

**Figure 4**



Source: Southeast Florida Regional Planning Model (SERPM VI), FGDL, FDOT

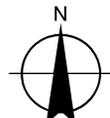
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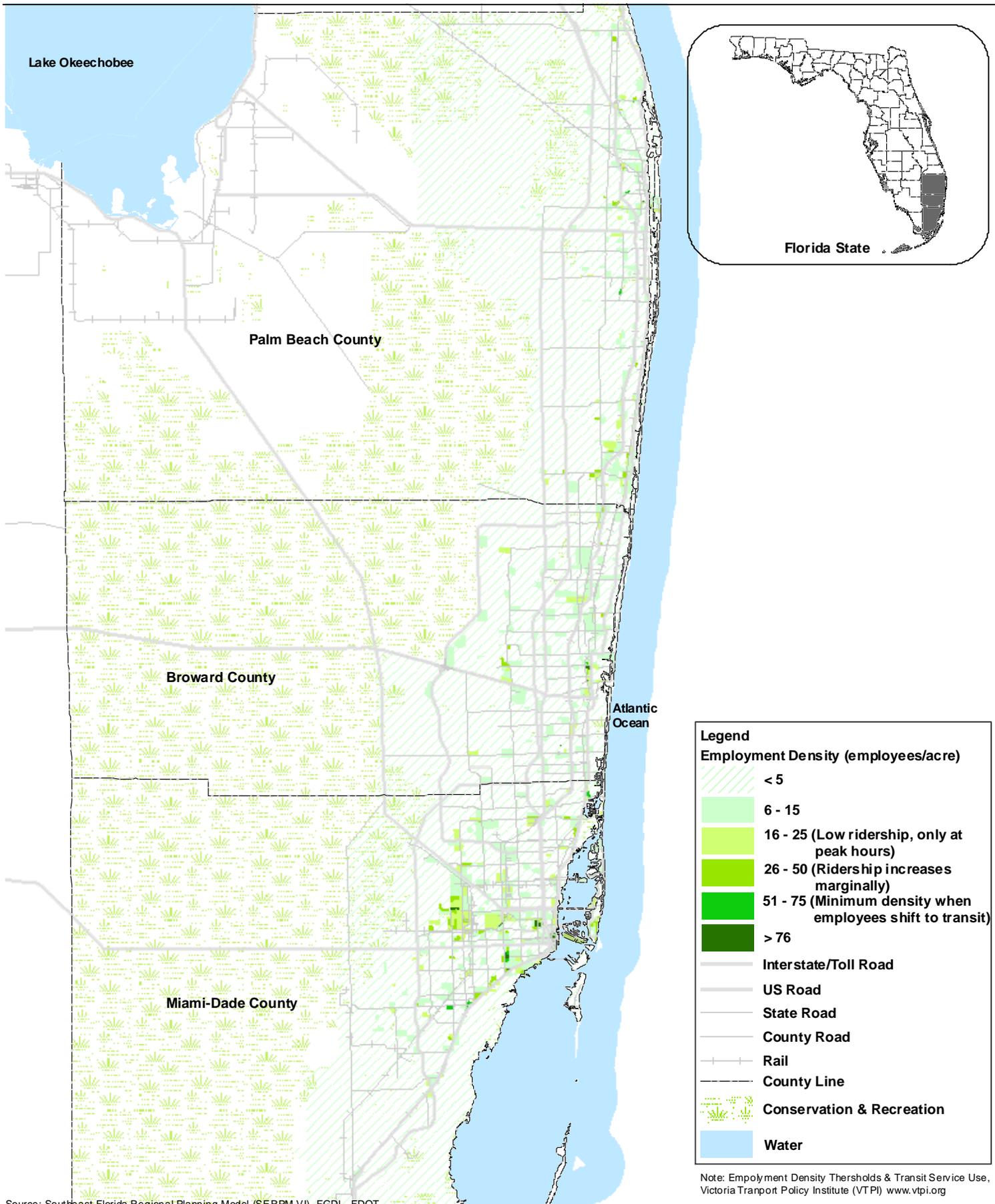
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## POPULATION GROWTH 2000-2030

Figure  
5



Source: Southeast Florida Regional Planning Model (SERPM VI), FGDL, FDOT

Note: Employment Density Thresholds & Transit Service Use, Victoria Transport Policy Institute (VTPI) [www.vtpi.org](http://www.vtpi.org)

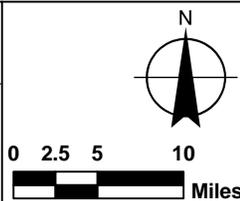
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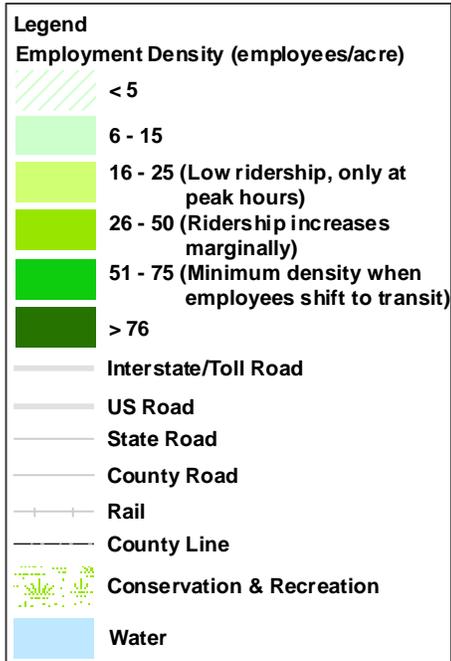
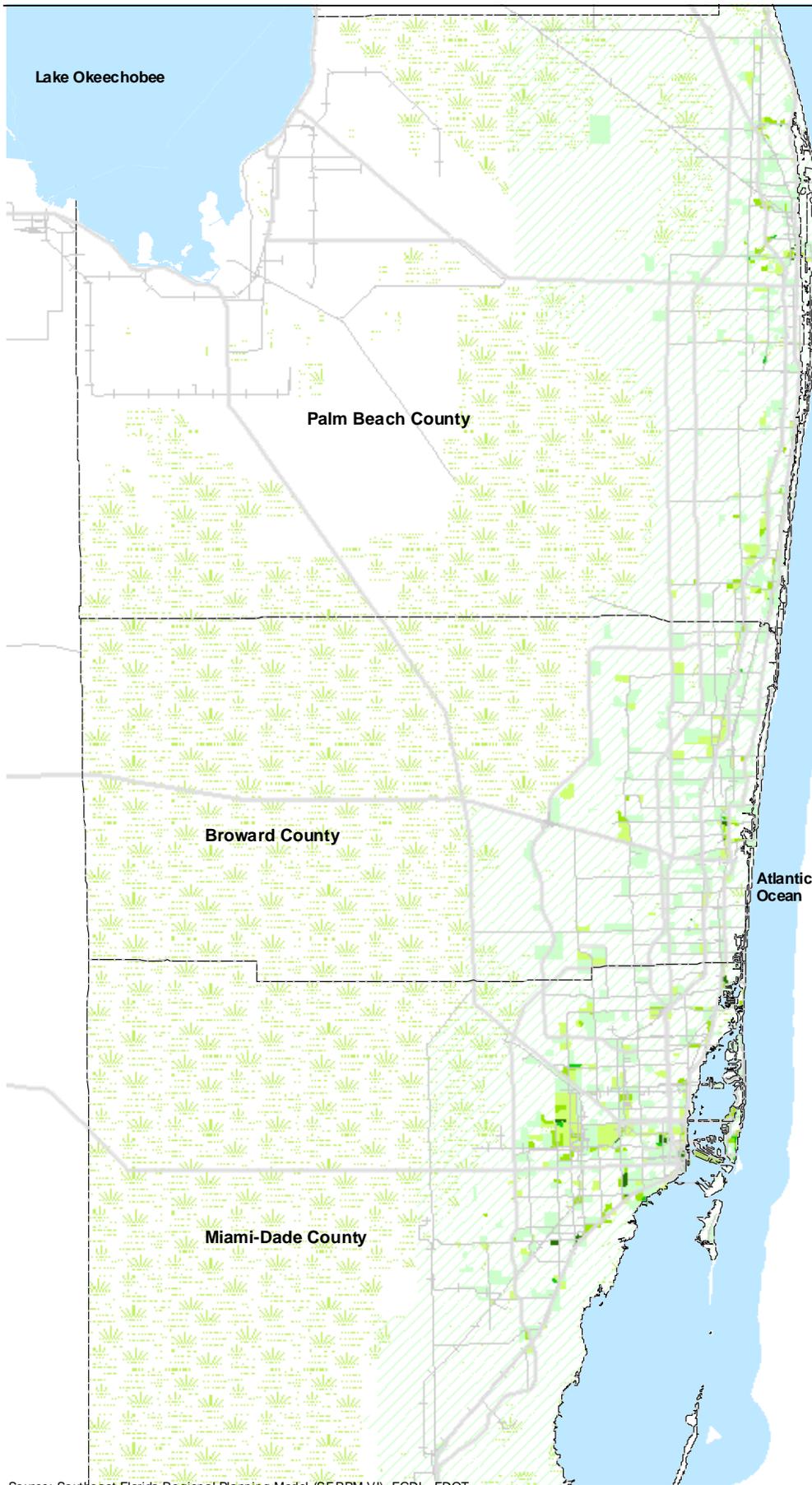
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**EMPLOYMENT/JOB  
 DENSITY, 2000**

**Figure  
 6**





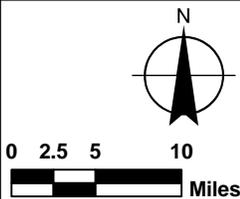
Source: Southeast Florida Regional Planning Model (SERPM VI), FGDL, FDOT

Note: Employment Density Thresholds & Transit Service Use, Victoria Transport Policy Institute (VTPI) www.vtpi.org



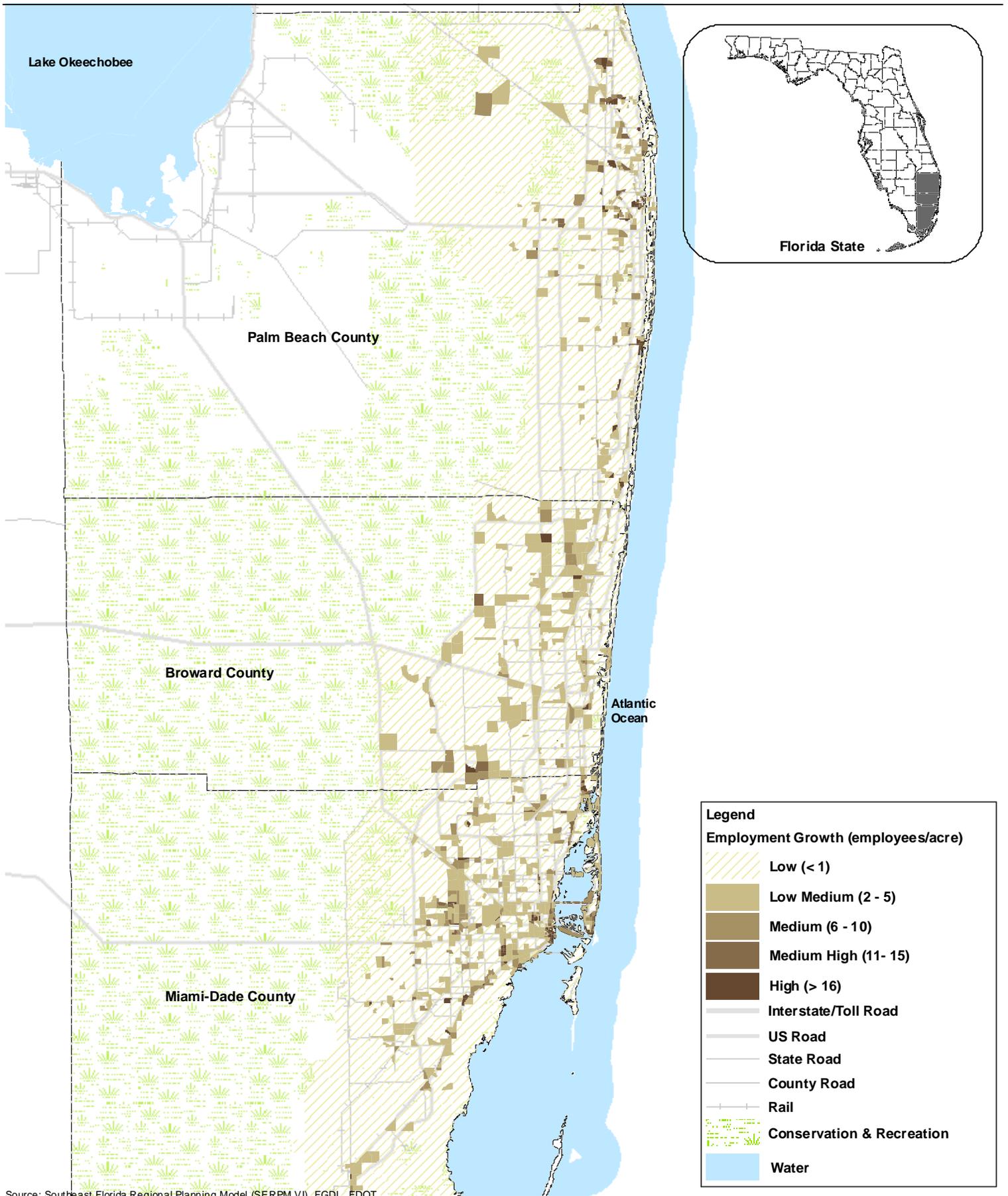
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**EMPLOYMENT/ JOBS DENSITY, 2030**

**Figure 7**



Source: Southeast Florida Regional Planning Model (SERPM VI), FGDL, FDOT

**Legend**

**Employment Growth (employees/acre)**

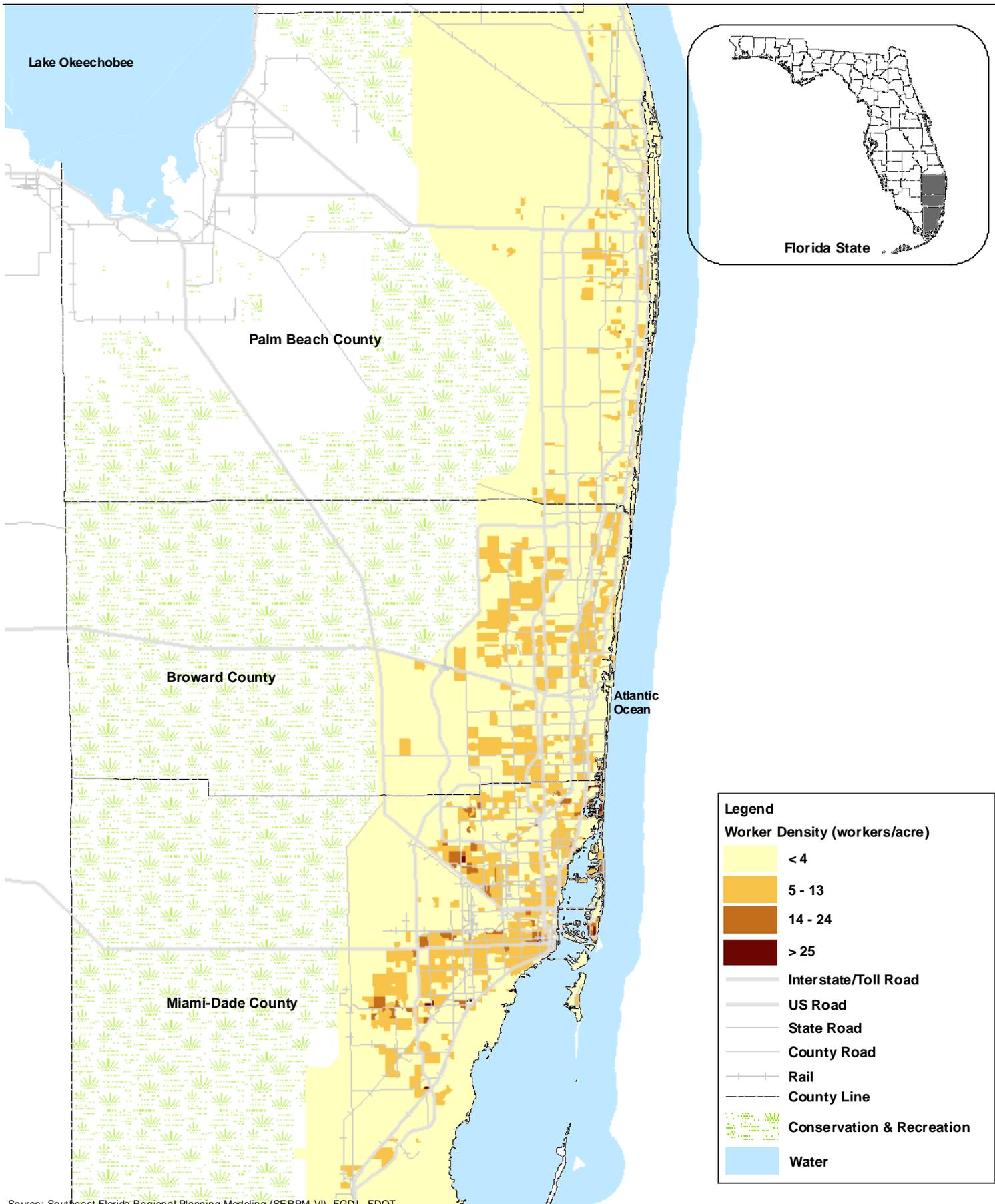
- Low (< 1)
- Low Medium (2 - 5)
- Medium (6 - 10)
- Medium High (11- 15)
- High (> 16)
- Interstate/Toll Road
- US Road
- State Road
- County Road
- Rail
- Conservation & Recreation
- Water

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N  
  
 0 2.5 5 10  
  
 Miles

**EMPLOYMENT/JOB GROWTH  
 2000-2030**

**Figure  
 8**



Source: Southeast Florida Regional Planning Modeling (SERPM VI), FGDL, FDOT

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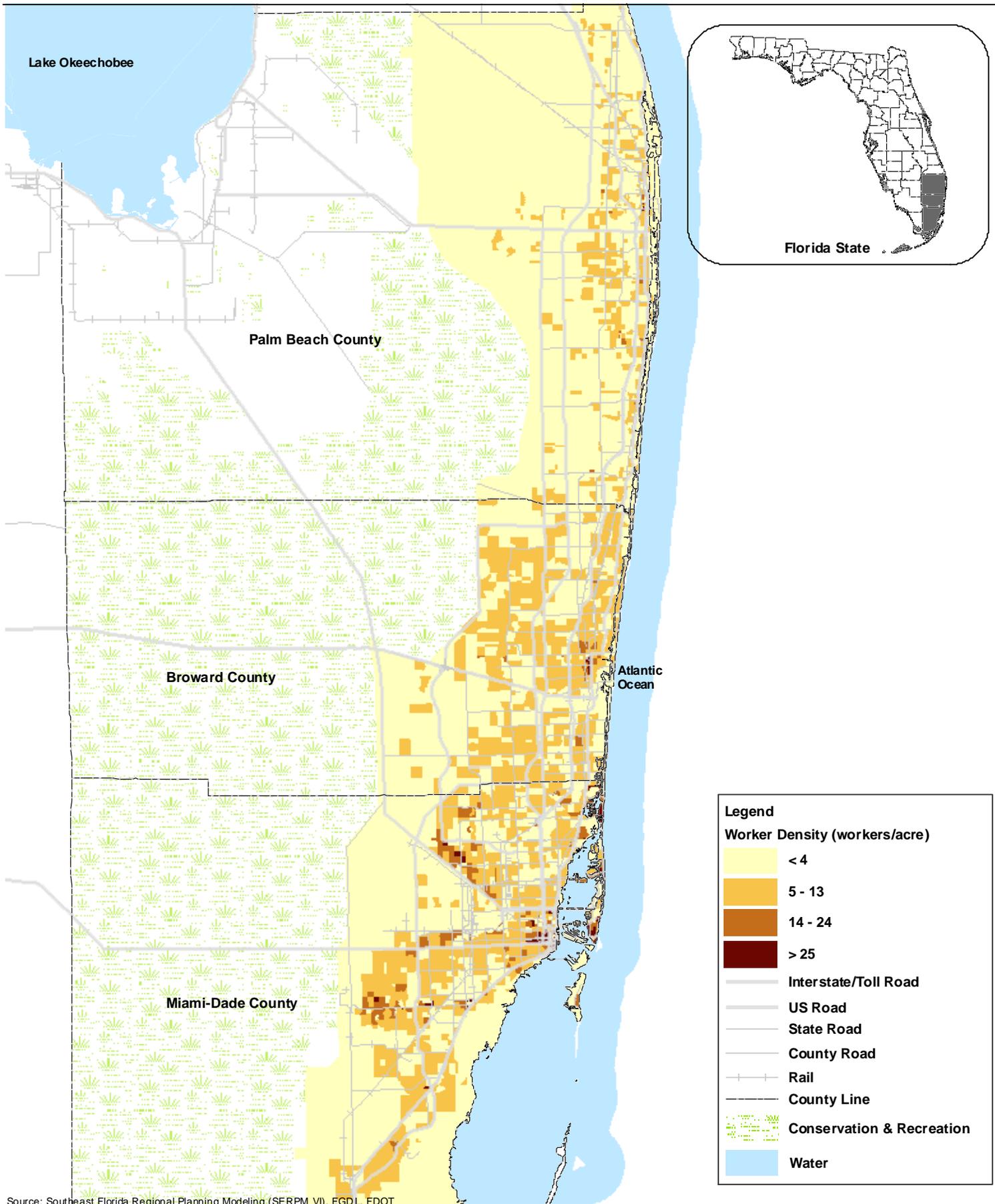
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**WORKER DENSITY, 2000**

**Figure 9**



Source: Southeast Florida Regional Planning Modeling (SERPM VI), FGDL, FDOT

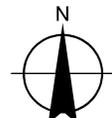
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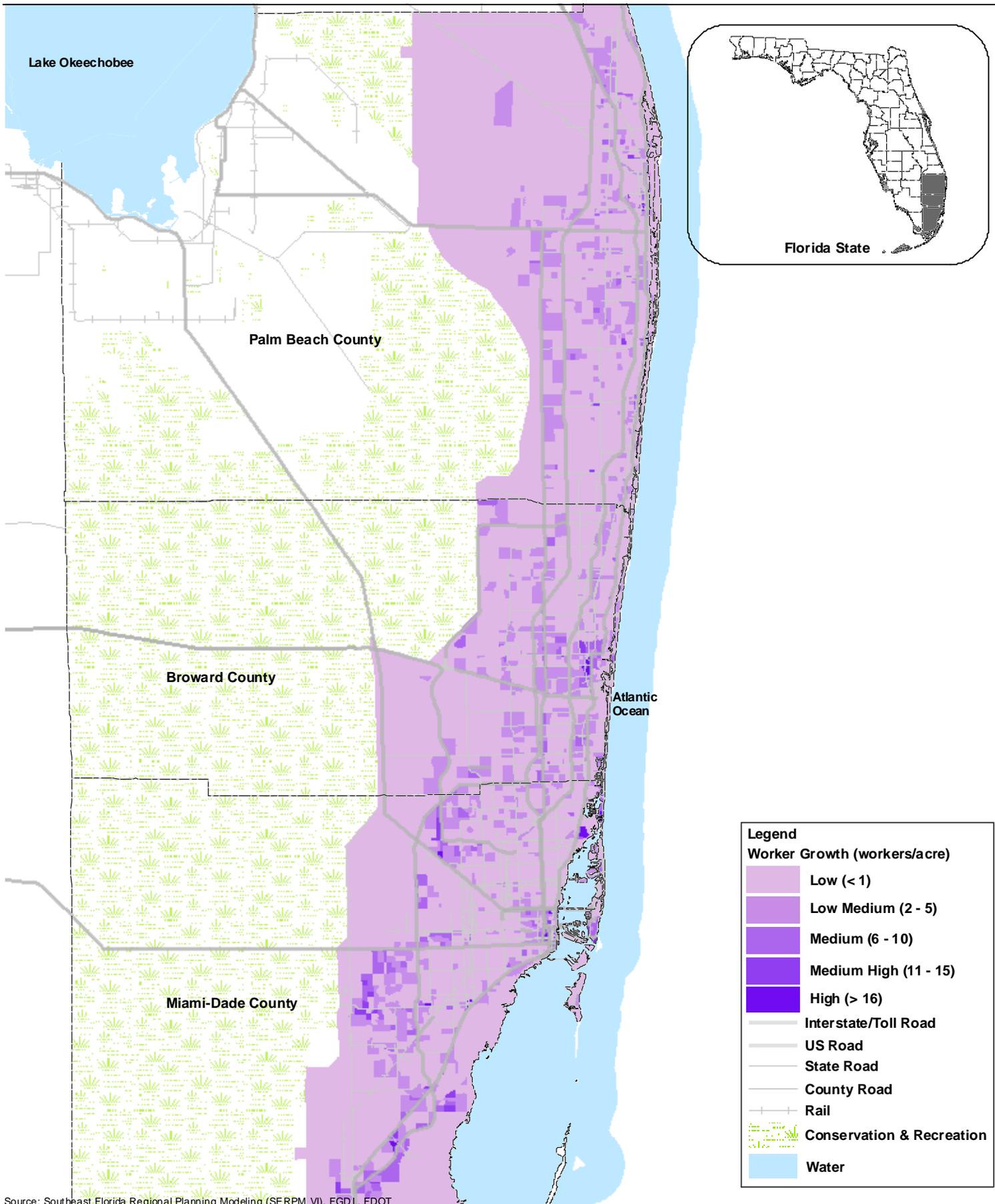
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## WORKER DENSITY, 2030

Figure 10



Source: Southeast Florida Regional Planning Modeling (SERPM VI), FGD, FDOT

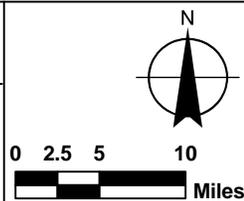
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**WORKER GROWTH 2000-2030**

**Figure 11**

- Small area to the south of SR 80 and west of Palm Beach International Airport (PBI)
- Tracts of land along US 1 in Boynton Beach, Lantana and Delray Beach
- Scattered areas in City of Boca Raton will have dense residential development
- Southern and central parts of Broward County are anticipated to be denser than the northern part. The bulk of the density will be along SR 7/US 441 and along the Florida East Coast (FEC) railroad, generally to the west of the tracks north of I-595 and on both east and west south of I-595
- In the west and central portion, the Cities of Margate and Tamarac will have higher residential density
- In Miami-Dade County, higher population density is forecasted for Kendall, the area along SW 8<sup>th</sup> Street, north of US 27 in Hialeah, Miami Beach, Miami Lakes, Cutler Ridge, and Downtown Miami and its vicinity.

### 3.1.2 Employment Distribution

Forty-eight percent of the total jobs in 2030 are expected to be in Miami-Dade County, while Broward and Palm Beach Counties are projected to accommodate 29 percent and 23 percent of the jobs in the region. As it has in the past, service sector jobs are expected to dominate other sectors of the economy in terms of job growth. More than 50 percent of the total jobs in 2030 are forecasted to be in service sector while 11 percent and 30 percent would be manufacturing and commercial sector jobs, respectively. This could have a profound impact on the peak period travel pattern. In general, service sector jobs have more flexibility in work shift than traditional jobs, but can also be highly concentrated in key business areas.

**Figure 7** shows the following areas having a higher concentration of jobs in 2030 in the South Florida region:

- In Palm Beach County, dense employment will be in Downtown Boca Raton, the area west of I-95 between Glades Road and NW 51<sup>st</sup> Street, Downtown West Palm Beach, the area in the vicinity of I-95 and the Okeechobee interchange, and the area along I-95 and Indian Road in Jupiter
- Cypress Creek, Downtown Fort Lauderdale, Plantation Mid-town, and Sawgrass Mills Mall area and its vicinity will be major employment centers in Broward County
- For Miami-Dade County, jobs are projected to be concentrated in Downtown Miami, Miami Beach, Coral Gables, Cutler Ridge, and corridors along SR 826/Palmetto Expressway and SR 836/Dolphin Expressway, as well as the area in the vicinity of the Golden Glades Interchange
- Along the boundary between Broward and Miami-Dade Counties, high density employment is located in the Aventura Mall area and in the vicinity of Red and Flamingo Roads, north of the Homestead Extension of Florida's Turnpike (HEFT)

Although they are major employers, airports do not exhibit characteristics of high density employment areas because of their expanse. However, they are important destinations to be served by a robust transit system.

The relationship between population, workers, and employment (jobs) density is illustrated in **Figure 12**.

### **3.1.3 Land Use Patterns and Policies**

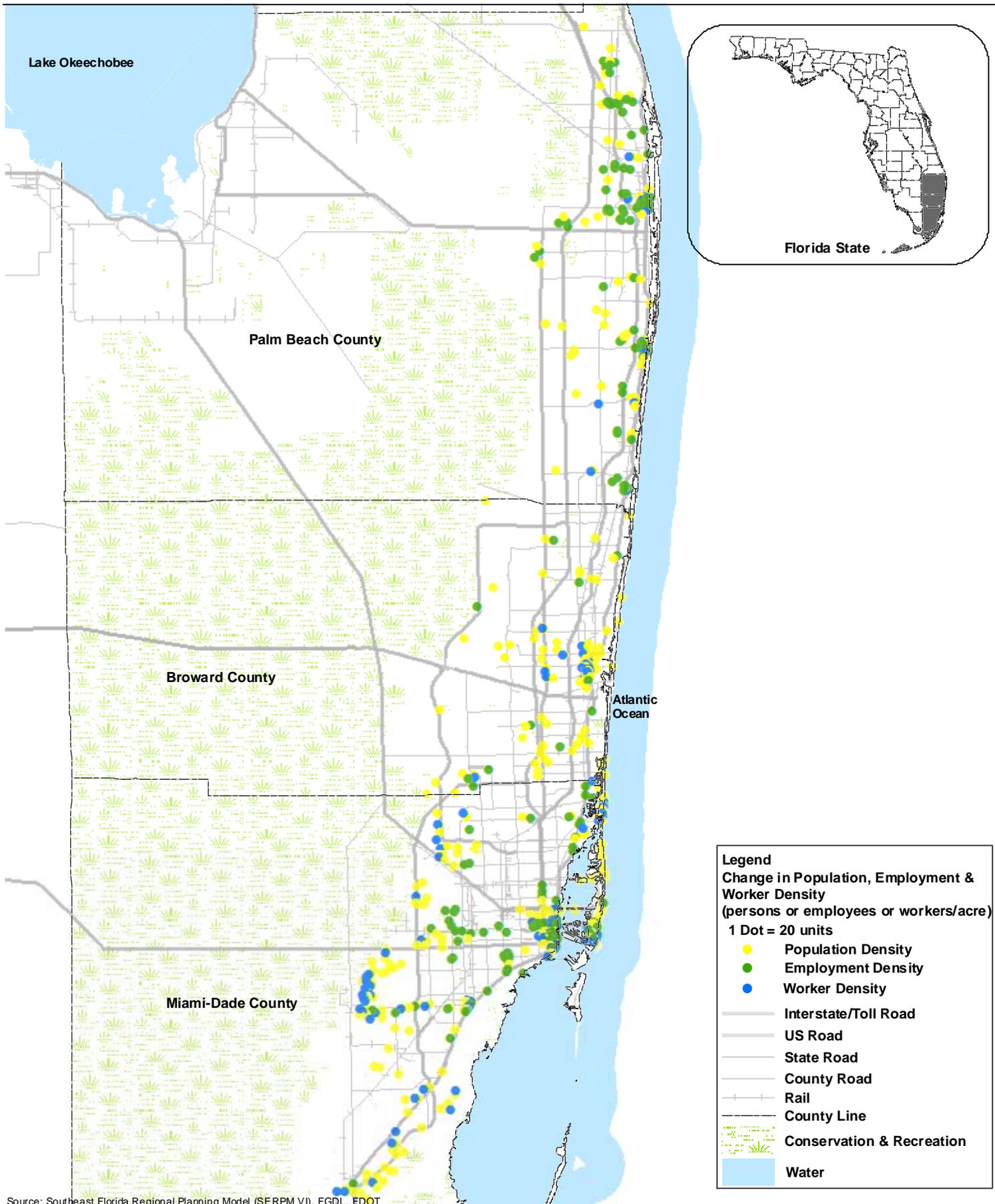
The historic pattern of land use in the South Florida region is not generally regarded as transit friendly. Generally, land uses are segregated and there are very few dense residential and employment centers that substantially support premium transit service outside of key Miami-Dade destinations. Exceptions to the historic pattern are increasing in areas like Downtown Ft. Lauderdale and Mizner Park, in the City of Boca Raton, that have sufficient residential and employment densities, in concentration as well as urban design characteristics that promote biking and/or walking that are primary modes of transportation at one end of a transit trip. **Figure 13** exhibits existing land types in the South Florida region, while **Figure 14** depicts generalized future land use in this region according to the South Florida Regional Planning Council data.

Moreover, many cities are now encouraging mixed-use development by incorporating policies for transit-friendly development or transit oriented development in their Comprehensive Plans and Redevelopment Plans. Agencies such as the FDOT and planning departments at the regional and county levels are supporting local government and encouraging them to consider regional traffic impacts of their land use decisions. Based on the land values, population, and employment growth, and a constrained supply of developable land in this region, high density and mixed land use types are logical future development patterns for the South Florida region.

## **3.2 PROPENSITY TO USE TRANSIT**

A Geographic Information System (GIS) based model was developed to analyze the spatial distribution of population with respect to the characteristics that encourage the use of transit. The model uses available secondary data (Census 2000). The variables used as input data in the model are those demographic characteristics that demonstrate high correlation with transit ridership for home-based work trips. Such relationships have been well-accepted and documented in transit literature. A model developed solely for analyzing home-based work trips is warranted because more than fifty percent of the transit trips are work trips. Because the characteristics of 'captive' riders and 'choice' riders are significantly different, two separate models were developed.

These models analyze each demographic variable independently resulting in a composite analysis of all variables. In most cases, a pattern is evident by visual inspection of each of these demographic characteristics, but the composite analysis truly shows geographical areas having concentrations of individuals who were more likely to ride transit. The model uses raster data; a point system, or scoring technique; and raster addition to enable the composite analysis. Census block groups are used as the geographical unit of analysis.



Source: Southeast Florida Regional Planning Model (SERPM VI), FGDL, FDOT

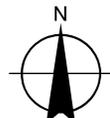
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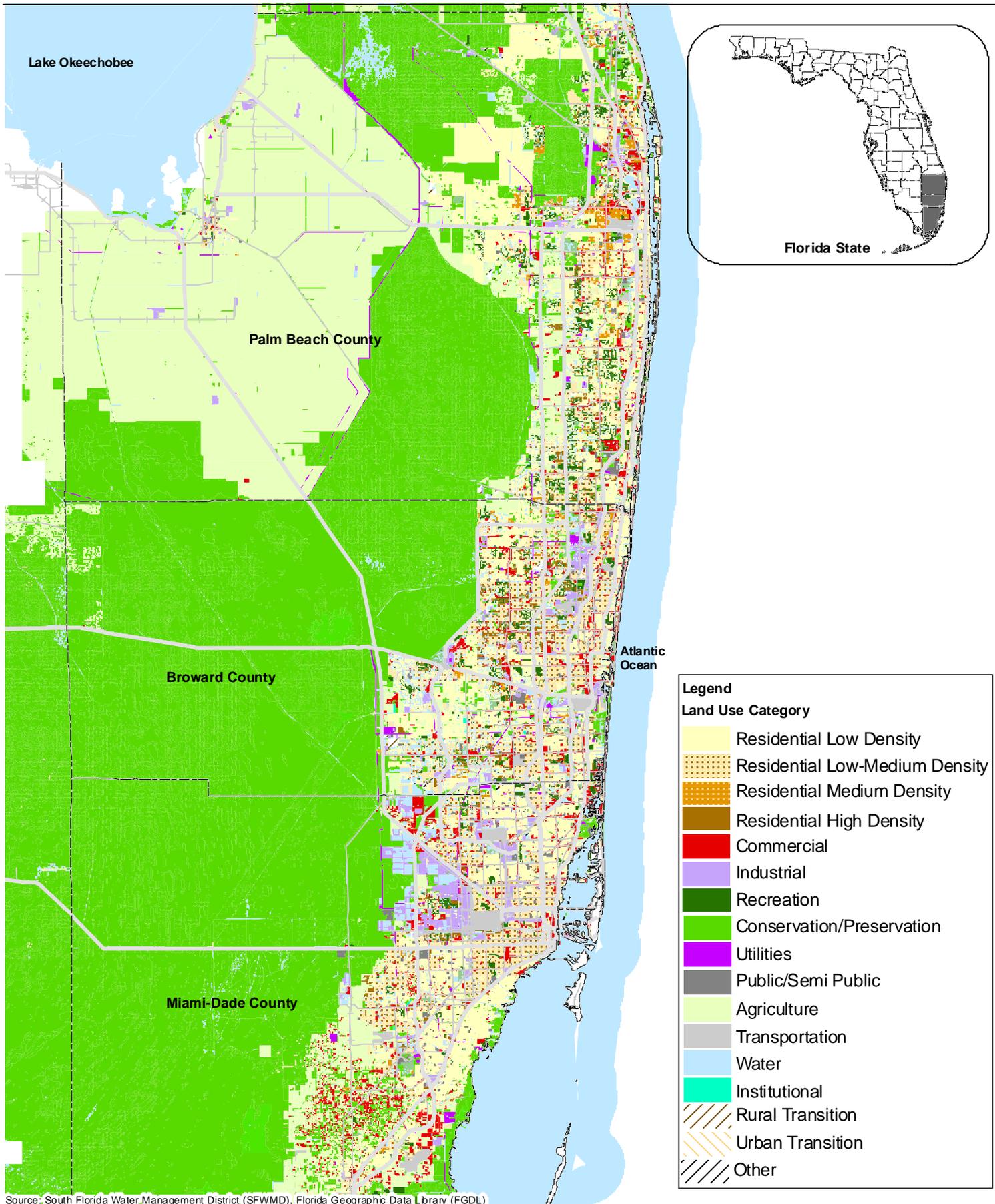
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**POPULATION, EMPLOYMENT & WORKER GROWTH, 2000-2030**

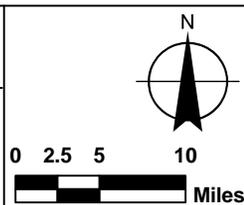
**Figure 12**



Source: South Florida Water Management District (SFWMD), Florida Geographic Data Library (FGDL)

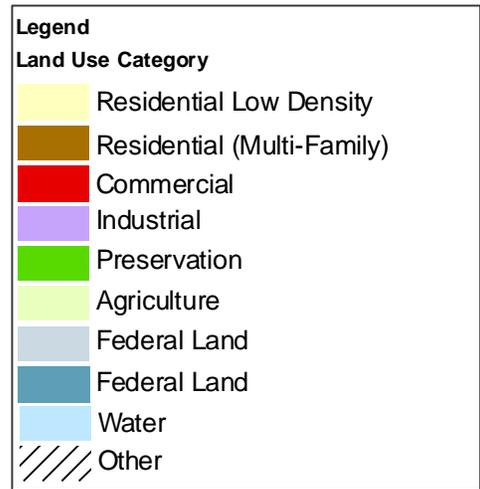
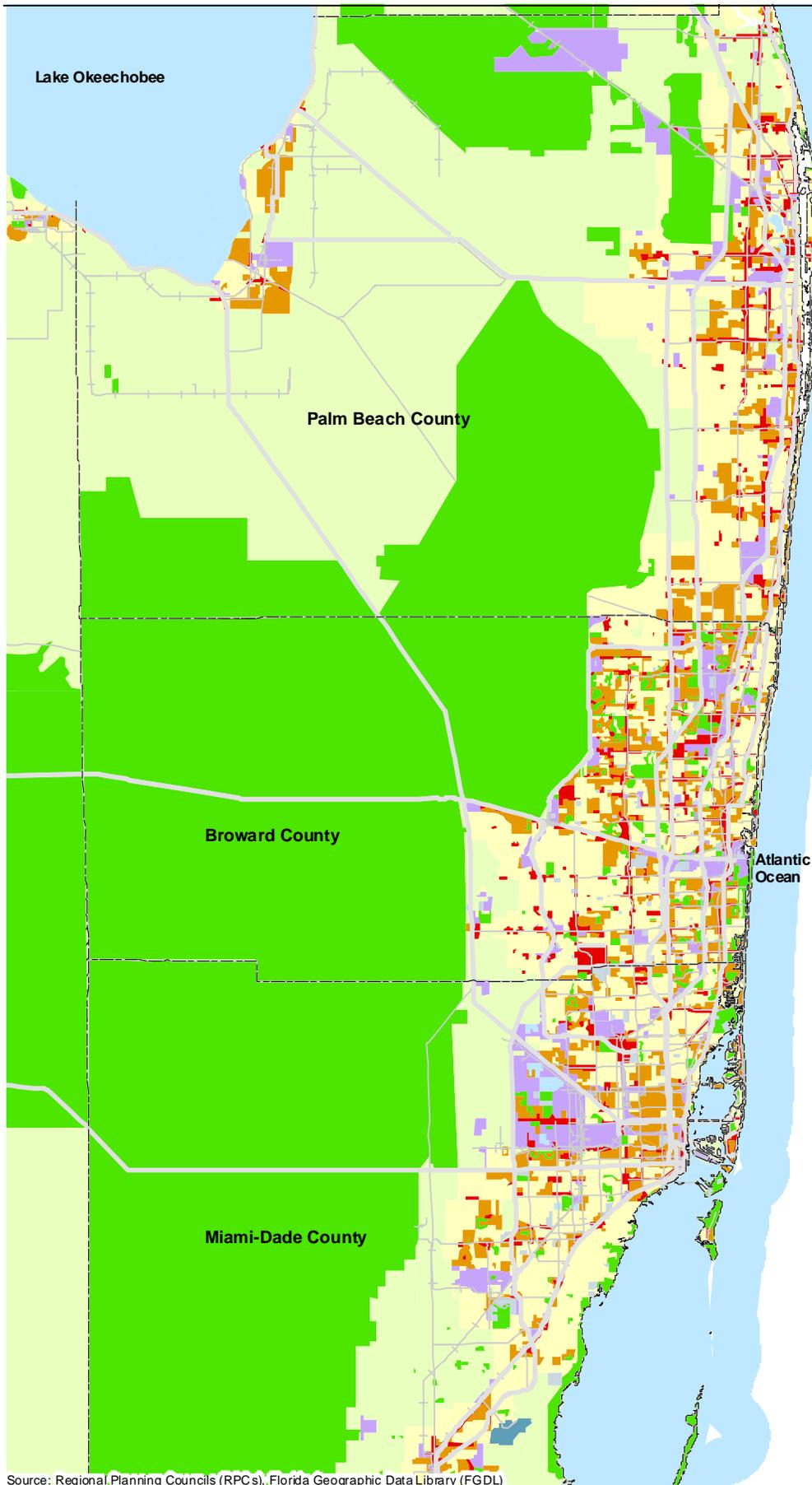


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**GENERALIZED LAND USE, 2000**

**Figure 13**



Source: Regional Planning Councils (RPCs), Florida Geographic Data Library (FGDL)



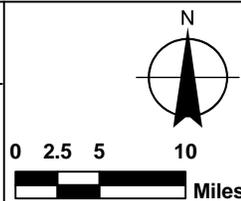
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**GENERALIZED  
FUTURE LAND USE**

**Figure  
14**

### 3.2.1 Choice Rider Model Description

The model inputs are independent variables that have some degree of correlation with trip-making characteristics, or patterns of individuals and/or an area. For the choice rider model, inputs include workers that drive-alone, travel time greater than 30 minutes, employment density, worker density, employees (workers) per household, households with one-auto, average household income, and households with two or more autos. The standards for each criterion are listed in **Table 1**.

**Drive-alone:** These are workers in single occupant vehicles or autos with one person driving to work. This is considered as the primary choice rider travel market that a proposed transit project would want to serve. (**Figure 15**)

**Travel time greater than 30 minutes:** According to American Community Survey 2005, the national average travel time for commute trips is 25 minutes, up from 21.7 minutes in 1980. In 2005, a commute trip in the State of Florida took 26 minutes, marginally more than the national average. However, average travel time to work in South Florida during the same year was 28 minutes. The travel times in each of the counties ranges between 26.1 to 31.1 minutes. Based on average travel time and the theory that drivers commuting for longer duration were more likely to switch to alternate modes of transportation, if available, this characteristic was factored in the analysis. (**Figure 16**)

**Jobs (Employment) density:** Information from recent studies shows employment density in a Central Business District and/or other major employment centers is more paramount in stimulating transit ridership than residential densities. According to Victoria Transport Policy Institute research, all other things being equal, transit ridership is low when employment density is less than 25 jobs per acre. It increases marginally as the density increases to 50 jobs per acre. The minimum density at which there is a significant shift to transit is 51 jobs per acre (**Figure 17**).

**Worker density:** The concentration of workers in an area reflects the size of market transit could serve. These workers are the 'would-be' patrons of the transit system. Transit agencies would be inclined to find large concentrations of customers to provide direct, frequent, and quality service. (**Figure 18**)

**Employees per household & Households with one-auto:** These two characteristics in combination would likely generate a high transit demand, and are considered codependent. In absence of transit as an alternate mode of transportation, households with more than one employee or worker and one-auto would rely on carpooling, trip chaining, or looking for jobs that are within walking or biking distance. These riders would be ideal candidates for using kiss and ride facilities if transit service is sufficient. (**Figures 19, 19A, 19B**)

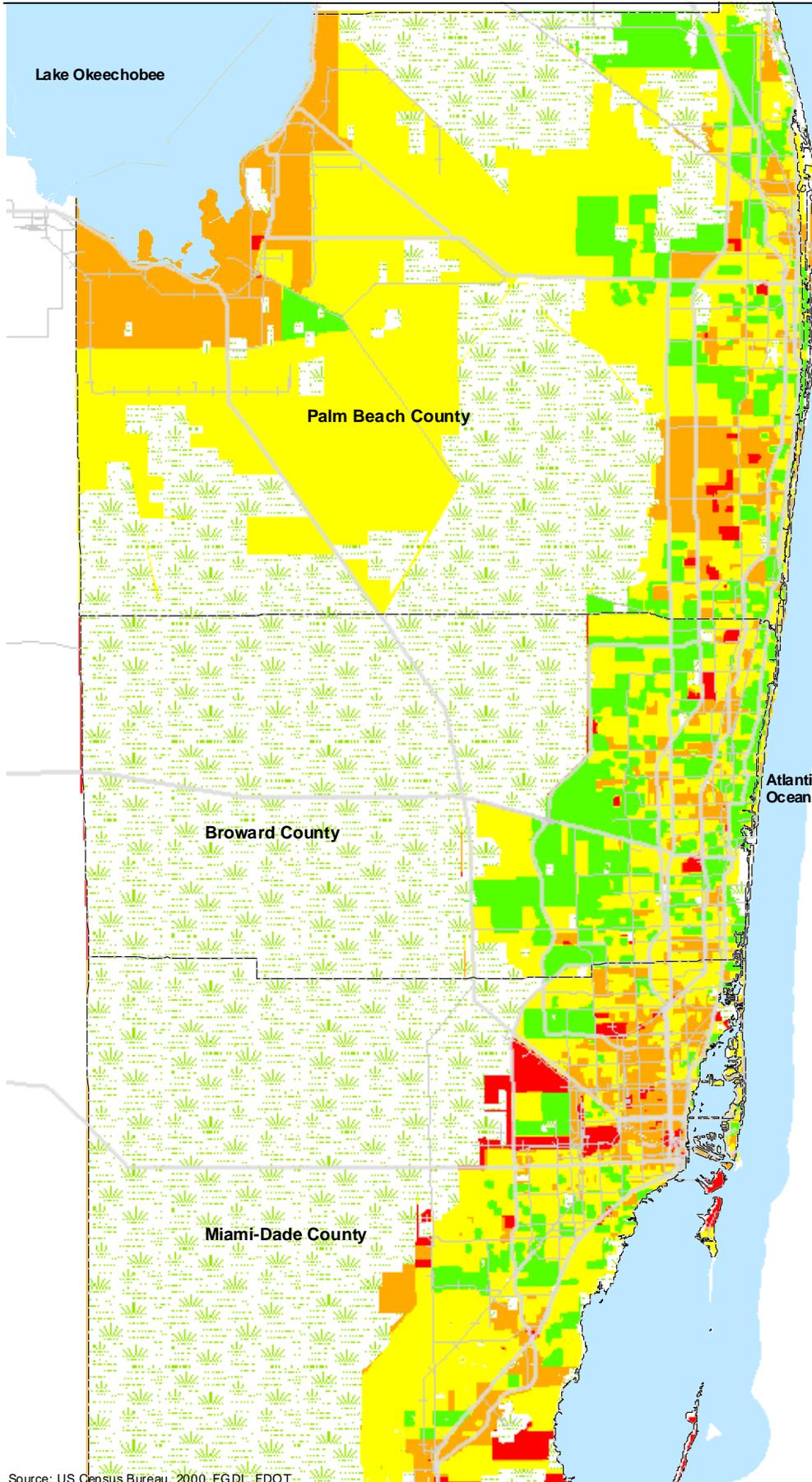
**Average household income & Households with two or more autos:** Used in combination, these variables demonstrate that as household income rises and auto-availability increases, the tendency to ride transit decreases. (**Figures 20, 20A, 20B**)

**Table 1: Choice Riders - Variables, Scoring, and Relative Values**

Variables	Score
<b>Drive Alone (% of the total population)</b>	
< 8%	1
9% - 27%	2
28% - 41%	3
> 42%	4
<b>Travel Time greater than 30 minutes</b>	
< 16%	1
17% - 44%	2
45% - 64%	3
> 65%	4
<b>Worker Density (Age 16+ years per acre)</b>	
< 4	1
5 - 13	2
14 - 24	3
> 25	4
<b>Jobs Density (jobs per acre)</b>	
< 6	1
7 - 15	1
16 - 25	2
25 - 50	3
51 - 75	4
> 76	4
<b>Employees per HH (currently employed)</b>	
< 1	1
1 - 1.5	2
1.6 - 3	3
> 3	4
<b>HHs with one Auto(% of the total HHs)</b>	
< 18.420%	1
18.421% - 36.310%	2
36.311% - 55.340%	3
> 55.341%	4
<b>Average Household Income</b>	
< \$38,431.56	4
\$38,431.57 - \$72,941.54	3
\$72,941.55 - \$116,079.01	2
> \$116,079.02	1
<b>HHs with two or more Autos (% of the total HHs)</b>	
< 19.797%	4
17.798% - 53.182%	3
53.183% - 75.698%	2
> 75.699%	1
<b>TOTALS</b>	

Source: Carter & Burgess, 2007

**Note:** Score\* 1 = low transit use potential, 4 = high transit use potential



**Legend**

**Propensity to Use Transit**

- 1 (Low)
- 2
- 3
- 4 (High)

- Interstate/Toll Road
- US Road
- State Road
- County Road
- Rail
- County Line
- Conservation & Recreation
- Water

Source: US Census Bureau, 2000; FGDL, FDOT

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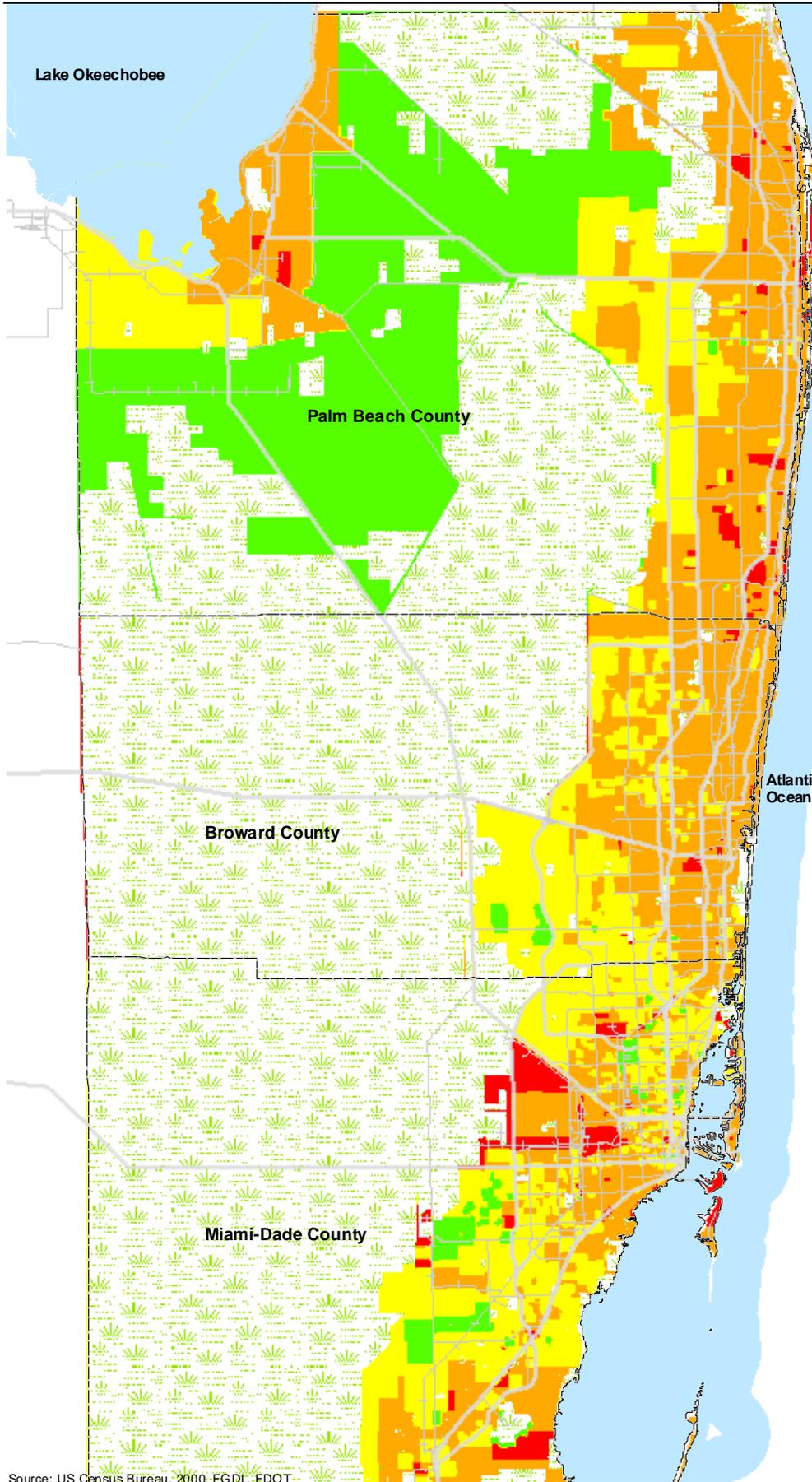
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**DRIVE ALONE (SOV) - HOME-BASED WORK TRIPS**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure 15**



**Legend**

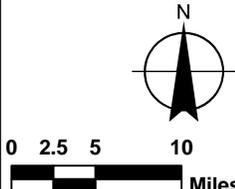
**Propensity to Use Transit**

- 1 (Low)
- 2
- 3
- 4 (High)

- Interstate/Toll Road
- US Road
- State Road
- County Road
- Rail
- County Line
- Conservation & Recreation
- Water

Source: US Census Bureau, 2000; FGDL, FDOT

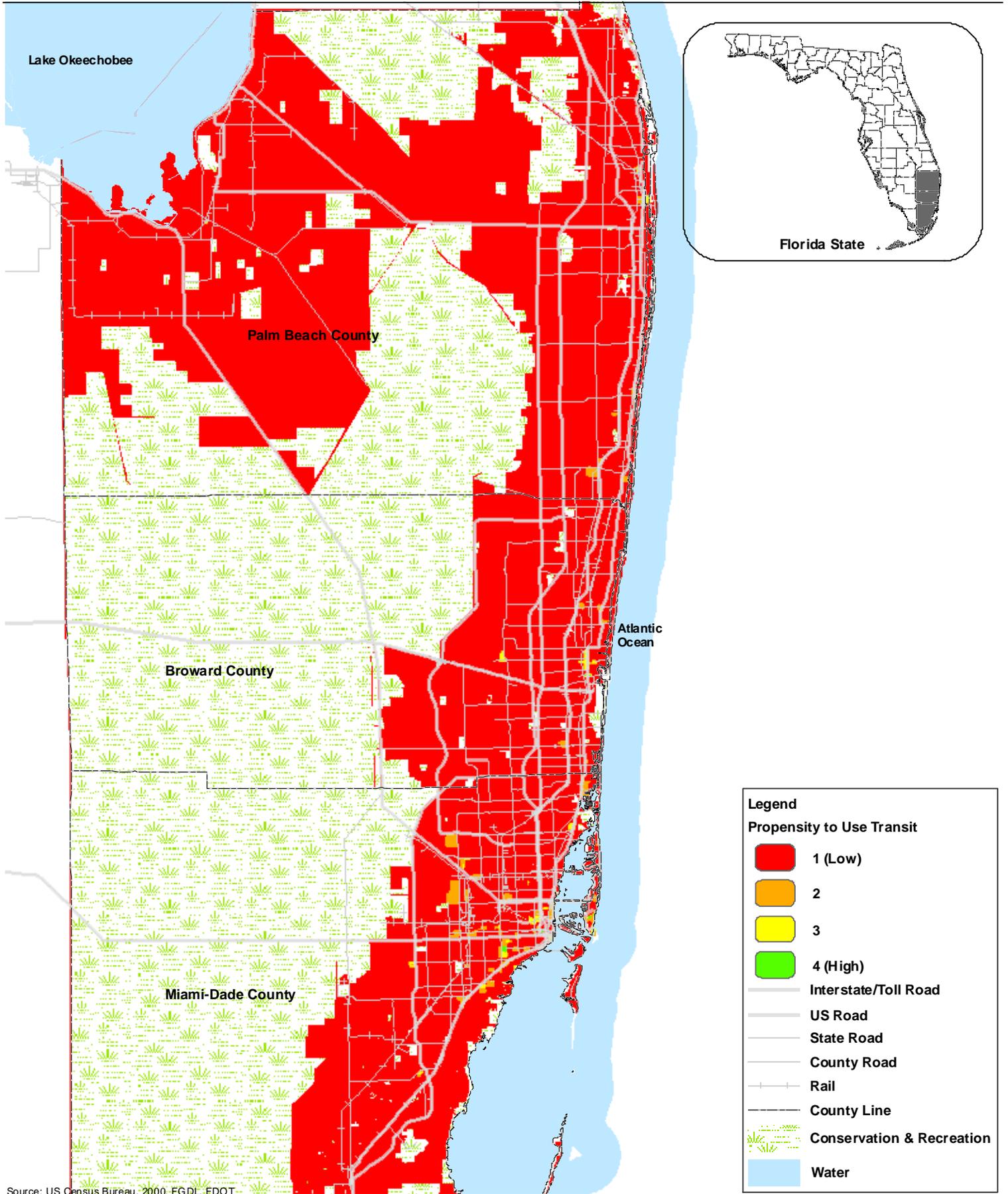
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**TRAVEL TIME  
 GREATER THAN 30 MINUTES -  
 HOME-BASED WORK TRIPS**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure  
 16**



Source: US Census Bureau, 2000; FGDL, FDOT

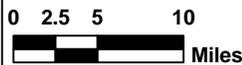
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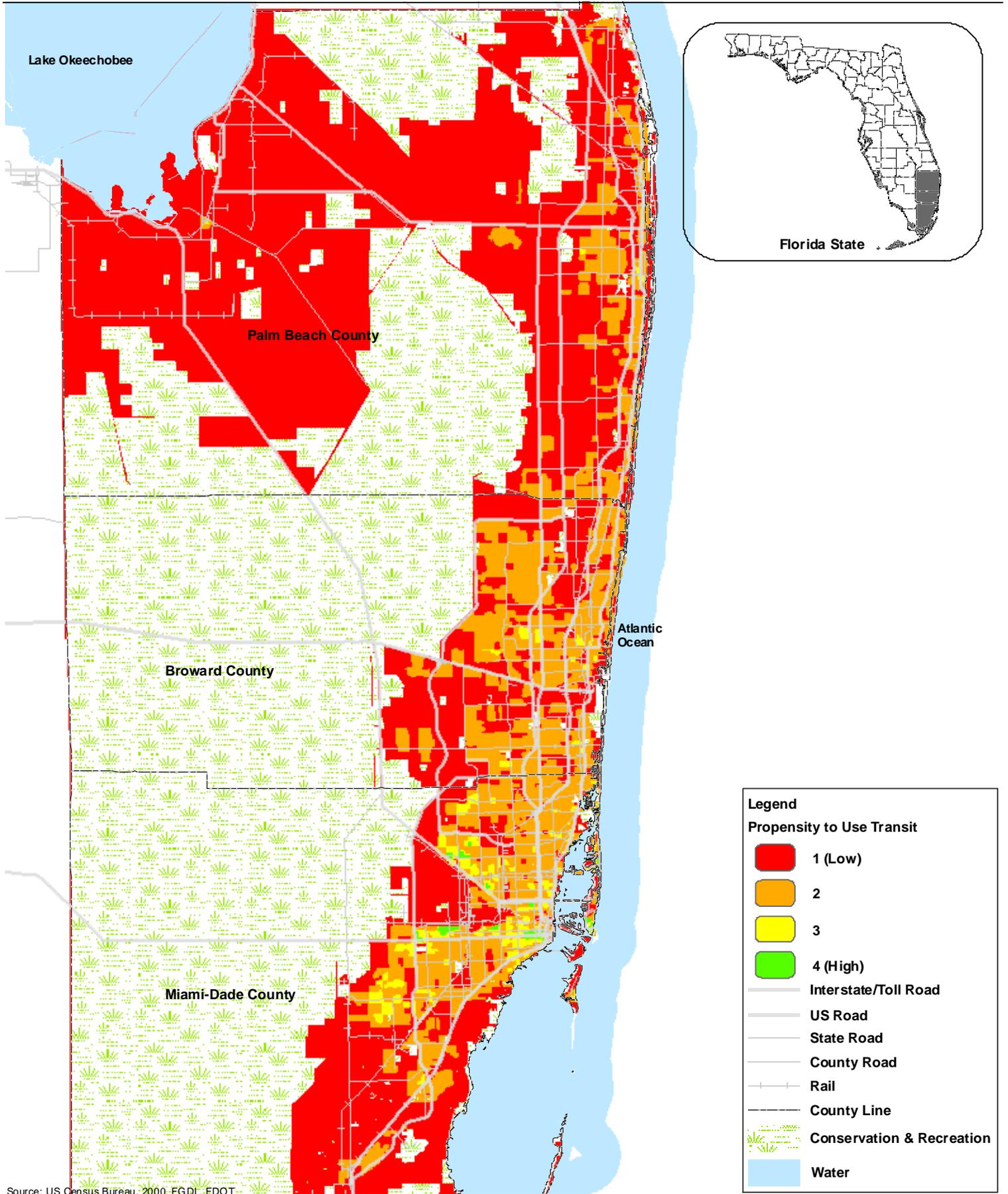
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**EMPLOYMENT (JOBS) DENSITY**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure 17**



Source: US Census Bureau, 2000; FGDL, FDOT

**Legend**

**Propensity to Use Transit**

- 1 (Low)
- 2
- 3
- 4 (High)

- Interstate/Toll Road
- US Road
- State Road
- County Road
- Rail
- County Line
- Conservation & Recreation
- Water

**RTA** SOUTH FLORIDA REGIONAL TRANSPORTATION AUTHORITY

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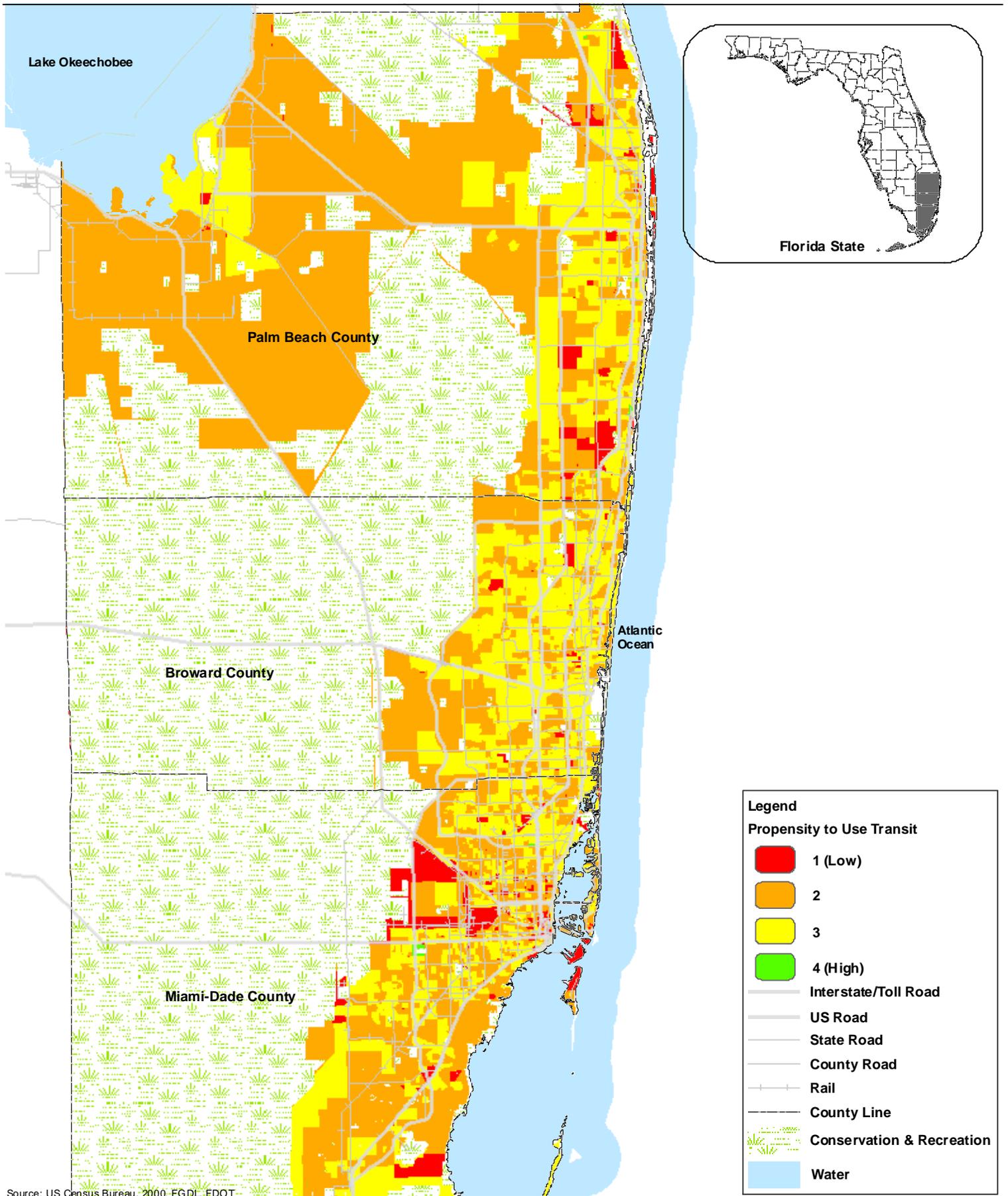
N

0 2.5 5 10 Miles

**WORKER DENSITY  
 (AGE 16+ YEARS)**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure  
 18**



Source: US Census Bureau, 2000; FGDL, FDOT

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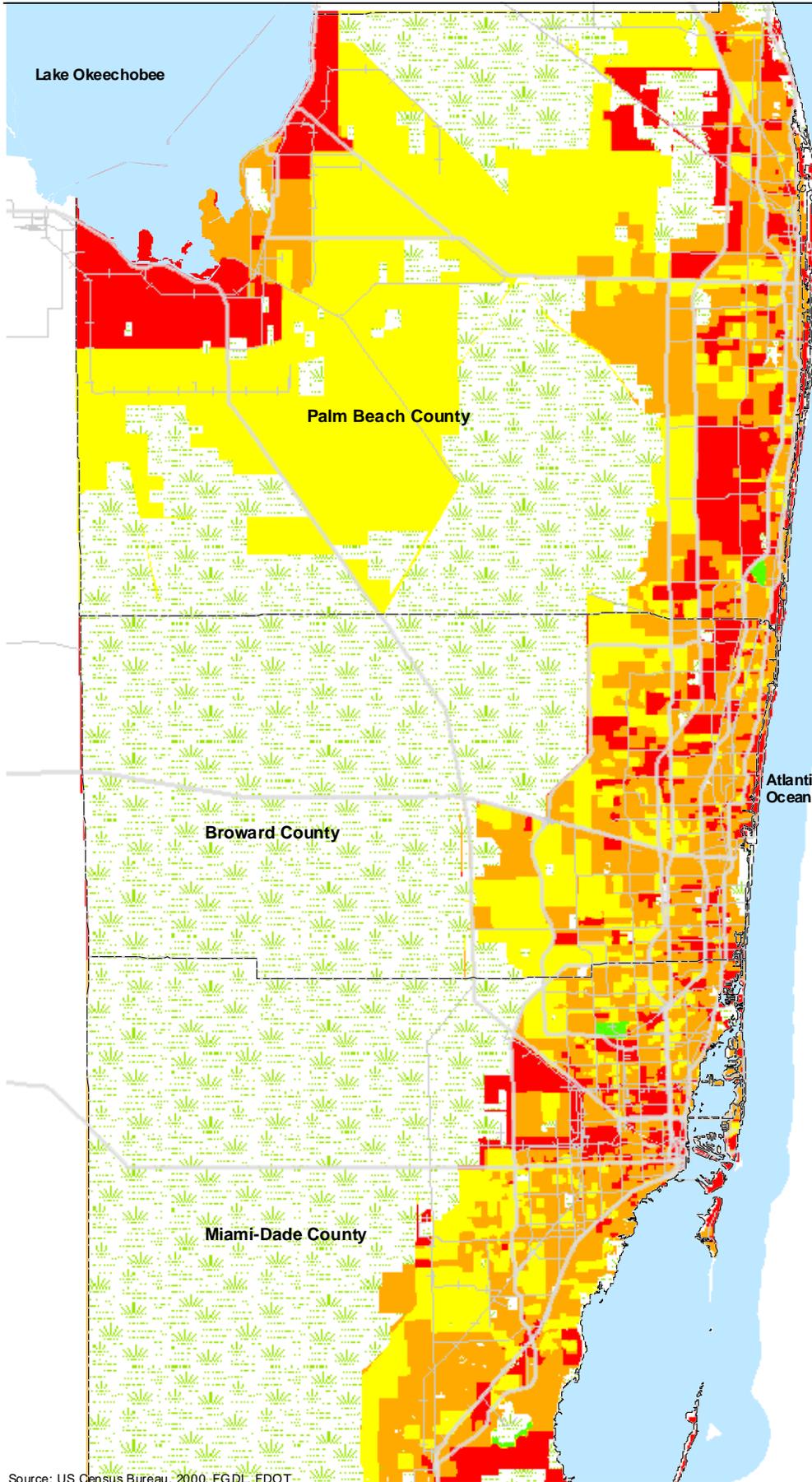


**WORKERS PER HOUSEHOLD & HOUSEHOLDS WITH ONE-AUTO**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure 19**





**Legend**

**Propensity to Use Transit**

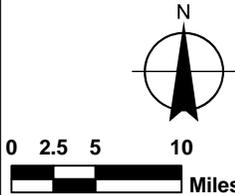
- 1 (Low)
- 2
- 3
- 4 (High)

- Interstate/Toll Road
- US Road
- State Road
- County Road
- Rail
- County Line
- Conservation & Recreation
- Water

Source: US Census Bureau, 2000; FGDL, FDOT

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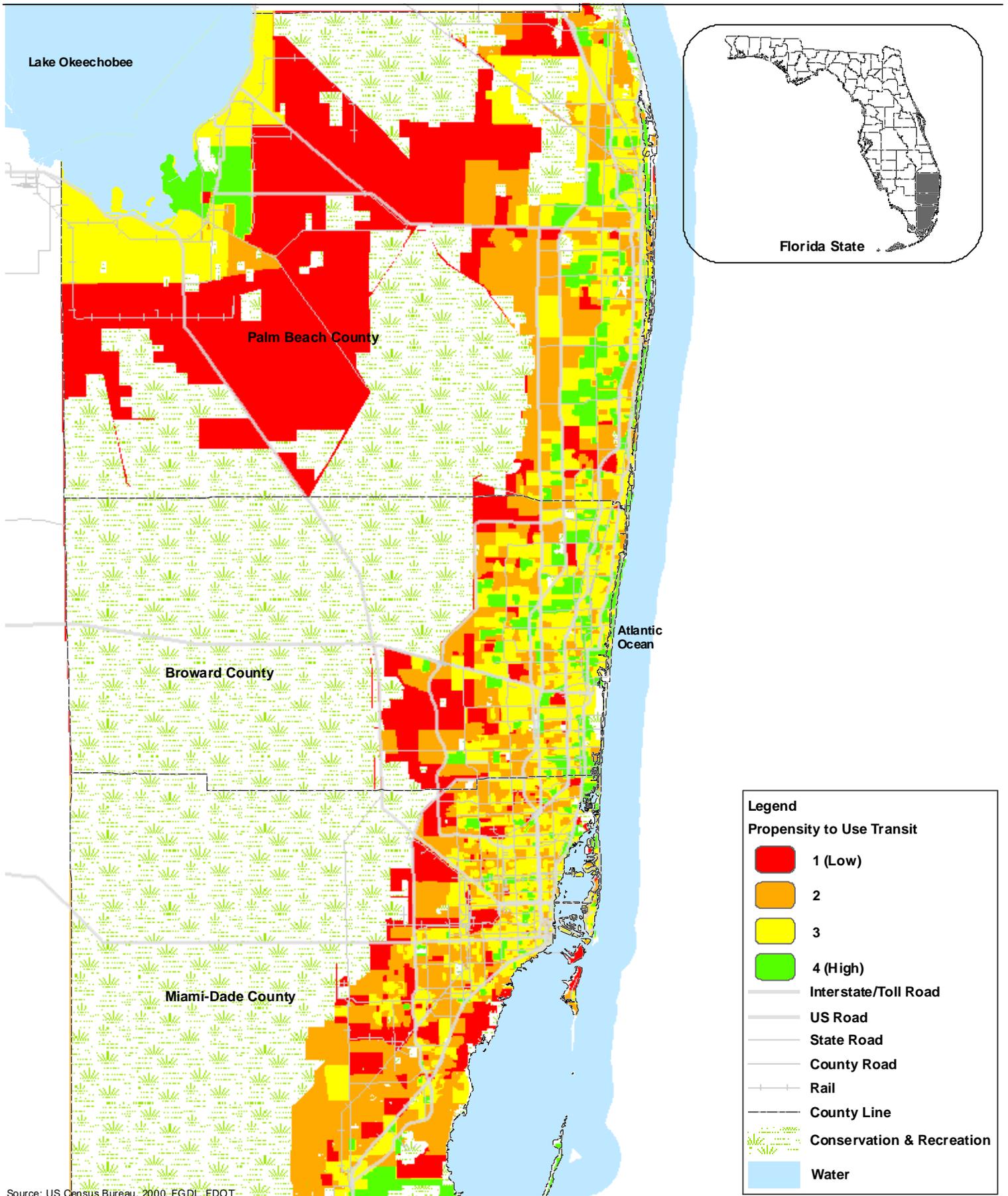
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**WORKERS PER HOUSEHOLD**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure 19-A**



Source: US Census Bureau, 2000; FGDL, FDOT

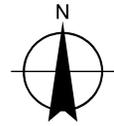
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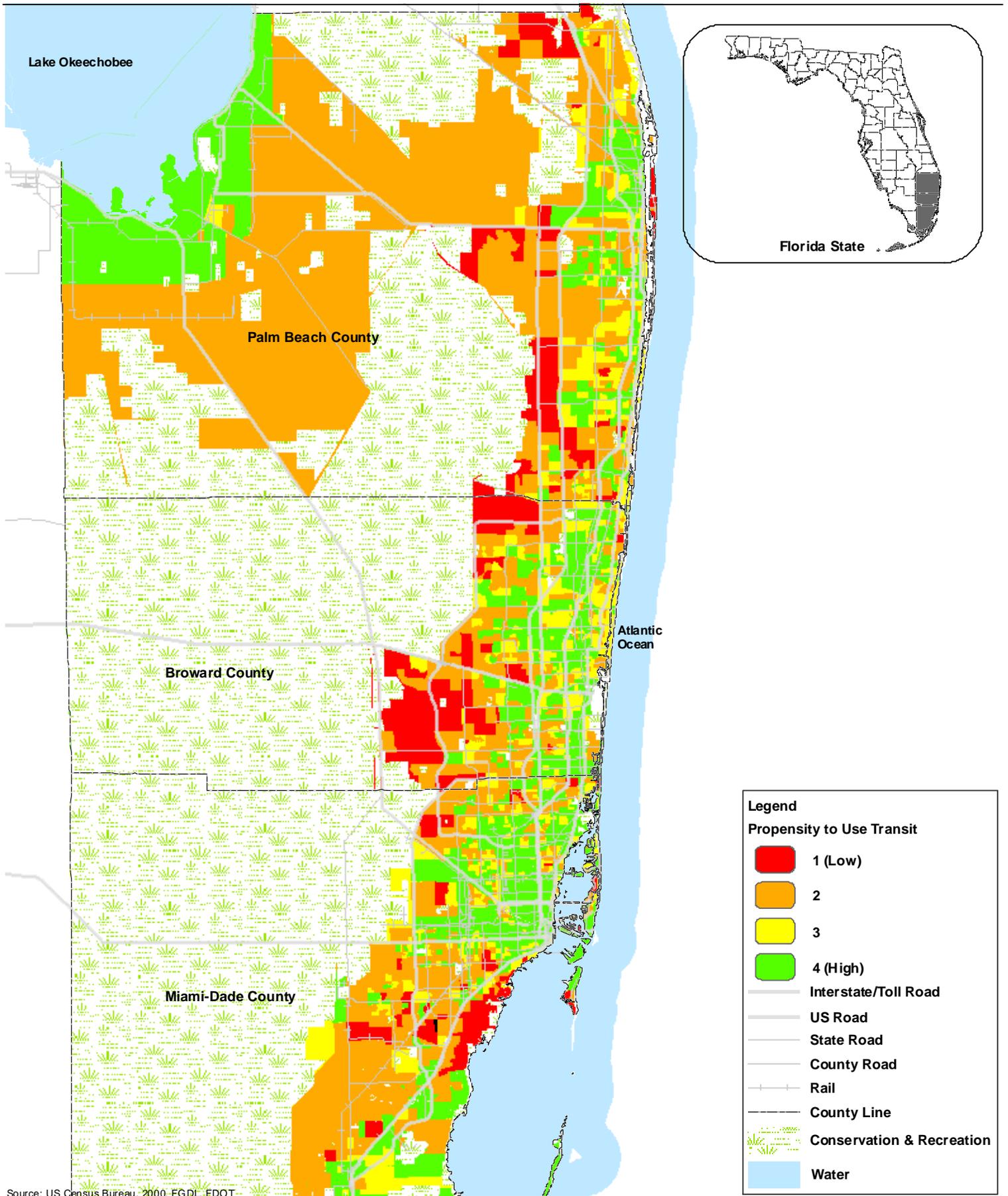
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**HOUSEHOLDS WITH ONE-AUTO**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure 19-B**



Source: US Census Bureau, 2000; FGDL, FDOT

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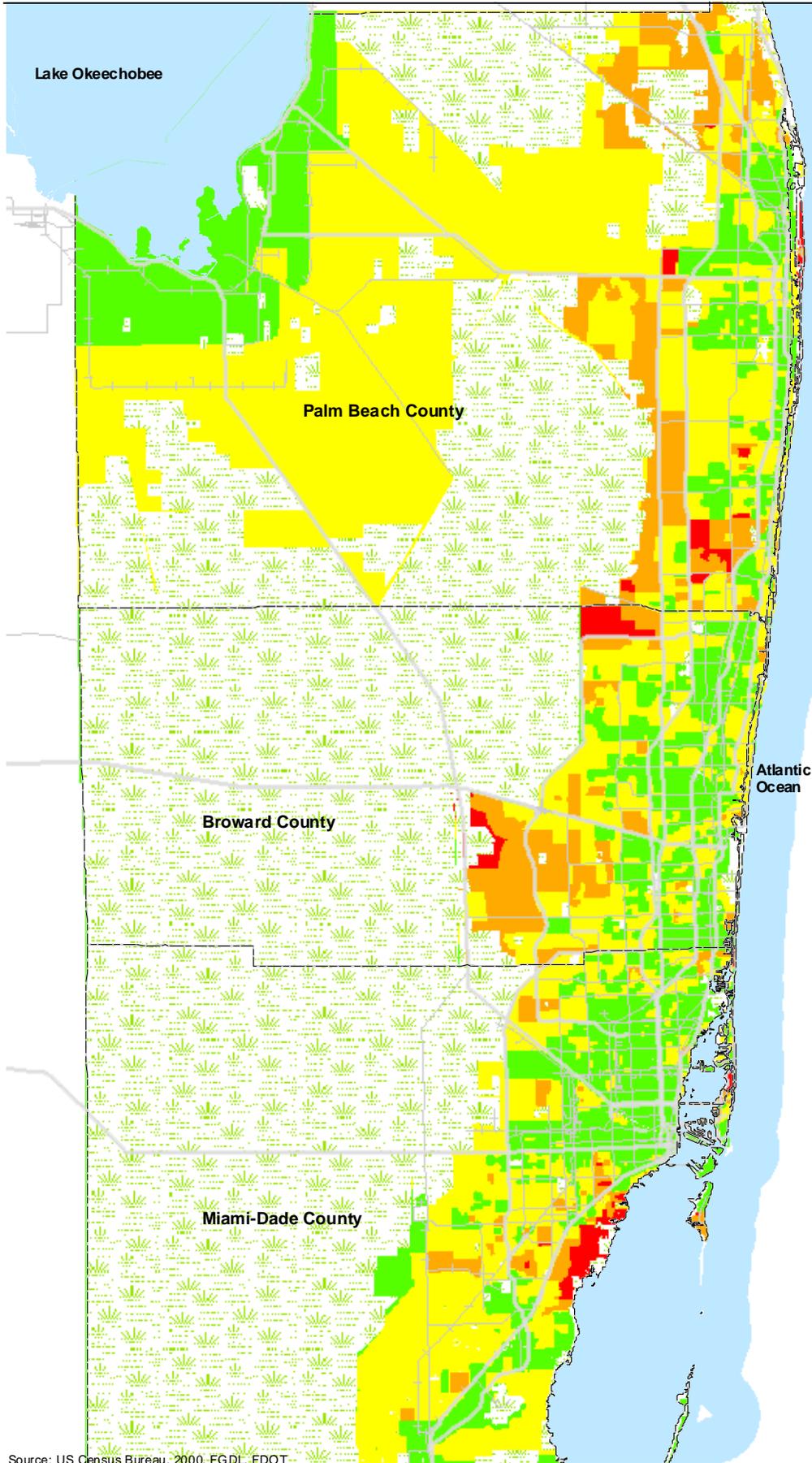


**AVERAGE HOUSEHOLD  
INCOME & HOUSEHOLDS  
WITH TWO OR MORE AUTOS**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure  
20**





**Legend**

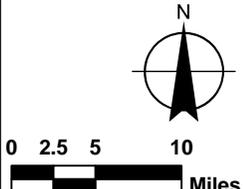
**Propensity to Use Transit**

- 1 (Low)
- 2
- 3
- 4 (High)

- Interstate/Toll Road
- US Road
- State Road
- County Road
- Rail
- County Line
- Conservation & Recreation
- Water

Source: US Census Bureau, 2000; FGDL, FDOT

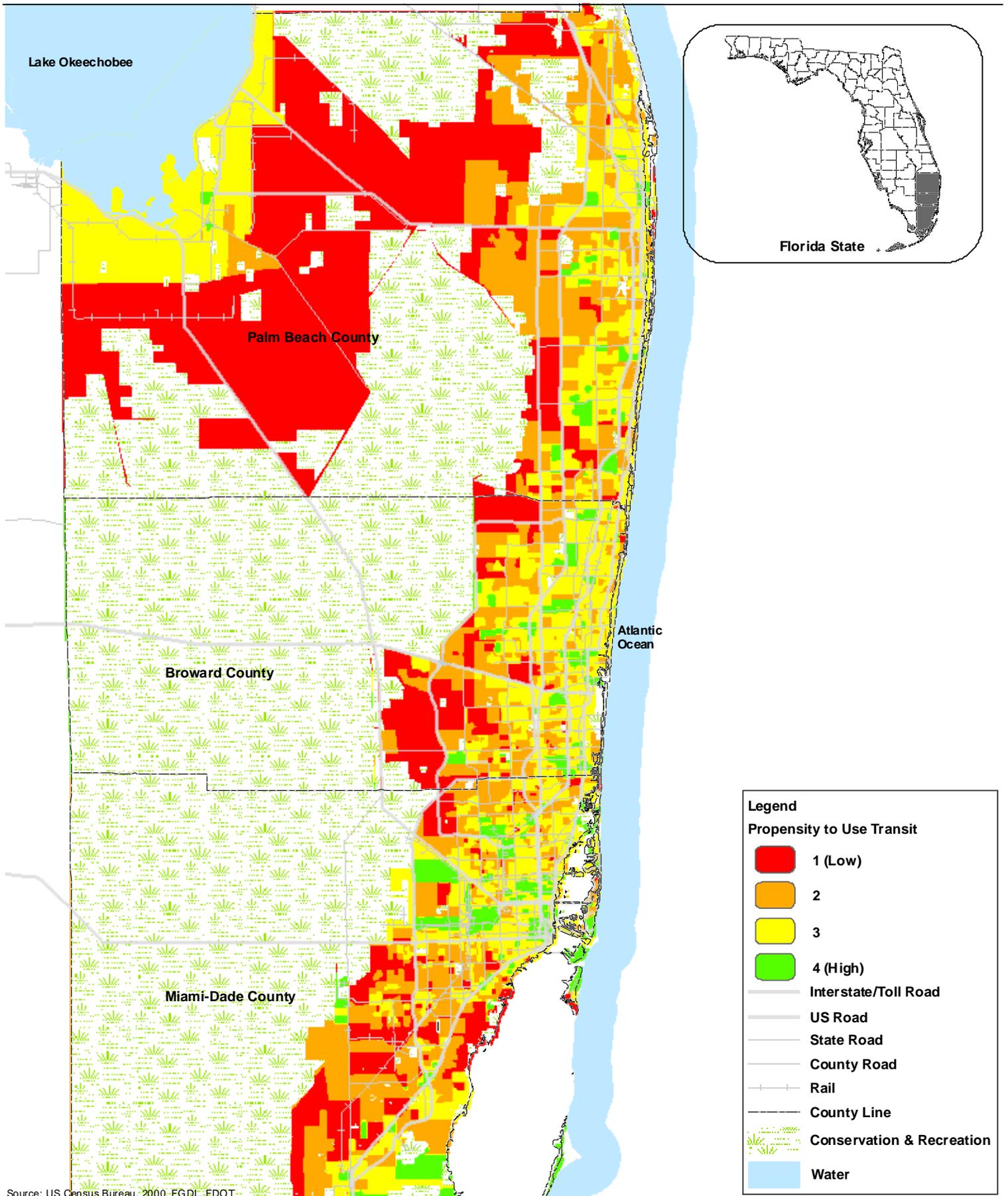
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**AVERAGE HOUSEHOLD INCOME**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure 20-A**



Source: US Census Bureau, 2000, FGDL, FDOT

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## HOUSEHOLDS WITH TWO OR MORE AUTOS

CHOICE RIDER MODEL - YEAR 2000

Figure 20-B



### 3.2.2 Model processing

**Scoring System:** All variables (or combinations of) were scored on a four-point system. In all cases, a score of one indicates low transit use potential and a score of four indicates a high potential of transit use.

The class intervals or break points for each variable were determined using ‘natural breaks’ in ArcGIS (v9.1). Classes are based on natural grouping of data values. In this method, data values are arranged in order. The break points are determined statistically by finding adjacent feature pairs, between which there is a relatively large difference in data value. **Table 1** outlines the scores for all the input variables.

For each input variable, the data was normalized at census block group level. In variables including drive alone, travel time greater than 30 minutes, and average household income, the percentage of people or households in a block group was calculated to normalize the data. In other cases, density was used for normalization.

All the above data was attached to the census block group geography using ArcGIS. This vector data was then converted into raster data for further analysis. Raster data represents the underlying geography in a grid or cell format. This data was reclassified using the four-point system as explained above. **Figures 15, 16, 17, and 18** are thematic maps displaying the reclassified data for each variable. The codependent variables were combined using combination function in ArcGIS, then reclassified (**Figures 19 and 20**). These thematic maps were then aggregated using raster addition in ArcGIS in order to produce the composite analysis (**Figure 21**). **Figure 22** shows a schematic diagram of the choice riders’ model, including the input variables, geoprocessing occurring in ArcGIS, and the final model output.

**Model output:**

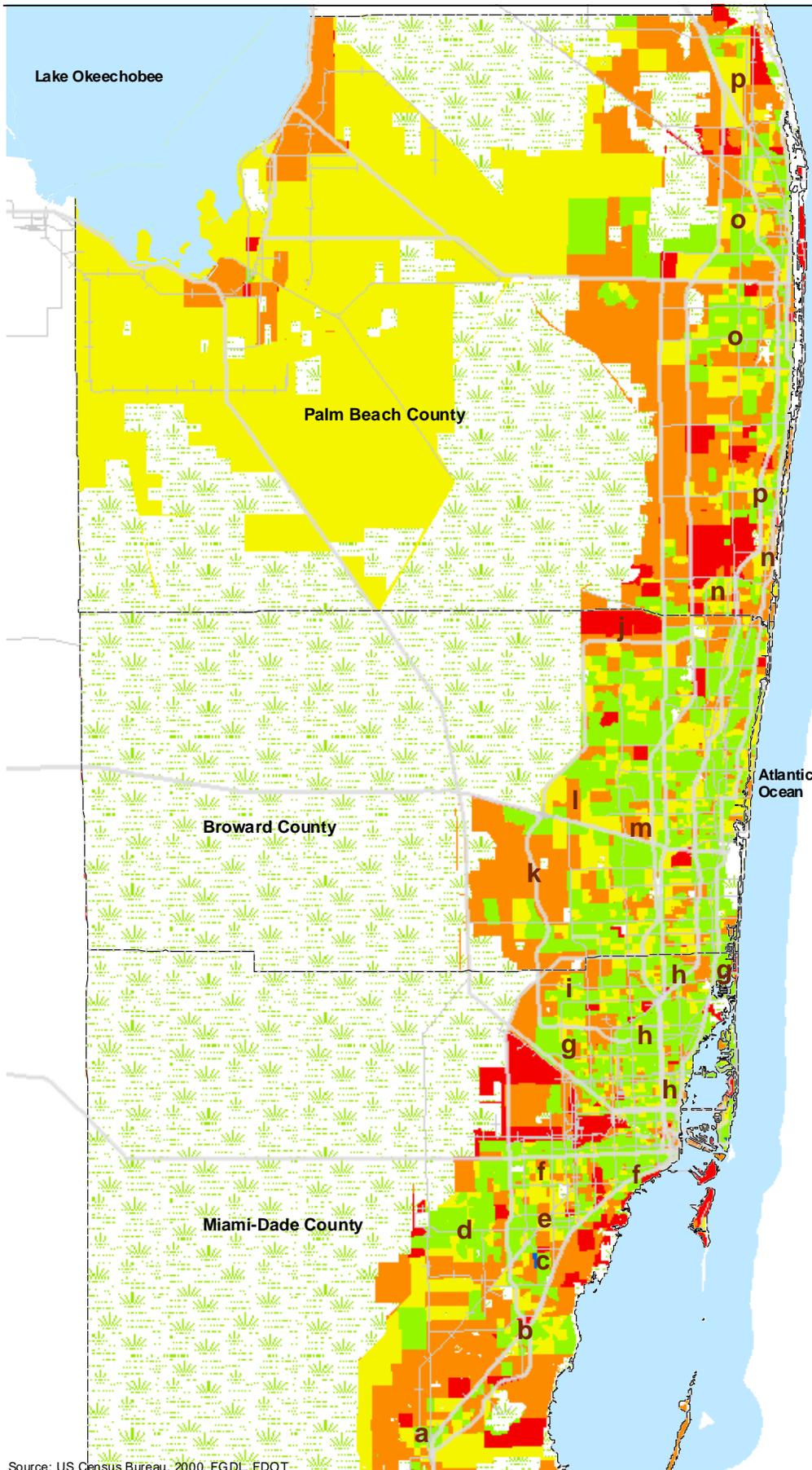
The composite analysis (**Figure 21**) shows the spatial distribution of choice riders in 2000. The raster addition in ArcGIS resulted in the final model output. The final output was reclassified on a sliding scale of one to five, where one represents ‘Low’ and five represents ‘Very High’ propensity to use transit. The raw composite scores ranged from a low of 6.0 to a high of 105.0. The mean and standard deviation for the distribution was 12.1 and 1.7, respectively. The break points for the composite analysis were determined using *natural breaks* (**Table 2**).

**Table 2: Choice Riders – Composite Analysis Break Points**

Raw Score	Score	Mean Score	Standard Deviation
6 -10	1	12.1	1.7
10.1 – 12.0	2		
12.1 – 13.0	3		
13.1 – 20.0	4		
20.1 – 105.0	5		

Source: Carter & Burgess, 2007

**Note:** Score\* - 1 = low transit use potential, 5 = high transit use potential



**Legend**

**Propensity to Use Transit**

- 1 (Low)
- 2
- 3
- 4
- 5 (Very High)

- Interstate/Toll Road
- US Road
- State Road
- County Road
- Rail
- County Line
- Conservation & Recreation
- Water

**a, b, c..\*** Letters correspond to area description in section 3.2.2

Source: US Census Bureau, 2000; FGDL, FDOT

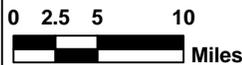
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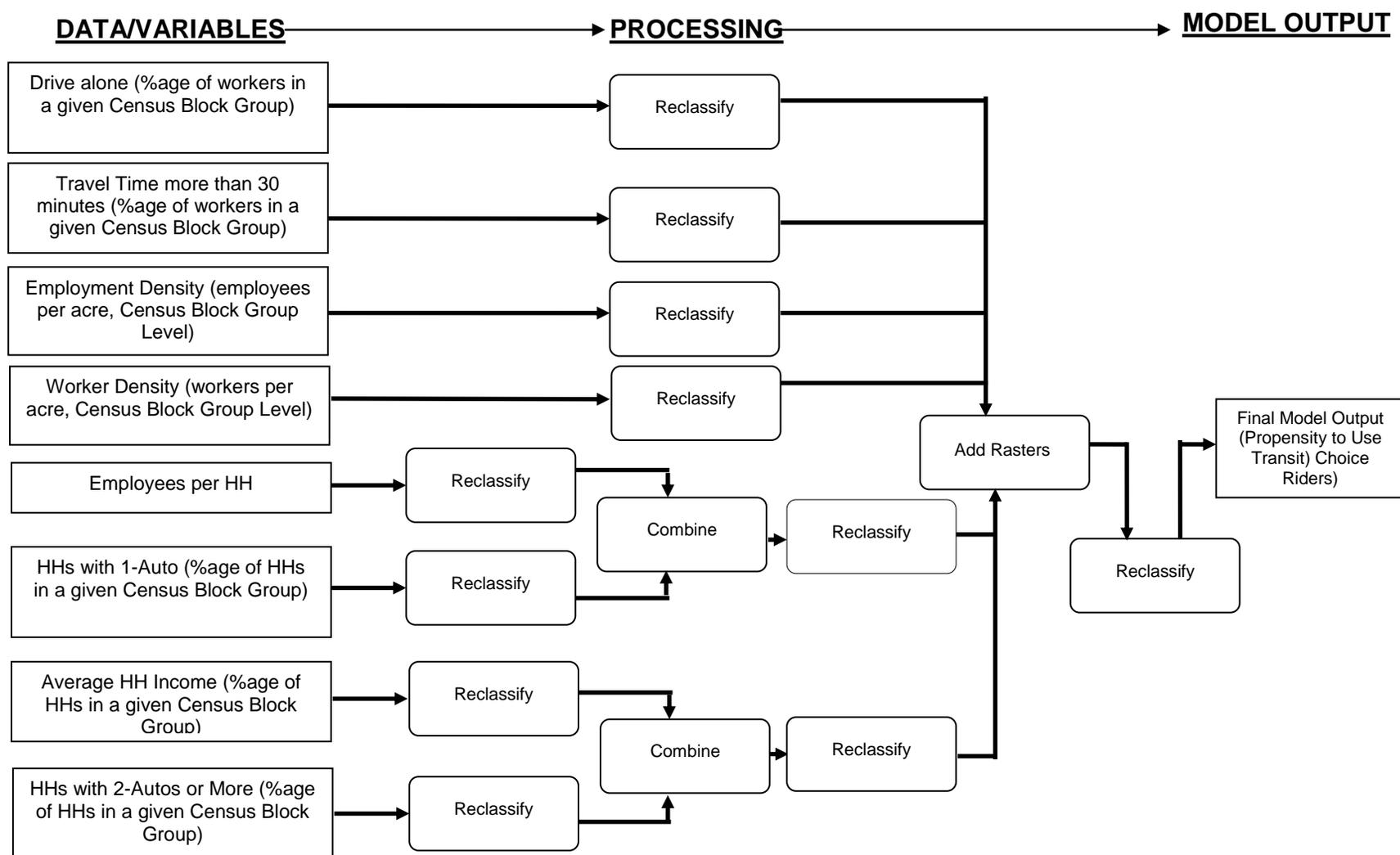
**PROPENSITY TO USE TRANSIT  
COMPOSITE MAP**

**CHOICE RIDER MODEL - YEAR 2000**

**Figure  
21**



Figure 22 – Schematic diagram for choice riders' model



Source: Carter & Burgess, 2007

**Figure 21** is a graphic representation of the composite analysis results from the model run showing the potential for transit use by choice riders in the South Florida region. The following areas indicate medium to very high potential for use of transit by choice riders. The location of each area discussed can be found on **Figure 21**, using the corresponding letter.

***Miami-Dade County:***

- A) Small area at the intersection of US 1 and SR 997/Krome Avenue in Florida City and Miami-Dade government center, area in the vicinity of US 1 and SR 821 interchange in Cutler Ridge or the general area around Cutler Ridge Mall.
- B) The area east of US 1 and north of SW 152nd Street/Coral Reef Drive or the general area in the vicinity of Deering Hospital is reasonably sized transit market.
- C) Large areas in Kendall along SW 104th Street/Kendall Drive between HEFT and SR 997 (Krome Avenue).
- D) Choice riders are also concentrated the area bounded by HEFT to east and SR 826 to the west and southeast along SW 104th Street/Kendall Drive.
- E) The entire two-mile wide stretch along SW 8th Street/Tamiami Trail, large parts of in the southern part of City of Miami.
- F) Area east and west of SR 826/Palmetto Expressway and north of US 27/SR 25 in Hialeah, Miami Beach and area in the vicinity of Aventura Mall,
- G) Areas along NW 27th Avenue, I-95, and US 1 in North Miami Beach, the City of Miami, and unincorporated Miami-Dade County are good candidates for providing transit service.
- H) Some areas in Carol City and Miami Lakes can also be served well by transit.

***Broward County:***

Areas with medium to very high potential to use transit are spread throughout the eastern portion of the county. In the western portion, the following areas were identified:

- I) The general area to the east and west of I-75 and the north western portion of the county north and south of SR 869 (Sawgrass Expressway).
- J) The area to the west of Florida's Turnpike (SR 91) in Parkland and Coral Springs.

The following areas, although they show medium to very high potential to use transit, may not be efficiently served with premium transit due to their remoteness from other high transit use areas.

- K) The areas immediately north of I-595 and east of Flamingo Road in Plantation.
- L) General area in the northwest quadrant at the interchange of I-595 and Florida's Turnpike.

### ***Palm Beach County:***

Unlike Broward County, areas with medium to very high propensity to use transit in Palm Beach County are not scattered, and are concentrated in the southern and central parts of the county.

- M) In southern Palm Beach County, areas immediately east and west of I-95 and south of Glades Road in Boca Raton and those in the vicinity of Mizner Park along US 1.
- N) In central Palm Beach County, they are north and south of SR 80 (Southern Boulevard) and between Florida's Turnpike and I-95, generally along Military Trail.
- O) Areas east of I-95 in Jupiter and along US 1 in Boynton Beach.

### **3.2.3 Captive Rider Model Description**

**Model inputs:** Captive riders are defined as those riders that use transit because they do not have an alternate mode of transportation. Theoretically, transit demand of captive riders is inelastic to level of service and fares. The demographic group consisting of households with zero autos, disabled people, and households living below the poverty level are considered transportation disadvantaged, or captive riders. The model uses only two of the three variables to minimize double counting. In this model elderly population and students are not considered as transit dependent because alternate modes of transportation are available, such as paratransit and school buses.

**Zero-auto households and Households below poverty level:** These are the primary transit dependent demographic groups.

**Jobs (Employment) density:** This category represents the destination end of the trip. As explained in choice riders' model, higher employment density at the center of the city results in higher transit ridership.

**Population density:** This represents the origin end of the trip. Several studies have documented the relationship between high residential densities and transit ridership. However, transit ridership depends collectively on several factors such as design and diversity of land uses. A majority of the studies are empirical and examine the relationship between residential density and transit ridership by controlling other variables. According to *Feasibility of Transit Service based on Urban Density, A Guide to Land Use and Public Transportation for Snohomish County, Washington* (December 1989), fixed route bus service is feasible when population density is between four and 13 persons per acre, while frequent bus service is feasible between 14 and 24 persons per acre. Rail service is only feasible when population density is more than 25 persons per acre.

### 3.2.4 Model processing

**Scoring System:** This model uses the same concept as the choice riders' model explained in **Section 3.2.1**. However, in this case all the four independent variables are directly proportional to the probability of an individual to use transit. Furthermore, the model uses the same methodology for determining break points or class intervals as the choice riders' model. The only difference between the models is that the captive riders' model does not use *combination function* because it does not involve analysis of codependent variables.

**Figures 23, 24, 25, and 26** are thematic maps displaying the reclassified data for each variable. The final model output is the composite analysis obtained by using raster addition in ArcGIS.

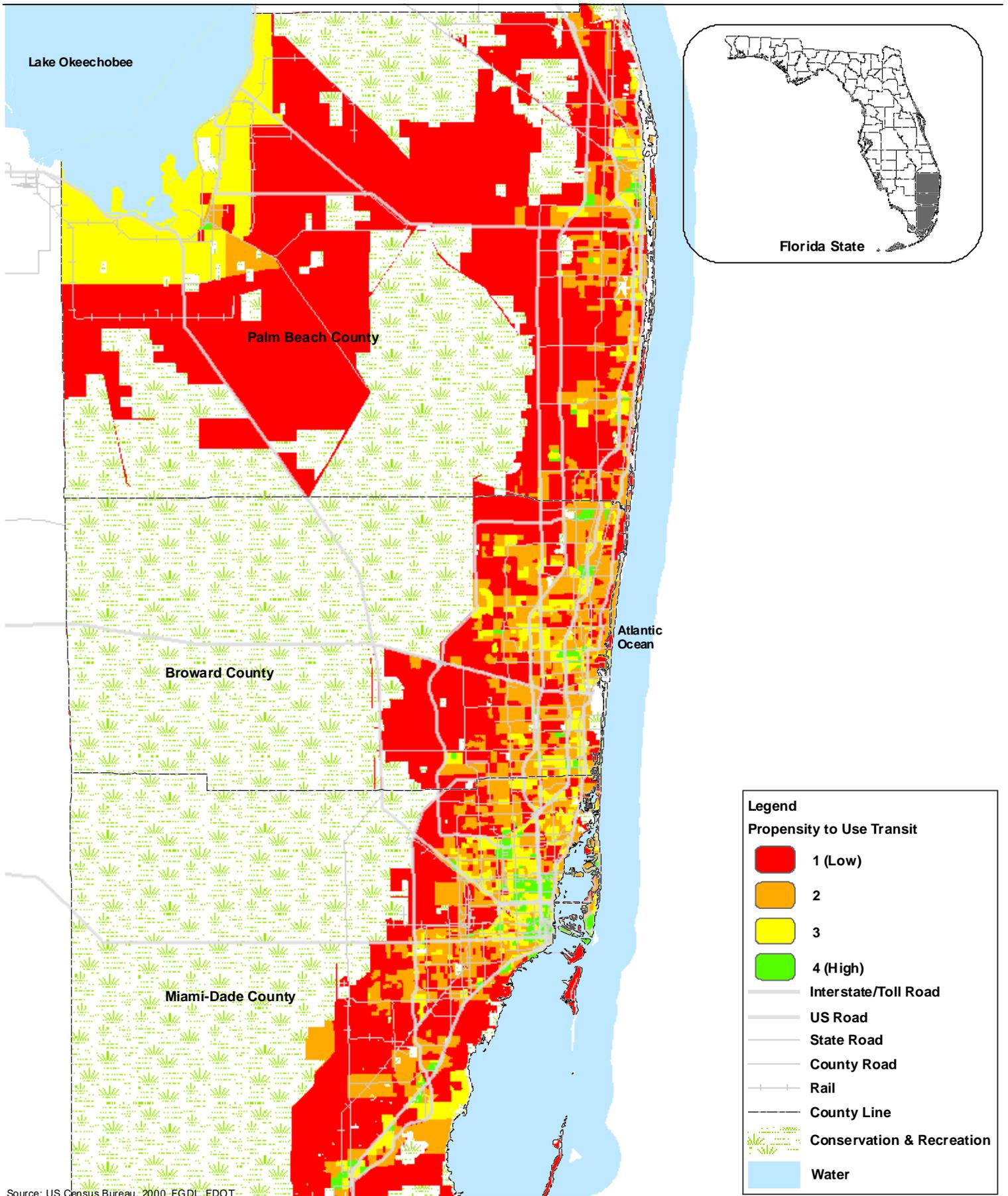
**Table 3** outlines the scores for all the input variables. **Figure 27** shows a schematic diagram of the captive riders' model, including the input variables, geoprocessing occurring in ArcGIS, and the final model output.

**Table 3: Captive Riders - Variables, Scoring, and Relative Values**

Variables	Score*
Zero-Auto HHs (%age of total HHs)	
< 4.690%	1
4.691% – 14.380%	2
14.381% - 31.090%	3
> 31.091%	4
Jobs Density (jobs per acre)	
< 6	1
7 - 15	1
16 -25	2
25 - 50	3
51 - 75	4
> 76	4
Population Density (persons per acre)	
< 4	1
5 - 13	2
14 - 24	3
> 25	4
HHs Below Poverty Level (%age of total HHs)	
< 5.719%	1
5.720% – 11.760%	2
11.761% – 25.459%	3
> 25.460%	4
TOTALS	

Source: Carter & Burgess, 2007

Note: Score\* - 1 = low transit use potential, 4 = high transit use potential



Source: US Census Bureau, 2000, FGDL, FDOT

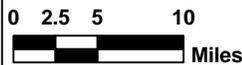
Prepared: May 2007

Revised:

Prepared by:

**CarterBurgess**

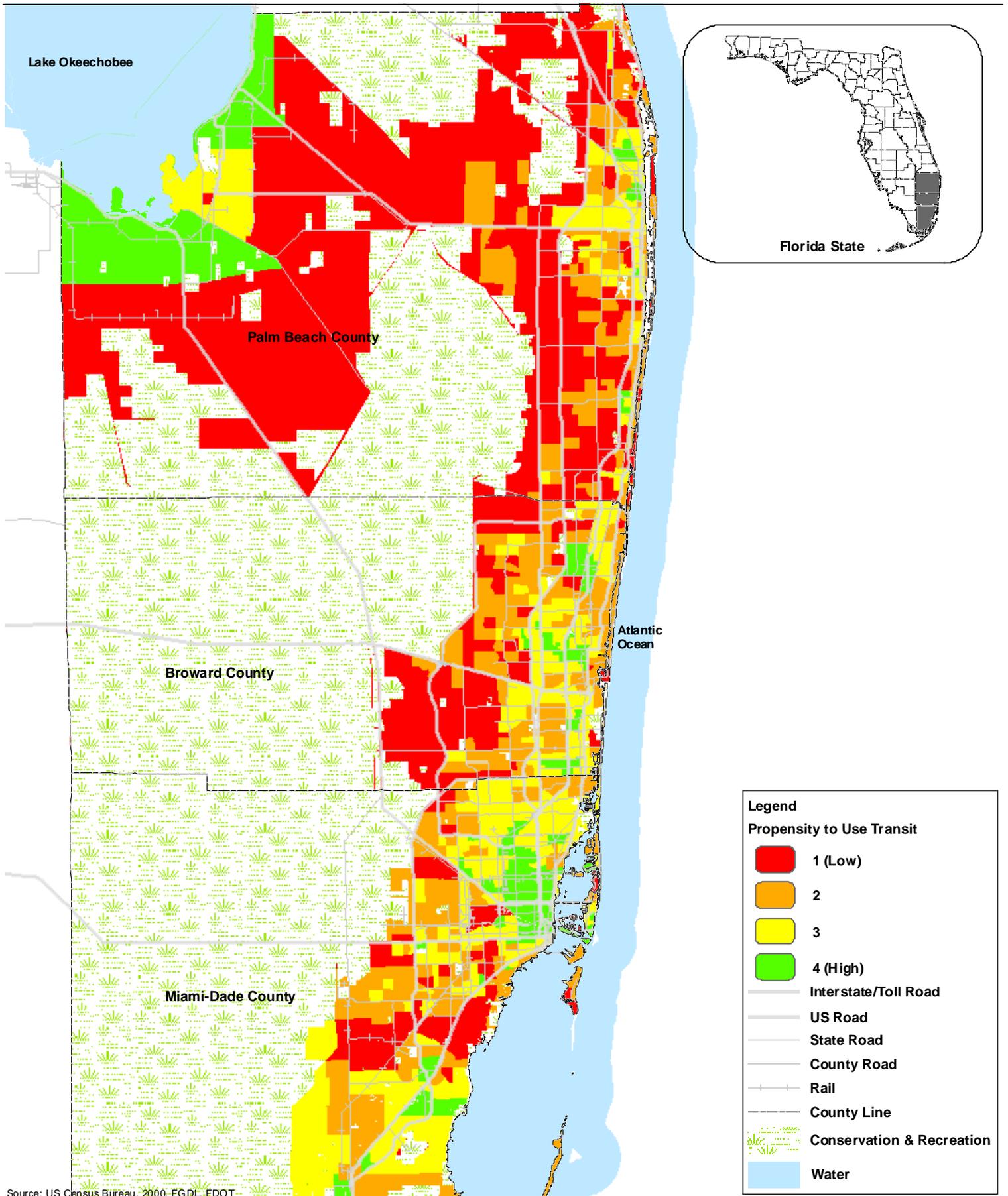
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## ZERO-AUTO HOUSEHOLDS

CAPTIVE RIDER MODEL - YEAR 2000

Figure 23



Source: US Census Bureau, 2000; FGDL, FDOT

Prepared: May 2007

Revised:

Prepared by:

**CarterBurgess**

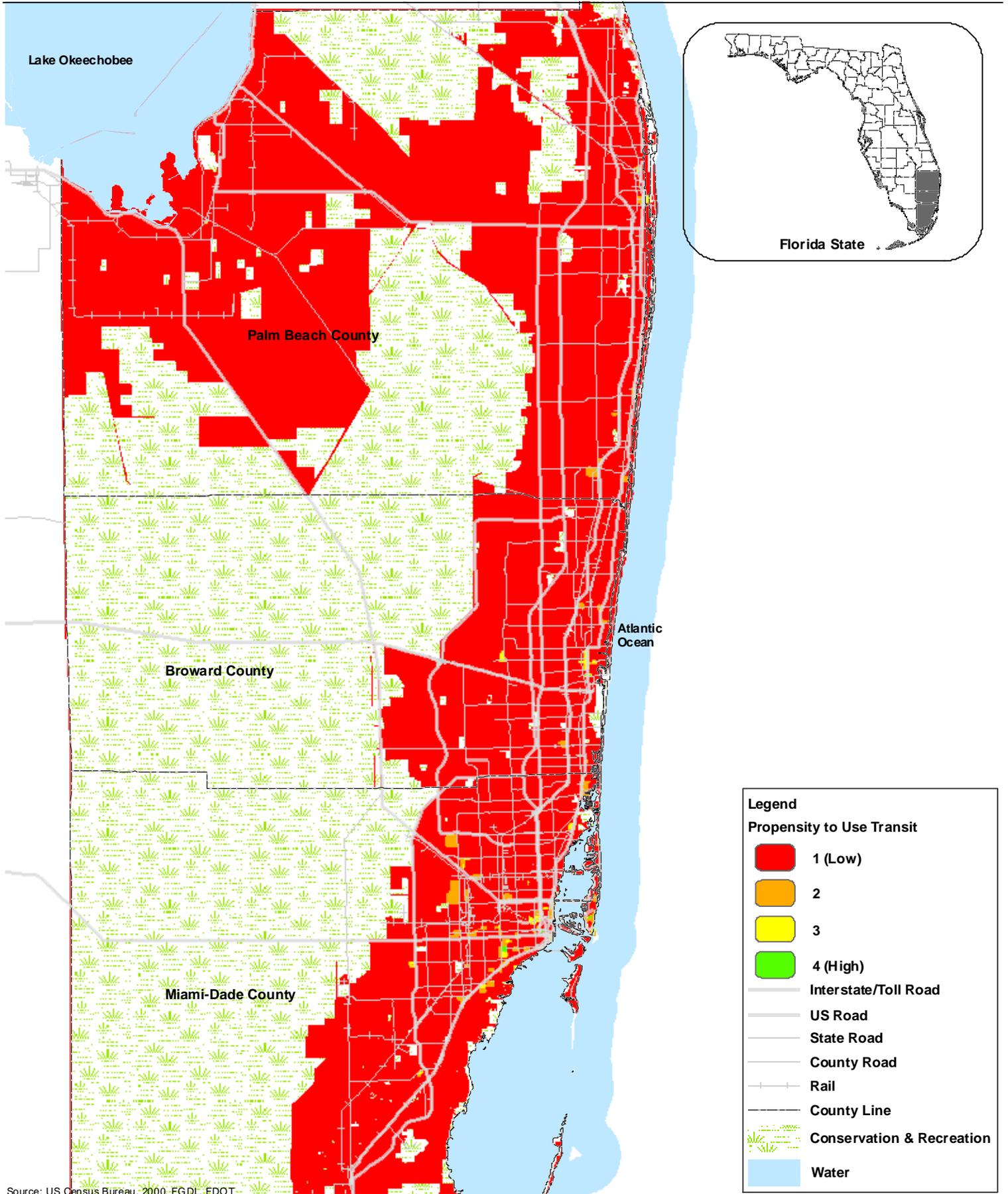
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## HOUSEHOLDS BELOW POVERTY LEVEL

CAPTIVE RIDER MODEL - YEAR 2000

Figure 24



Source: US Census Bureau, 2000; FGDL, FDOT

Prepared: May 2007

Revised:

Prepared by:

**CarterBurgess**

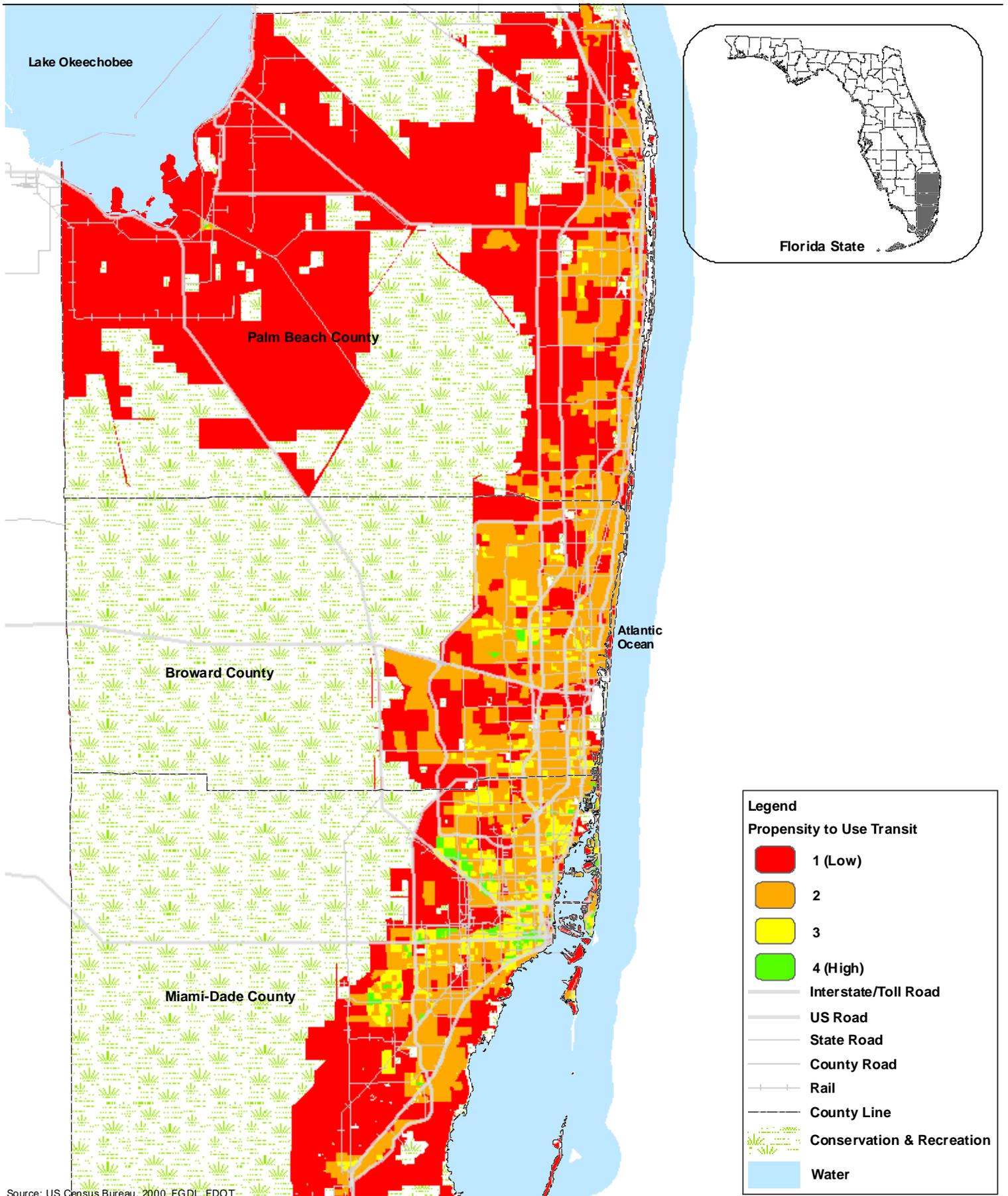
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**EMPLOYMENT (JOBS) DENSITY**

**CAPTIVE RIDER MODEL - YEAR 2000**

**Figure 25**



Source: US Census Bureau, 2000; FGDL, FDOT

Prepared: May 2007

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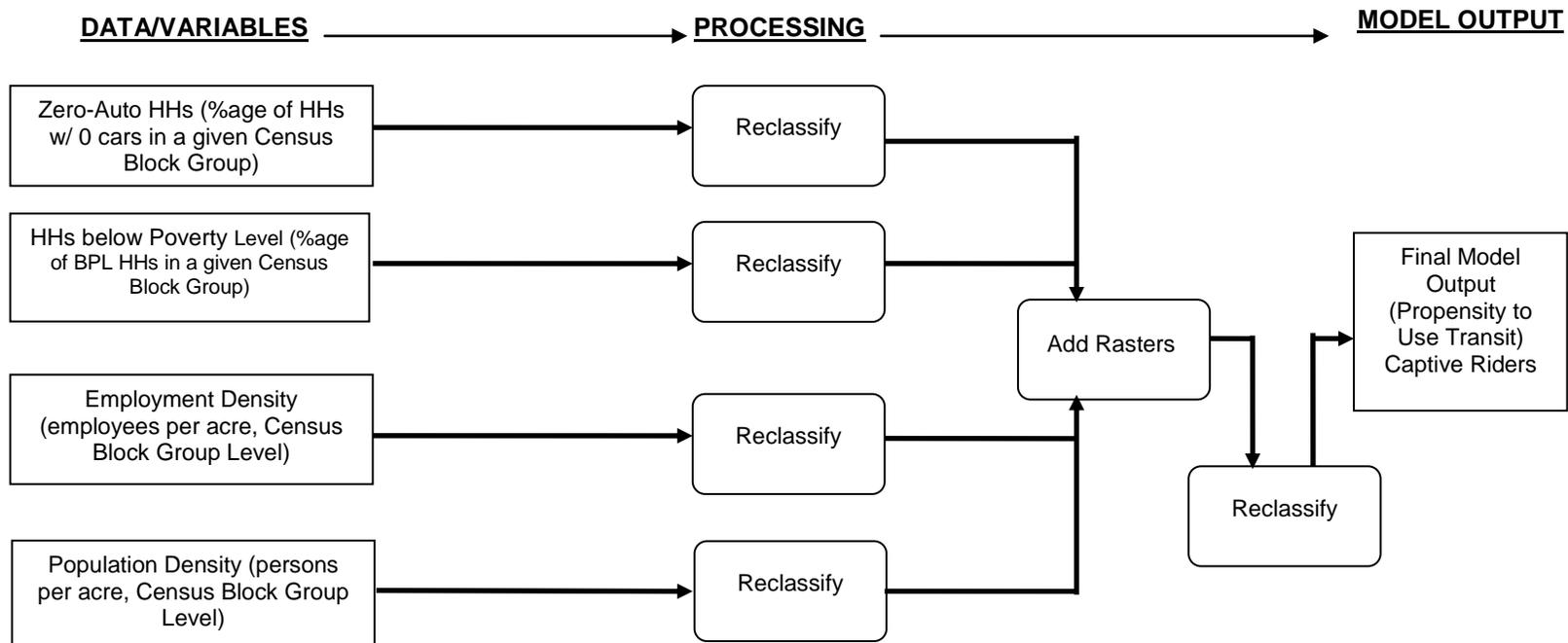


**POPULATION DENSITY**

**CAPTIVE RIDER MODEL - YEAR 2000**

**Figure 26**

**Figure 27 – Schematic diagram for captive riders’ model**



Source: Carter & Burgess, 2007

**Model output:**

The composite analysis (**Figure 28**) shows the spatial distribution of captive riders in 2000. The raster addition in ArcGIS resulted in the final model output. The final output was reclassified on a sliding scale of one to five, where one represents 'Low' and five represents 'Very High' propensity to use transit. The raw composite scores ranged from a low of 4.0 to a high of 103.0. The mean and standard deviation for the distribution was 5.7 and 1.9, respectively. The break points for the composite analysis were determined using quantile classification (**Table 4**).

**Table 4: Choice Riders – Composite Analysis Break Points**

Raw Score	Score	Mean Score	Standard Deviation
< 4	1	5.7	1.9
4.1 – 6.0	2		
6.1 – 7.0	3		
7.1 – 9.0	4		
9.1 – 103.0	5		

Source: Carter & Burgess, 2007

Note: Score\* - 1 = low transit use potential, 5 = high transit use potential

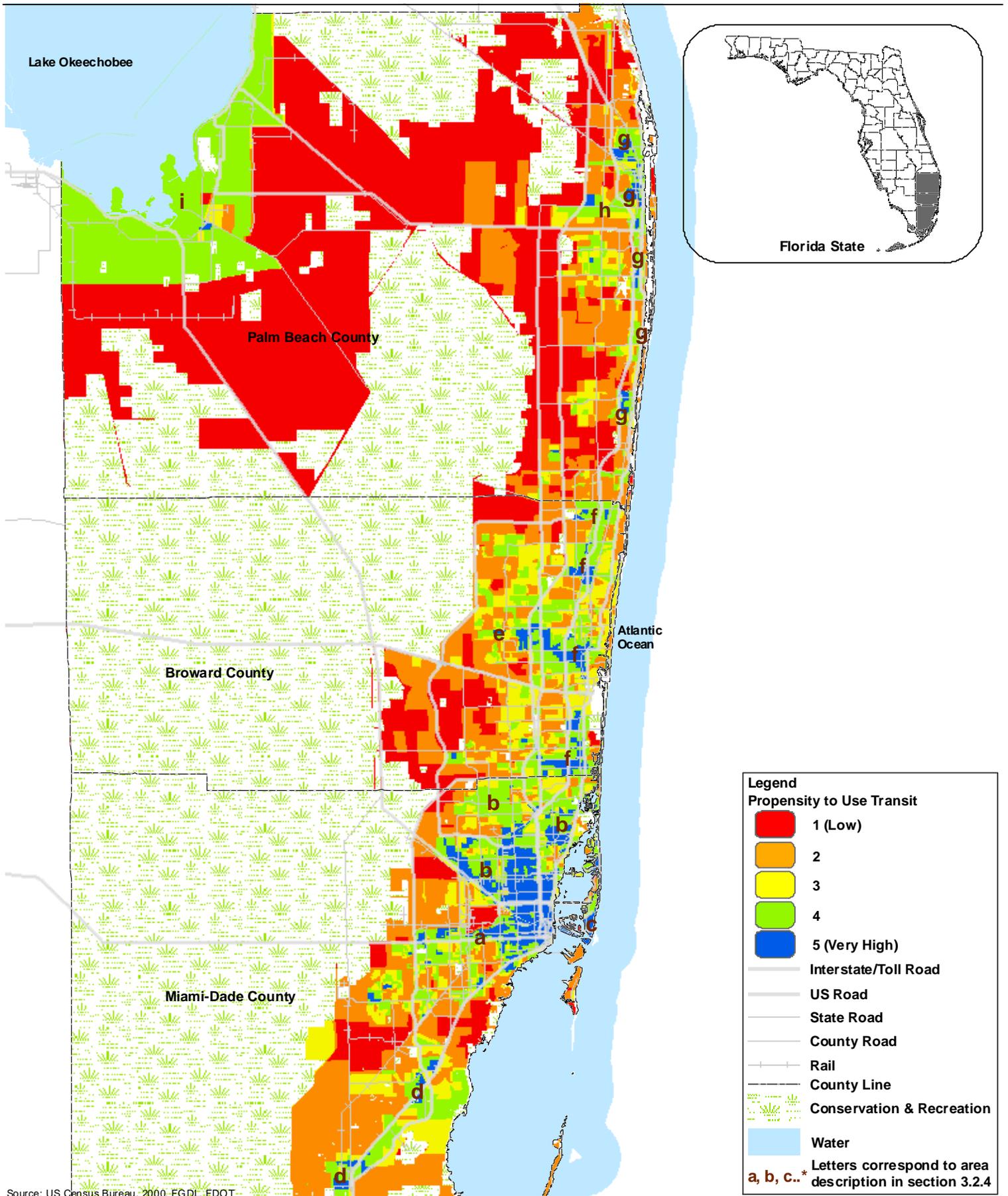
**Figure 28** is a graphic representation of the composite analysis results from the model run showing the potential for transit use by captive riders. The following areas indicate medium to very high potential for the use of transit by captive riders in the South Florida region. The location of each area discussed can be found on **Figure 28** using the corresponding letter.

**Miami-Dade County:**

- A) One-mile area along SW 8<sup>th</sup> Street on either side from Downtown Miami to SR 821, the general area bounded by SR 27, I-95, and I-75 in Hialeah, are large tracts of land in Coral City and North Miami.
- B) Although the Miami-Beach area also shows concentration of captive riders, it is likely more of a reflection of the employment center characteristics of this area.
- C) In southern Miami-Dade County, areas in Homestead, Florida City, and in the vicinity of Cutler Ridge have a large transit dependent population.

**Broward County:**

- D) East of SR 817/University Drive, with a few pockets north of Sunrise Boulevard and west of SR 817/University Drive.
- E) Hollywood, Lauderhill, Fort Lauderdale, Pompano Beach, and Deerfield Beach show high concentration of a transit dependent population, located generally along I-95, north of I-595, and south of I-95, between I-95 and US 1.



Source: US Census Bureau, 2000; FGDL, FDOT

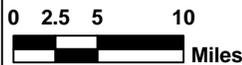
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**PROPENSITY TO USE TRANSIT  
COMPOSITE MAP**

**CAPTIVE RIDER MODEL - YEAR 2000**

**Figure  
28**

### ***Palm Beach County:***

- F) Areas in the eastern part of the county, along I-95 and US 1, in cities of Delray Beach, Lantana, Lake Worth, Riviera Beach, Haverhill, and West Palm Beach.
- G) Area along SR 704/Okeechobee Boulevard, between Florida's Turnpike and I-95.
- H) Area in the vicinity of Okeechobee Lake, in the west part of the County in Belle Glade.

The spatial analysis indicates captive riders are concentrated in several large contiguous areas within the region while choice riders are scattered throughout the region. Broward and Palm Beach Counties have fewer areas likely to be transit supportive with a high concentration of captive riders as compared to Miami-Dade County.

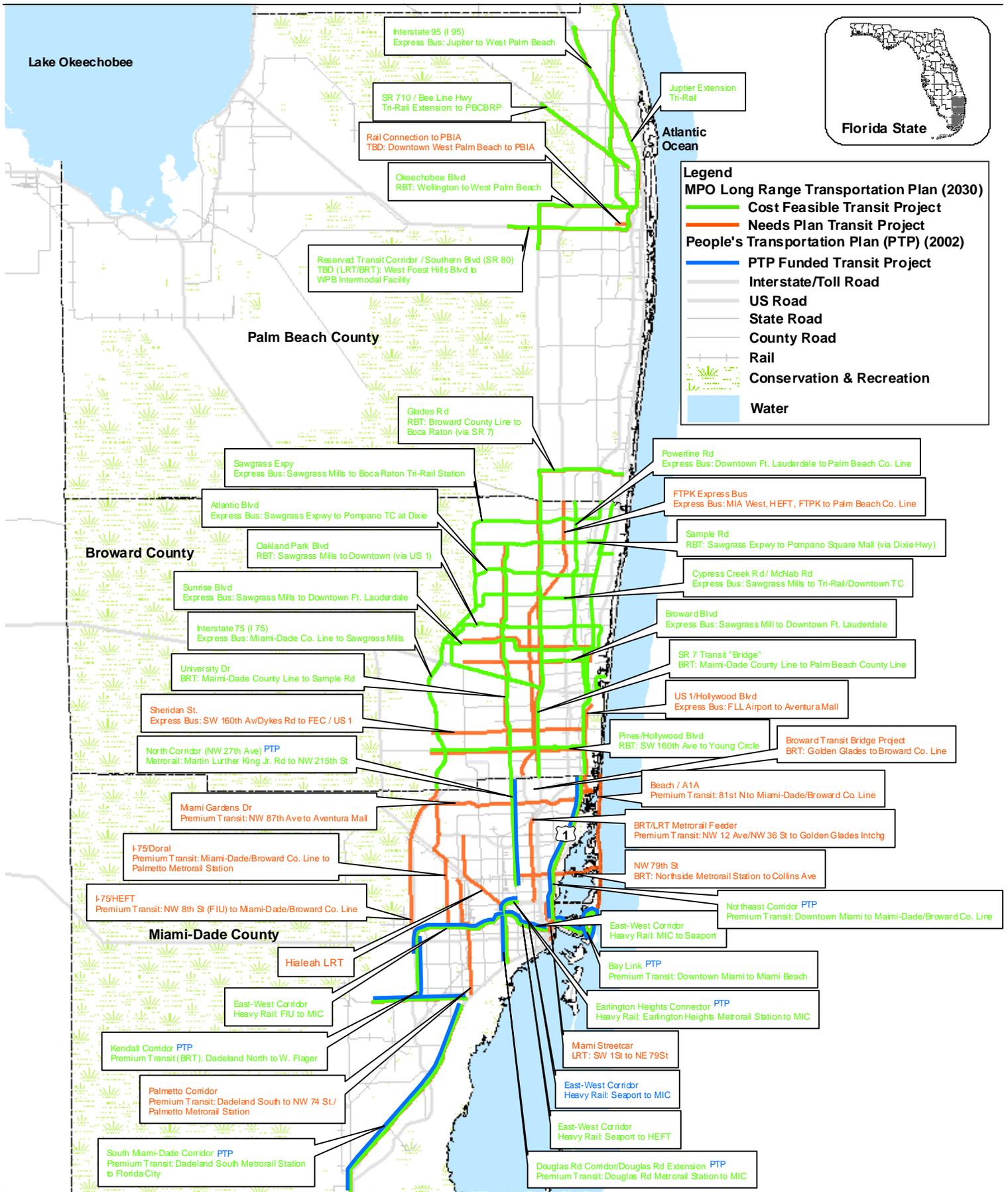
### **3.3 EXISTING PLANS AND PROPOSALS**

In the South Florida region, a total of 61 fixed-guideway transit projects have been identified in various planning documents to be implemented over the next 30 years, including Long Range Transportation Plans (LRTPs), Transit Development Plans (TDPs), BCT Investment Plan, SFRTD Transit Study, and the Tri-Rail Master Plan (**Figures 29, 30, and 31**). Several of the proposed transit projects have been identified in multiple planning documents or studies. Although they may have different names and termini, the corridors and/or alignments are identical.

#### **3.3.1 Committed Fixed-Guideway Transit Projects**

Fixed-guideway transit projects that were under construction at the time of this study, have allocated federal funds, or have been approved by the Federal Transit Administration (FTA) are considered committed transit projects. The following committed projects will be included in the base alternative:

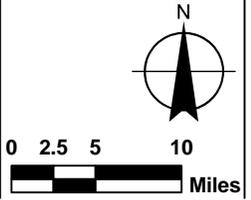
- **North Corridor Metrorail Extension:** This 9.5-mile extension of Stage I Metrorail along NW 27<sup>th</sup> Avenue will extend Metrorail from existing Dr. Martin Luther King Jr. Metrorail station to Broward County line. The project includes seven stations and seven park-and-ride lots providing a total of 4,300 spaces and 36 rail cars. (New Starts, FY 2008)
- **Phase II – MDT Busway Extension:** Segment 2 of Phase II will extend the Busway 6.5 miles to reach SW 344<sup>th</sup> Street in Florida City. The project is scheduled to open in July 2007, with seven stations between SW 264<sup>th</sup> Street to SW 344<sup>th</sup> Street. The project includes landscape improvements and a bike path.



Source: Miami-Dade, Broward, Palm Beach Counties' L RTPs (2030), People's Transportation Plan (PTP) 2002, FGDL, FDOT

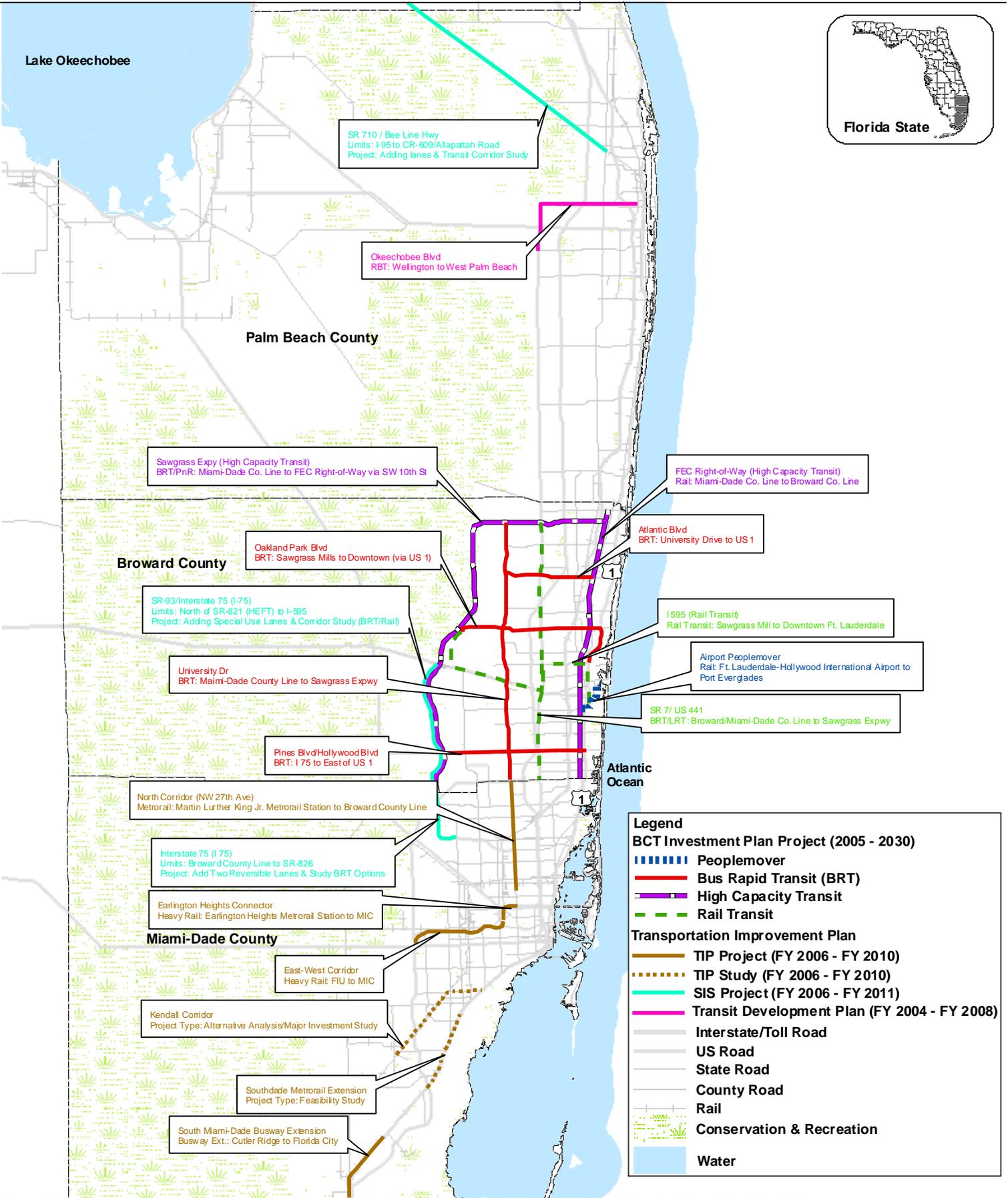


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**PLANNED/PROGRAMMED  
 PREMIUM TRANSIT  
 PROJECTS (L RTPs & PTP)**

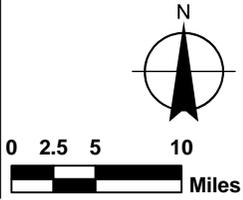
**Figure  
 29**



Source: SIS Growth Management Projects (FY 2006-2011), BCT Investment Plan (2005-2030), Palm Beach, Broward & Miami-Dade Counties' TDPs & TIPs, FGDL, FDOT

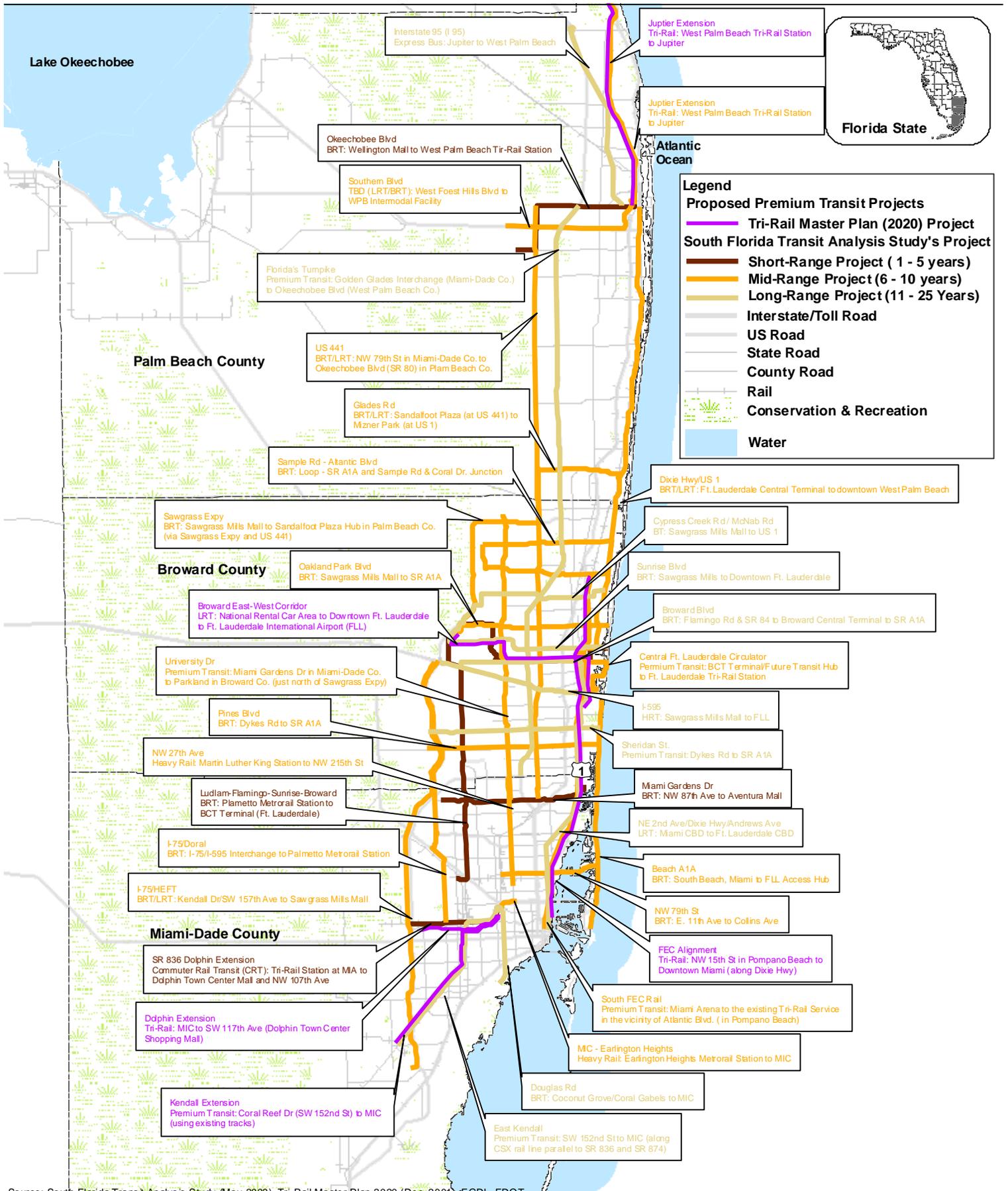


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**PLANNED/PROGRAMMED  
 PREMIUM TRANSIT  
 PROJECTS (SIS, TDP, TIP &  
 BCT Investment Plan)**

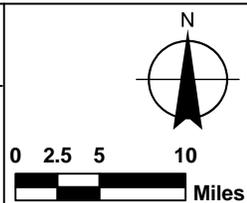
**Figure  
 30**



Source: South Florida Transit Analysis Study (May 2003), Tri-Rail Master Plan 2020 (Dec. 2001), F.G.D.L., FDOT



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**Revised:**  
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**PROPOSED  
 PREMIUM TRANSIT  
 PROJECTS**

**Figure  
 31**

- **Earlington Heights Connection (Earlington Heights Metrorail Station to the Miami Intermodal Center (MIC)):** This cost-feasible, Priority I (2005-2009) project is a 2.3 mile heavy rail extension between the existing Metrorail Earlington Heights Station and the MIC. The purpose of this project is to establish a rail connection to MIA to serve visitors and airport employees and provide an intermodal connection. A Preliminary Engineering (PE)/Final Environmental Impact Study (FEIS) started in 2005. (Miami-Dade County 2030 Plan)
- **One-Mile Metrorail Extension:** This project extends the Stage I Metrorail from the existing Dadeland South Metrorail station to SW 124<sup>th</sup> Street.

### 3.3.2 Projects identified in Long Range Transportation Plans

#### *Miami-Dade County MPO LRTP 2030*

Miami-Dade County's LRTP 2030 is a major update to the LRTP 2025 adopted in December 2001. It is also known as the 2030 Plan. The adoption of People's Transportation Plan (PTP) in November 2002 by referendum resulted in a complete reassessment of the 2030 Plan's future capital and operational needs for the County's multimodal network. The 2030 Plan identified the following major premium transit projects:

- **Northeast Corridor:** This project is listed as a cost-feasible, Priority IV (2021-2030) project in the 2030 Plan. It is a 13.6 mile rapid transit corridor from Downtown Miami to the Broward County Line (NE 215<sup>th</sup> Street) along Biscayne Boulevard and the FEC right-of-way. The purpose of this project is to serve the high densities and population concentrations along the eastern seaboard, provide a regional link to Broward County, and to provide service to multiple municipalities and neighborhoods. An Alternatives Analysis (AA) is in progress for the Northeast Corridor.
- **North Corridor:** This project is a 9.5 mile heavy rail extension of Metrorail along NW 27th Avenue from Dr. Martin Luther King Jr. Metrorail Station (NW 62nd Street) to NW 215th Street (Miami-Dade/Broward County Line). The purpose of this project is to serve a highly transit dependent population, connect major generators such as: Miami-Dade College North Campus and Dolphin Stadium, and provide a future rail linkage to Broward County.
- **East-West Corridor:** This project is a cost-feasible, Priority II (2010-2015) project. It is a 17.2 mile rail extension of Metrorail consisting of two segments. Segment 1 is 10.5 miles connecting the MIC to Florida International University (FIU). The purpose of this project is to serve a population highly dependent on transit; establish the first east-west link in the central Miami-Dade area, provide a transit connection between major traffic generators: FIU, MIA-MIC, Downtown Miami, Port of Miami; provide connection with the regional network; and relieve high traffic congestion along major roadways. Segment 2 is a 4.4 mile segment connecting the MIC to the Government Center. Currently a Supplemental Draft Environmental Impact Study (DEIS) is underway for Segment 1.

- **Earlington Heights Connection (Earlington Heights Metrorail Station to the MIC):** This cost-feasible, Priority I (2005-2009) project is a 2.3 mile heavy rail extension between the existing Metrorail Earlington Heights Station and the MIC. The purpose of this project is to establish a rail connection to MIA to serve visitors and airport employees and to provide an intermodal connection. A PE/FEIS started in 2005.
- **Douglas Corridor:** Future plans call for a 4.5-mile Metrorail extension from Douglas Road station to the MIC along SW 37<sup>th</sup> Avenue. The purpose of this project is to provide a linkage to MIA from the south area and to avoid circuitous trips to MIA.
- **Kendall Corridor:** This project includes two segments: an east/west segment along SW 88th Street/Kendall Drive from SW 157th Avenue east to Dadeland area, and a north/south segment along the Florida's Turnpike. The project will connect with the East-West corridor. The purpose of this project is to connect the growing southwest areas to the regional network; provide service to major generators such as Baptist Hospital, Miami-Dade College-South, Downtown Kendall, FIU, MIA, and the MIC; provide service to the highest concentration of choice-riders; and severe traffic congestion along east-west roadways during peak periods.
- **South Miami-Dade Corridor:** Future plans call for a 21-mile Metrorail extension from Dadeland South station to Florida City. The project runs along US 1 and consists of two segments: from Dadeland South Metrorail station to Cutler Ridge, and from Cutler Ridge to Florida City. The purpose of this project is to serve a population highly dependent on transit, serve deep southwest communities, and establish regional links to central and North Miami Dade in this fast urban development area.
- **MIC:** This is a cost-feasible, Priority II (2010-2015) project. The MIC is a multimodal access facility providing regional connectivity and access to the MIA. This project is under construction.
- **Bay Link (Downtown Miami to Miami Beach):** This is a cost-feasible, Priority III (2016-2020) project in the 2030 Plan. It is a 5.1 mile light rail transit (LRT) corridor that would connect Downtown Miami to south Miami Beach, across MacArthur Causeway. An AA/DEIS was completed in 2003. The project was not funded in the PTP, and is not currently proceeding into the next phase of project development.
- **NW/NE 79<sup>th</sup> Street Bus Rapid Transit (BRT), Miami Gardens Drive BRT:** These projects are listed as Priority IV Unfunded projects in the 2030 Plan. Both the BRT projects provide more direct and reliable service to riders in the east-west direction and access to north-south transit routes. These projects cross the FEC Railroad corridor at different points. Any improvements planned for the FEC corridor should consider and provide for accommodating and integrating these projects in the future.
- **Miami Streetcar:** Is listed as a Priority IV Unfunded project in the 2030 Plan. However, the City of Miami is conducting an AA for this project and implementation funding is scheduled to be provided by the state and the city.

In addition to transit projects, improvement projects have been identified for I-75, HEFT, I-95, SR 836 including construction of High Occupancy Vehicles (HOV) lanes, High Occupancy Toll lanes, and Express lanes.

### ***Broward County MPO 2030 LRTP***

The Broward County MPO LRTP Year 2030 Update (adopted December 2004) is a major update to the LRTP 2025 adopted in December 2001. The 2030 LRTP is a plan to guide development of multi-modal transportation systems throughout Broward County for the next 25 years. The 2030 LRTP identifies the following cost-feasible transit projects:

- **FEC Railroad Transit Corridor and Crossing Improvements:** This project includes LRT and crossing improvements on the 24.5 mile portion of the FEC corridor from Miami-Dade County to Palm Beach County. A Draft transit analysis study was completed in September 2006.
- **Central Broward East-West Corridor:** This project is a 21 mile LRT system on the Central Broward East-West Transit Corridor from Sawgrass Mills to the MIA through Downtown Fort Lauderdale. An AA for this corridor was completed in 2005.
- **Oakland Park Rapid Bus:** This project is an 18.03 mile BRT service on Oakland Park Boulevard, Pines/Hollywood Boulevard, Sample Road, SR 7/US 441, and University Drive connecting Sawgrass Mills Mall to the BCT Central Terminal through Downtown Fort Lauderdale. An implementation plan was endorsed by the project Steering Committee. Phase II to develop a capital and operations plan has been completed. The next step is to present the project to the Palm Beach, Broward, and Miami-Dade County MPOs and County Commissions, and to identify funding for operations.
- **Atlantic Boulevard Rapid Bus:** This project is a 15.8 mile BRT service operating on Atlantic Boulevard, Cypress Creek/McNab Road, Sunrise Boulevard, Sawgrass Expressway/SR 869, and Powerline Road connecting Sawgrass Expressway to Cypress Creek.
- South Port (Port Everglades) rail connector to connect Southport to the FEC mainline

### ***Palm Beach County MPO LRTP 2030***

The 2030 LRTP for Palm Beach County is a 25-year forecast based on regional connections and includes a multi-modal approach, integrating all transportation modes within the area. The Cost Feasible Transit System component of the 2030 LRTP supports a change in operation regarding the provision of fixed route transit services. The current operation is a series of routes, predominately loops, providing service between major destinations and along major roadways.

The 2030 LRTP proposes to implement a grid-based system with emphasis on north-south and east-west travel along major roadways, providing an interconnected system with the potential to reach more areas. North-south routes include service along all major arterials and east-west connecting routes are planned for major arterials, with rapid bus service planned for Okeechobee Boulevard and Glades Road.

The 2030 LRTP also includes the expansion of Tri-Rail service along the CSX rail line, parallel to the Beeline Highway, connecting Downtown West Palm Beach with a new station at the Palm Beach County Biotechnology Research Park. Tri-Rail expansion to the northern county border along the FEC also is included in the plan, with approximately ten new stations proposed. An intermodal center in the City of West Palm Beach would support Tri-Rail and its two expansions, as well as rapid bus, standard fixed route, and community shuttle services.

### **3.3.3 South Florida Transit Analysis Study**

This study was conducted by the South Florida Regional Transit Organization (SFRTTO) and submitted to Tri-County Commuter Rail Authority in 2003. The purpose of this study was to develop a regional transit implementation program comprised of transit corridors that would support the future mobility and economic competitiveness of South Florida. The study area included the urbanized areas of Miami-Dade, Broward, and Palm Beach Counties. The regional transit implementation program proposed a grid system of premium transit projects consisting of three phases, a short-range plan phase (one to five years), a mid-range plan phase (six to 10 years) and a long-range phase (11 to 25 years).

Short-range projects include:

- Tri-Rail Feeder Shuttles (initial service 2005)
- Ludlam-Flamingo-Sunrise-Broward BRT (estimated initial service 2007)
- Miami Gardens Drive – NW 87<sup>th</sup> Avenue to Aventura Mall (estimated initial service 2007)
- Okeechobee Boulevard BRT (estimated initial service 2007)
- SR 836 Corridor Commuter Rail – MIA to Dolphin Shopping Mall (estimated initial service 2007)

Mid-range projects include:

- Jupiter Extension – extend commuter rail service from West Palm Beach to Jupiter along the FEC (estimated initial service 2009)
- Glades Road – accessibility enhanced transit from US 441 to US 1 (estimated initial service 2010)
- Southern Boulevard – mobility transit corridor supporting BRT or LRT between Forest Hill Boulevard and the West Palm Beach Intermodal center (estimated initial service 2010)

- West Palm Beach Intermodal Center – joint transit oriented development and intermodal facility adjacent to West Palm Beach Tri-Rail/Amtrak station (estimated initial service 2010)
- Central Fort Lauderdale Circulator – high accessibility and express service between the BCT Transit Central Terminal and Fort Lauderdale Tri-Rail Station, Fort Lauderdale/Hollywood International (FLL) Airport, Convention Center and Port Everglades (estimated initial service 2012)
- Oakland Park Boulevard – accessibility corridor supporting BRT between Sawgrass Mills Mall and SR A1A (estimated initial service 2012)
- Pines Boulevard – accessibility transit service from Dykes Road to SR A1A (estimated initial service 2012)
- Sample Road/Atlantic Boulevard – enhanced transit service along Sample Road and Atlantic Boulevard, forming a loop between SR A1A and Coral Ridge Drive (estimated initial service 2012)
- Dixie Highway/US 1 – accessibility enhanced transit service supporting BRT or LRT along Dixie Highway from the Fort Lauderdale Central Terminal to Downtown West Palm Beach (estimated initial service 2013)
- NW 79<sup>th</sup> Avenue – from E 11<sup>th</sup> Street to SR A1A (estimated initial service 2010)
- South FEC Rail – from City of Miami by the Miami Arena to existing Tri-Rail service in the vicinity of Atlantic Boulevard in the city of Pompano Beach (estimated initial service 2013)
- Beach A1A – from southern tip of South Beach to FLL Airport Access Hub (estimated initial service 2010)
- US 441 – from NW 79<sup>th</sup> Street in Miami-Dade County to Okeechobee Boulevard in Palm Beach County (estimated initial service 2010)
- MIC – MIA (estimated initial service 2010)
- MIC-Earlinton Heights – from the MIC to Earlinton Heights Metrorail Station in the vicinity of NW 22<sup>nd</sup> Avenue (estimated initial service 2011)
- NW 27<sup>th</sup> Avenue – from the existing Martin Luther King Station to NW 215<sup>th</sup> Street (estimated initial service 2011)
- I-75/Doral – from the I-75/I-595 interchange south to SR 826 to potentially connect with Palmetto Metrorail Station (estimated initial service 2010)
- I-75/HEFT – (estimated initial service 2016)

Long-range projects include:

- I-595 Corridor Premium Transit – heavy rail along I-595 from Sawgrass Mills to FLL Airport (estimated initial service 2015)
- Broward Boulevard – BRT from Flamingo Road to the Fort Lauderdale Central Terminal (estimated initial service 2016)

- Cypress Creek Road/McNab Road – accessibility transit corridor supporting BRT from Sawgrass Mills Mall to US 1 (estimated initial service 2016)
- FLL Airport Access Hub – intermodal facility (estimated initial service 2016)
- I-95 Express Bus – enhanced mobility service from Indiantown Road in Jupiter to Downtown West Palm Beach (estimated initial service 2016)
- Sheridan Street – accessibility transit service from Dykes Road to SR A1A (estimated initial service 2016)
- Sunrise Boulevard – accessibility transit service from Sawgrass Mills Mall to Downtown Fort Lauderdale (estimated initial service 2016)
- NE 2<sup>nd</sup> Avenue-Dixie Highway-Andrews Avenue – from Downtown Fort Lauderdale to Downtown Miami (estimated initial service 2022)
- Douglas Road – from SW 72<sup>nd</sup> Street to NW 25<sup>th</sup> Street (estimated initial service 2021)
- East Kendall – from the MIC at MIA to SW 152<sup>nd</sup> Street, primarily following SR 836 and SR 874 (estimated initial service 2021)
- Florida’s Turnpike - from Golden Glades Interchange to Okeechobee Boulevard in Palm Beach County (estimated initial service 2016)

### **3.3.4 Tri-Rail 2020 Long-Range Master Plan**

This Long-Range Master Plan was submitted to the Tri-Rail Commuter Rail Authority in 2001. The intent of this study was to identify mobility improvements for the densely populated coastal region, a 12-mile corridor between the Atlantic coast and the Florida Everglades, extending from Miami-Dade County to the south, to Palm Beach County to the north. The plan proposed five rail alternatives in this corridor to extend existing Tri-Rail service:

- Jupiter Extension – from existing CSX railroad line from near 27<sup>th</sup> Street in West Palm Beach to existing FEC rail right-of-way in Jupiter (15.7 miles long)
- Dolphin Extension – from the MIC to 117<sup>th</sup> Avenue along SR 836/Dolphin Expressway (8.8 miles long)
- Kendall Extension – from the MIC to Kendall along SR 836, 45<sup>th</sup> Street and Don Shula Expressway (16.7 miles long)
- FEC Corridor – from NW 15<sup>th</sup> Street in Pompano Beach to Downtown Miami using FEC rail right-of-way, alignment includes one-mile of new track (31.6 miles)
- Broward East-West Corridor – from the Arena (National Rental Car Arena) to FLL Airport via Downtown Fort Lauderdale, new track (17.0 miles long)

### **3.3.5 MDT Departmental Business Plan and Outlook**

MDT's TDP, *Departmental Business Plan and Outlook*, for FY 2004/05 and FY 2005/06 has its roots in the previously adopted Miami-Dade County Strategic Plan. According to MDT's *Departmental Business Plan and Outlook*, its vision is 'delivering excellence everyday'. This plan identified various major capital projects and several small projects aimed at improving the existing transit services provided by MDT. It lists eight rail corridor projects including the Northeast Corridor, a 13.6 mile extension from Downtown Miami to the Broward County Line (NE 215<sup>th</sup> Street). This corridor is a subset of the FEC corridor that lies within Miami-Dade County's jurisdiction. In addition, the Northeast Passenger Activity Center project that would serve as a viable alternative to the bus transfer facility at the Mall at 163<sup>rd</sup> Street also includes these transit projects. MDT's priority rail corridor projects include the North Corridor, East-West Rail Corridor (segment from FIU to the MIC), and Earlington Heights Connector.

### **3.3.6 Miami-Dade County Peoples' Transportation Plan**

The PTP established a committed funding source for highway and transit improvements approved by citizens of Miami-Dade County through referendum in November 2002. The ½ cent sales tax increase was anticipated to generate \$160 million in fiscal year 2004 and grow 5 percent annually. The PTP would provide funding for construction of approximately 88.9 miles of rapid transit, fleet augmentation, various neighborhood improvement projects, and major highway projects. Rapid transit projects identified in the PTP overlap with the projects identified in the MPO's 2030 Plan.

### **3.3.7 BCT Master Plan**

The Broward County Board of County Commissioners recently approved the development of a Transit Master Plan, with the intention of developing a ten-year plan that will serve as a basis for the development of enhanced transit services in Broward County. This plan also has a financial element to consider possible funding options for the service. The plan was coordinated and consistent with the various other on-going transit studies. It also serves as the basis for BCT's TDP, as required by Florida Statute.

### **3.3.8 BCT TDP**

The BCT TDP is a short-range plan that addresses operational and capital improvements for Broward County's Mass Transit Division. This plan, completed in 2003, is a Major Update covering years 2005 – 2009. A goal of the TDP is to enhance local and regional connectivity. Objectives include implementing an evolutionary process (or building the BRT system incrementally) within corridors programmed for BRT and implementing smaller scale transit projects during the TDP timeframe that will be needed to support large, capital intensive improvement projects in later years.

### **3.3.9 BCT Investment Plan**

The Investment Plan completed by BCT in June 2005 provides a 25-year (2005-2030) vision for developing a transit network that meets the mobility needs of the citizens of Broward County. Many of the improvements proposed for implementation in the Investment Plan were developed to meet deficiencies and transit needs identified in the TDP. Both the TDP and the Investment Plan meet needs both by enhancing existing services and developing new services. Major capital transit projects impacting the FEC corridor either in this corridor or in the vicinity include high level BRT on Atlantic Boulevard, Oakland Park Boulevard and Hollywood Boulevard, LRT connection between Sawgrass Mills Mall and the airport using NW 136<sup>th</sup> Avenue/I-595/SR 7/Broward Boulevard/US 1, high capacity transit on I-75/Sawgrass Expressway and FEC rail line, automated people mover connecting the FLL Airport and the Port Everglades. In addition, local bus service on fixed routes in FEC corridor would be improved and express or limited bus service on Atlantic Boulevard, Powerline Road, Sunrise Boulevard, and Sample Road would be operated. All local bus routes running on the east-west grid and providing connections to the north-south bus routes in FEC corridor would see service improvements.

### **3.3.10 Palm Beach County TDP**

The Palm Beach County TDP was completed in 2006. Like most other TDPs, Palm Beach County TDP provides assessment of current public transportation services, examines peers and trends, estimates existing and future public transportation demand, establishes goals objectives, strategies and presents a service plan alternative along with a financial analysis and program of operating and capital investments.

### **3.3.11 Summary of Existing Plans/Proposals Including Cost Estimates**

- Miami-Dade County LRTP 2030 estimates \$5.8 billion approximately (cost-feasible plan) in capital costs for implementing fixed guideway transit system or premium transit projects (*9 projects*). The PTP estimates \$7.8 billion for these premium transit projects (*8 projects*).
- Broward County LRTP 2030 estimates \$2.6 billion approximately (cost-feasible plan, *15 projects*) and \$4.2 billion (needs plan, *24 projects including cost-feasible plan*) in capital costs for implementing fixed guideway transit system or premium transit projects. BCT Investment Plan calls for an investment of \$4.2 billion for premium transit projects. All LRTP projects are not necessarily included in the BCT Investment Plan.
- Palm Beach County LRTP 2030 estimates \$1.0 billion approximately (cost-feasible plan, *6 projects*) in capital cost for implementing fixed guideway transit system or premium transit projects.
- In sum, these 3 Counties need a total of \$9.4 billion (cost-feasible plan, *30 projects*) to \$11.0 billion (*including Broward County needs plan*) in capital costs for implementing these projects.

- SFTRTO dedicates \$9.0 million annually for the short range projects identified in the South Florida Regional Transit Analysis Study. The short range projects are to be implemented between 2006 and 2010. Therefore, funds available from SFRTA revenues would be to the tune of \$45 million. For all the medium-range and long-range projects this study assumes that funds identified in the MPO's 2030 LRTP will be available. According to SFRTA's study, \$4.7 billion (25 projects) are need in capital investments between 2006 and 2025 for implementing all the projects.
- Tri-Rail Long-Range Master Plan 2020 indicates a requirement of \$1.4 billion dollars in capital improvements for implementing 5 rail projects identified in the plan.
- Out of 61 projects, 26 projects (approximately 43 percent) do not have identified funding source(s), 33 projects (approximately 52 percent) assume Federal and State funds (New Starts) in addition to the local match to be available, while 3 projects (5 percent) have other funding sources including the Downtown Development Authority and the County Aviation Department.

## 4.0 REGIONAL ACTIVITY CENTERS

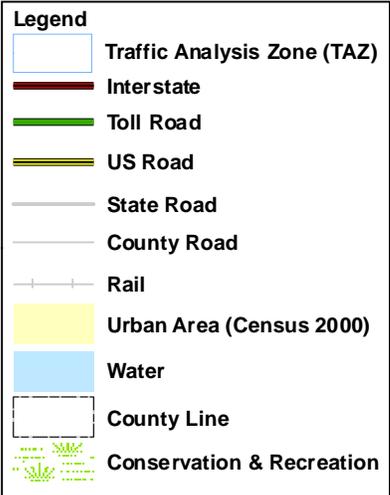
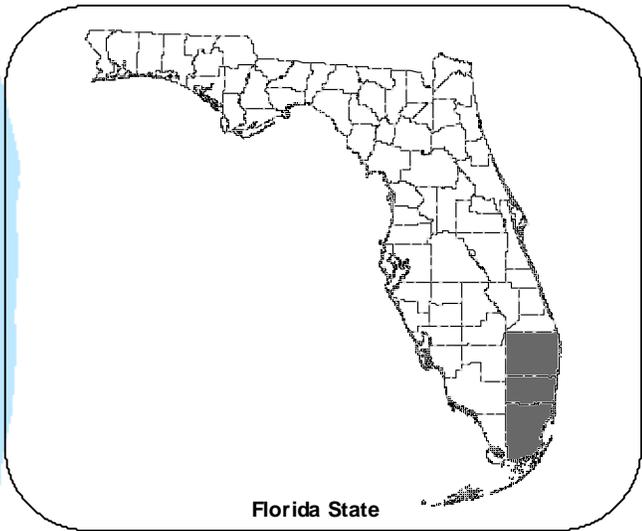
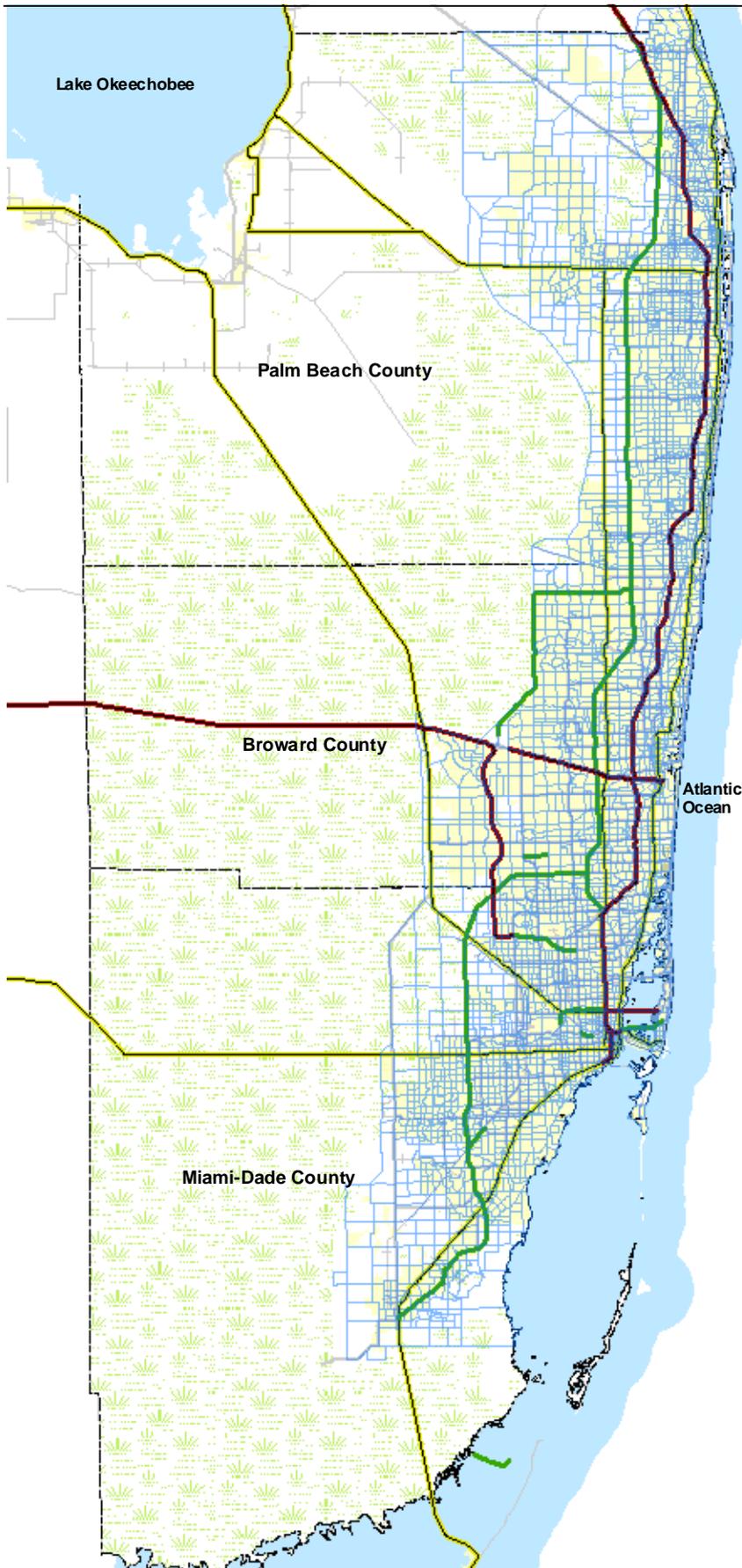
Demographic data for the Year 2030 was used to identify major destinations with potential as transit hubs. Traffic Analysis Zones (TAZs) (**Figure 32**) representing geographic areas that exhibited multi-use trip generation characteristics were grouped together to form Regional Activity Centers (RACs). Areas with a high concentration of jobs in 2000, and those that were projected to experience significant employment growth between the years 2000 and 2030 were designated as major employment centers (**Figure 33**). Furthermore, Developments of Regional Impact were also mapped to assist in identifying multi-use trip generators (**Figure 34**).

Eighteen RACs (**Figure 35**) and 22 employment centers were initially identified in the South Florida region. Because approximately 90 percent of the initial RACs overlapped employment centers, they were subsequently merged and their boundaries restructured. Twelve additional RACs were added to the initial list based on preliminary model outputs from Southeast Regional Planning Model, Version 5 (SERPM V). In conclusion, the study identified 34 RACs in the region (**Figure 36**). Nine of the 34 RACs are found in Palm Beach County, seven in Broward County, and 18 in Miami-Dade County.

### 4.1 PALM BEACH COUNTY

**Scripps:** The proposed Scripps Florida Research Institute will be located in the general area bounded by SR 786/PGA Boulevard to the south, Donald Ross Road to the north, SR 91/Florida's Turnpike to the east, and Military Trail to the west. It will be a 350,000 square-foot, state-of-the-art biomedical research facility built on approximately 100 acres of land.

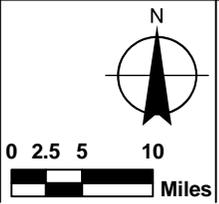
**Palm Beach Mall:** Located just east of I-95, this RAC includes retail commercial employment adjacent to scattered commercial office buildings and multi-family housing. The area is served by Shenandoah Road, Village Boulevard, and Palm Beach Lakes Boulevard.



Source: South Florida Regional Planning Model (SERPM VI), Florida Department of Transportation (FDOT), Florida Geographic Data Library (FGDL), US Census Bureau

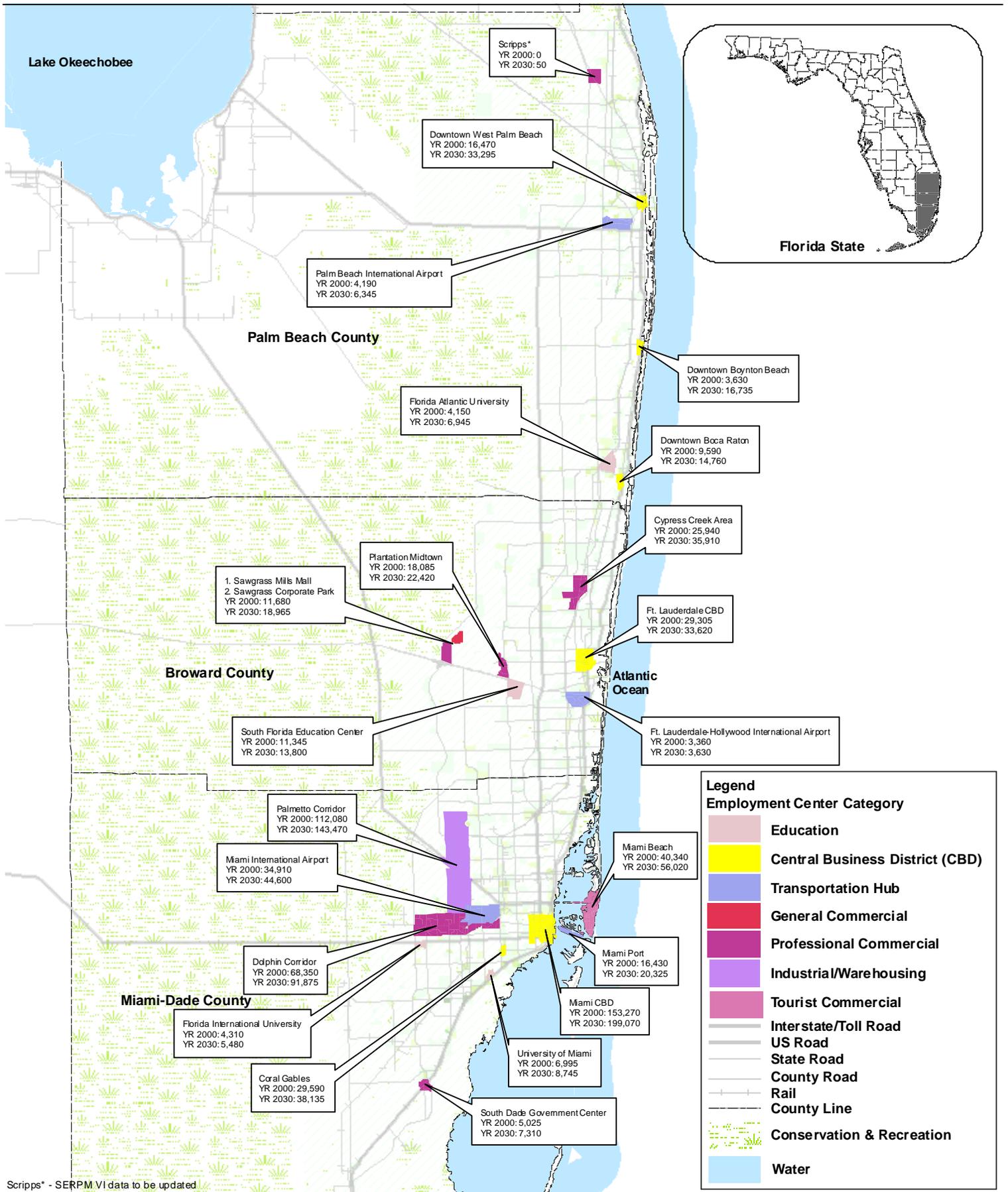


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## TRAFFIC ANALYSIS ZONE (TAZ)

Figure 32

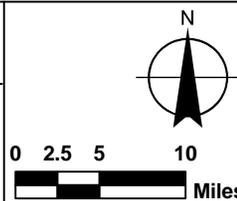


Scripps\* - SERPM, VI data to be updated  
 Source: Southeast Florida Regional Planning Model (SERPM VI), FGDL, FDOT



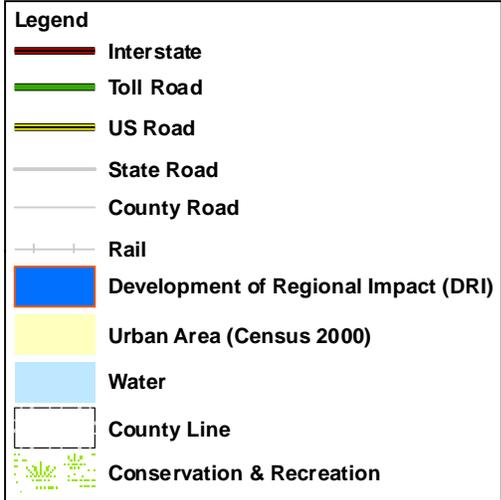
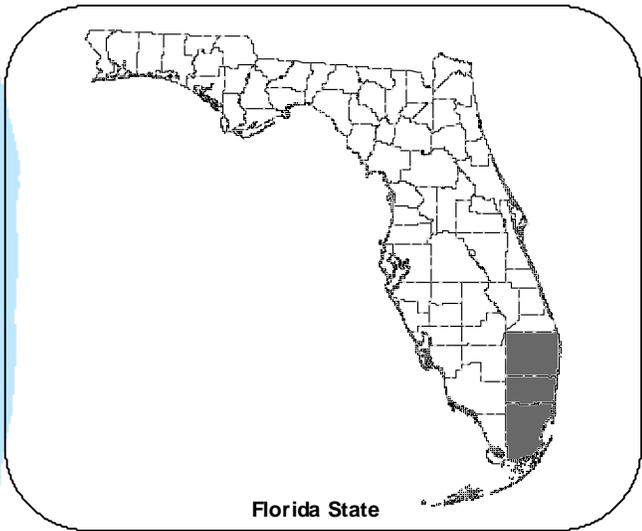
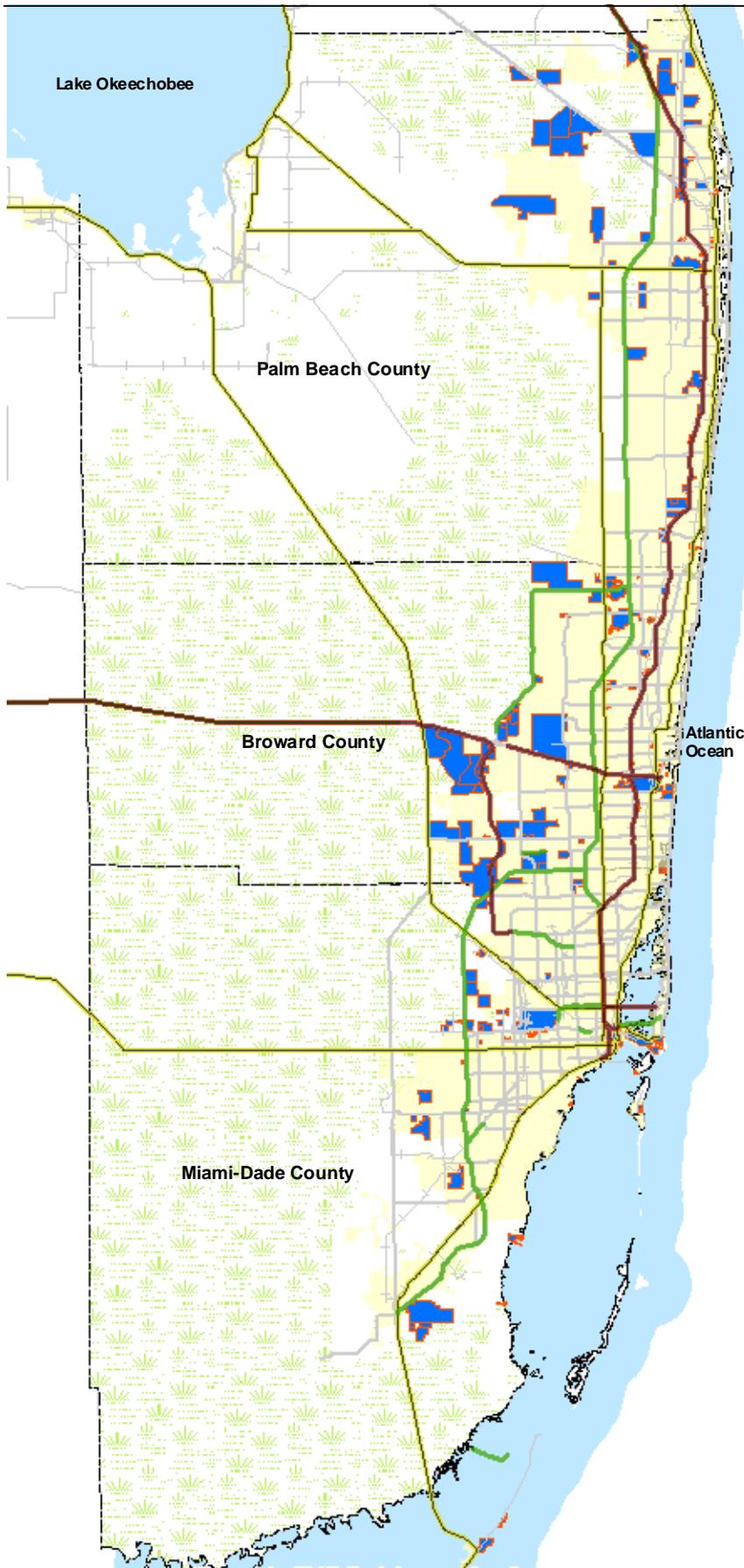
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## MAJOR EMPLOYMENT (JOBS) CENTERS, 2030

Figure 33



Source: Florida Department of Transportation (FDOT), Florida Geographic Data Library (FGDL), US Census Bureau



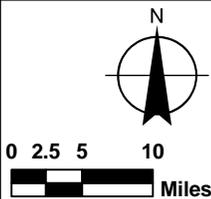
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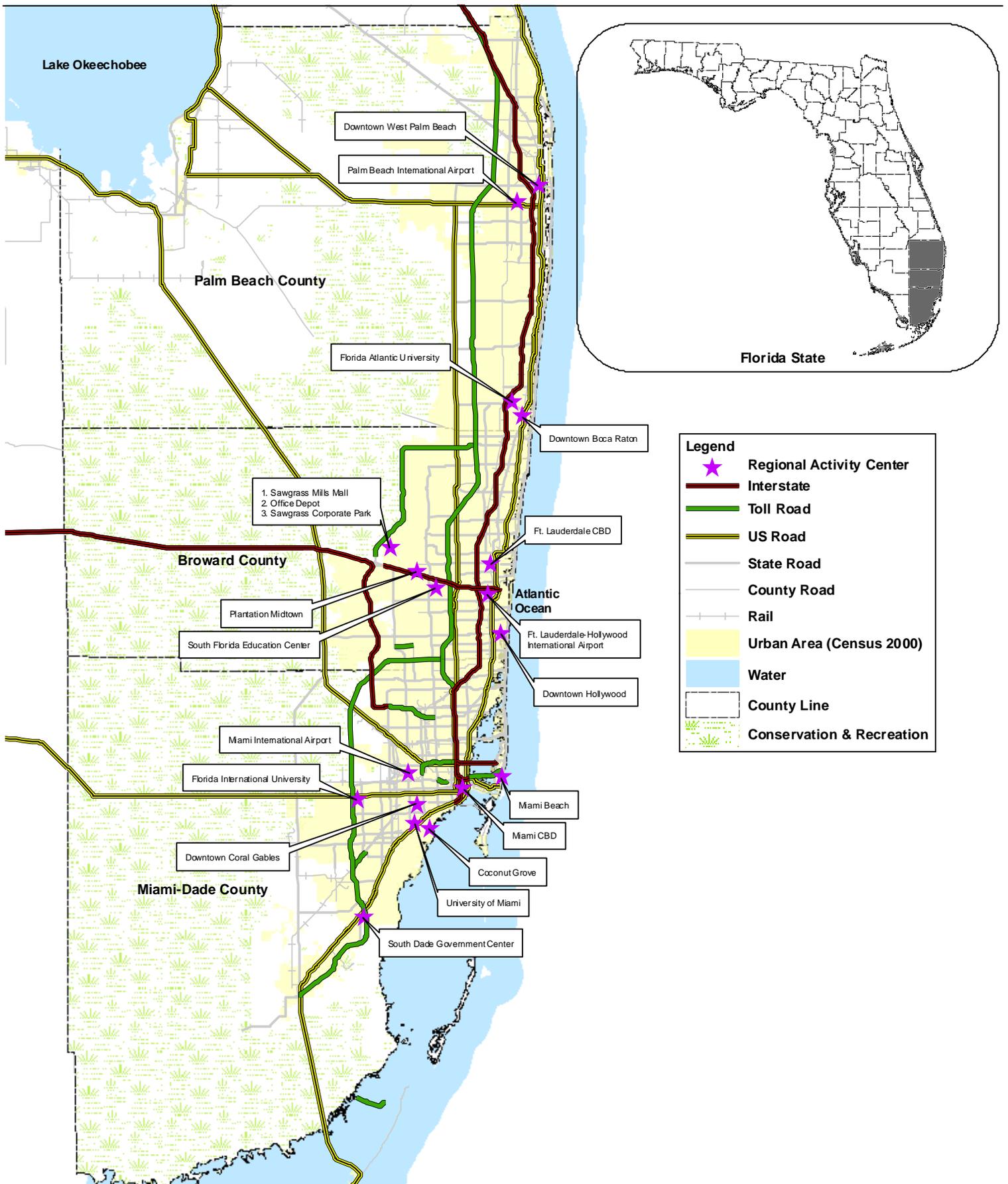
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## DEVELOPMENT OF REGIONAL IMPACT, JUNE 2006

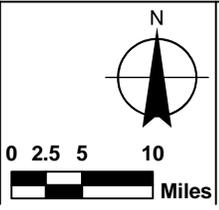
Figure 34



Source: Florida Department of Transportation (FDOT), Florida Geographic Data Library (FGDL), US Census Bureau

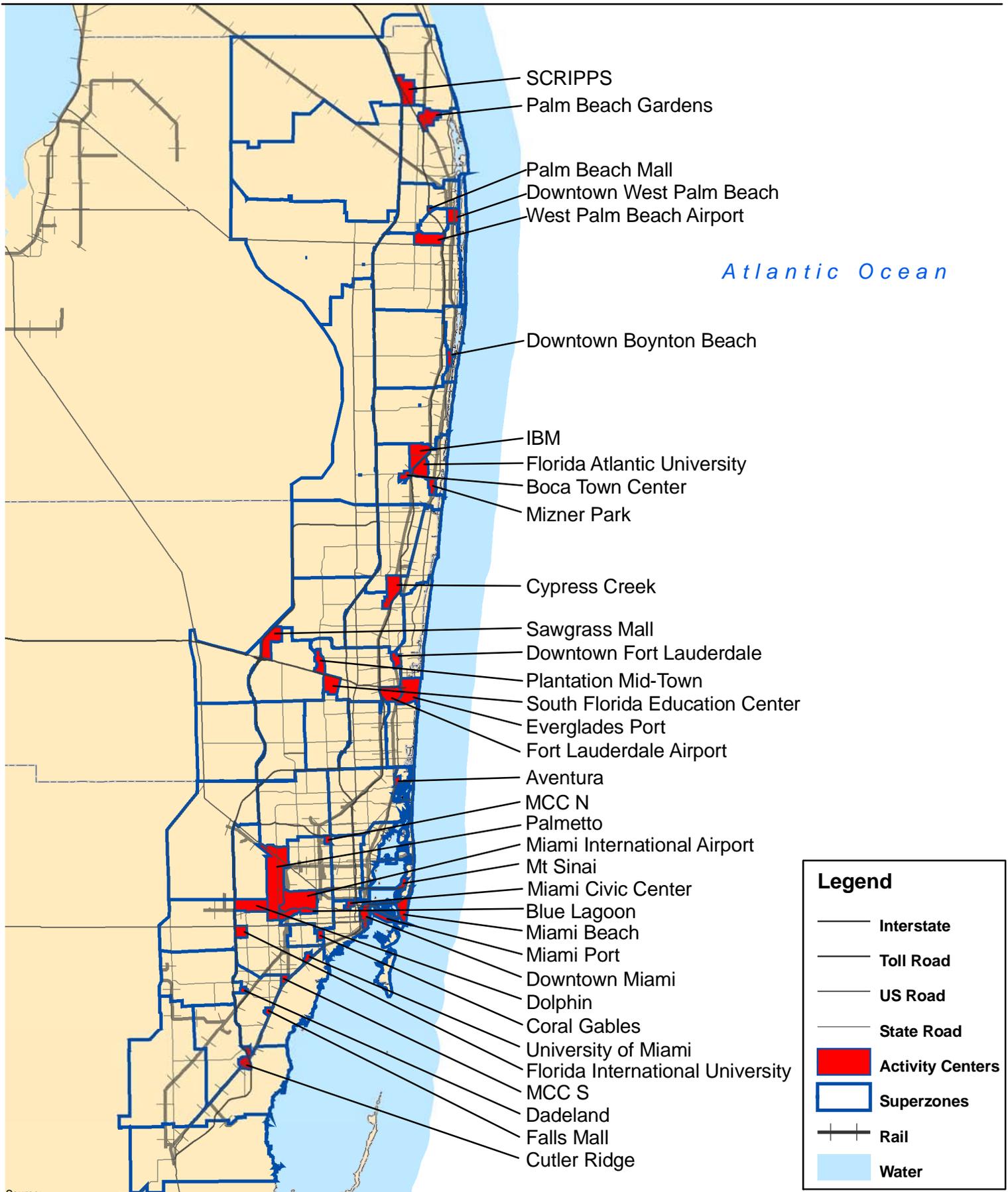


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**REGIONAL ACTIVITY CENTERS**

**Figure 35**



Source:



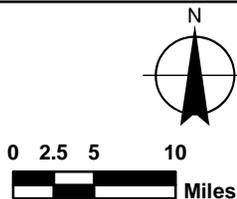
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**SUPERZONES  
&  
ACTIVITY CENTERS**

**Figure  
36**

**Downtown West Palm Beach:** This central business district includes a high concentration of private and government employment with some residences scattered throughout. Roads feeding this RAC are Okeechobee Road, Australian Avenue, US 1, and I-95.

**PBIA:** This area contains a relatively high concentration of jobs in Palm Beach County, and is located west of I-95. The RAC is served by SR 80/Southern Boulevard, Military Trail, and Australian Avenue. Congress Avenue feeds into the airport from north. The airport handled 6.8 million travelers in 2006.

**Downtown Boynton Beach:** Compared to typical central business districts, this area is small in terms of total employment but has a good mix of activities and a variety of land uses. It is served by South Federal Highway, Woolbright Road, Boynton Beach Boulevard, and Seacrest Boulevard. This activity center is expected to see immense employment density growth in the future.

**T-Rex Center:** The triangular land area bounded by I-95, Yamato Road, and Military Trail is a dense employment center. The area was formerly known as *Integrated Business Management (IBM)* headquarters. However, it is a typical suburban employment center with large parking lots and big swales, or drainage ditches, along the roads.

**Florida Atlantic University (FAU):** This suburban activity center is located on either side of I-95 between Glades and Yamato Roads. It is a major employment center with offices, schools, and supporting land uses. Main feeder roads are North Federal Highway/US 1, I-95, Glades Road, Yamato Road, and Boca Raton Boulevard.

**Boca Town Center:** Located along Glades Road, west of I-95, this area has a high concentration of retail commercial employment in the southern Palm Beach County. Its proximity to FAU and IBM makes it a logical consideration while planning for new transit service.

**Mizner Park:** This mixed-use development, lying east of North Federal Highway between Glades and Palmetto Park Roads, has first floor retail and residences on the upper floors.

## **4.2 BROWARD COUNTY**

**Cypress Creek:** The Cypress Creek area is generally bounded by I-95, Cypress Creek Road, Atlantic Boulevard, and Florida's Turnpike/SR 91. The area is a major suburban employment center with land use characterized by large office parks/buildings, expansive surface parking lots, and supporting land uses. While individual development may have pedestrian elements, the area in general is not designed for the pedestrian.

**Sawgrass Mills Mall:** Located in the northwest corner at West Sunrise Boulevard and Flamingo Road, this mall is a major retail center adjacent to a high concentration of employment centers and medium to high density residential development. Roads feeding this activity center are Sunrise Boulevard, Flamingo Road, I-595 and Sawgrass Expressway/SR 869.

**Plantation Mid-Town:** As the largest commercial district in the City of Plantation, in size and concentration of office and retail uses, this RAC is over 860 acres. This RAC lies immediately north of I-595 and is bounded by Broward Boulevard, Pine Island Road, and University Drive/SR 817. The area contains approximately 2.5 million square feet of retail and 3 million square feet of office space. The businesses employ approximately 20,500 people, while 34,500 households live with a one-mile radius. In 2002, the city adopted the Central Plantation Conceptual Plan, and projects are in the works to change this predominantly commercial district into a live, work, and play Town Center for Plantation and Central Broward.

**South Florida Education Center (SFEC):** This is the consortium of educational institutions located on Davie Road south of I-595. Feeder roads are I-595, University Drive, Griffin Road, and Davie Road. The SFEC campus is one of the biggest generators of traffic in Broward County, resulting in the formation of the SFEC Transportation Management Area (TMA) to help with mobility and parking problems.

**Downtown Fort Lauderdale:** As the main central business district for Broward County, this RAC includes government services, educational centers, high density employment, and residential buildings. Downtown Fort Lauderdale has changed dramatically in the last seven years in both appearance and substance. Since 2000, more than a dozen residential high-rises have been built transforming it into a vibrant multi-use activity center.

**Port Everglades:** The seaport's jurisdiction encompasses a total of 2,190 acres of which there are approximately 1,742 acres of upland and 448 acres of submerged land. It is a major employment center in Broward County and the South Florida region, and supports a thriving cruise industry. The roads serving this port include US 1, I-595, SE 17<sup>th</sup> Street, and SR 84.

**FLL Airport:** The airport is located in the southeast corner of the I-95/I-595 interchange. This is a major employment center and is anticipated to grow dramatically in future. In 2000, it provided approximately 3,360 jobs. The airport served 21.4 million passengers in 2006.

### **4.3 MIAMI-DADE COUNTY**

**Aventura Mall:** This is a major retail center surrounded by high-density residential developments and employment centers. It is located near the Broward County line, and is served Biscayne Boulevard, NE 203<sup>rd</sup> Street, Collins Avenue, and I-95.

**MIA:** This RAC is a major employment center served by I-95, SR 112, SR 836/Dolphin Expressway, and LeJeune Road. In the vicinity of MIA, the MIC is being constructed.

**Palmetto:** This two-mile wide area along SR 826/Palmetto Expressway north of SR 836/Dolphin Expressway is one of the largest employment areas in Miami-Dade County. The predominant land use is light industrial. The general boundaries of this activity center are NW 87<sup>th</sup> Avenue, NW 72<sup>nd</sup> Avenue, and W 49<sup>th</sup> Street.

**Dolphin:** The area along SR 836/Dolphin Expressway encompassed by the HEFT, SR 826/Palmetto Expressway, NW 25<sup>th</sup> Street and Flagler Street is major employment

center. The Mall of Americas and Miami International Mall are also included in this activity center.

**Blue Lagoon:** The suburban office complex is located south of SR 836/Dolphin Expressway across from MIA. Feeder roads serving this activity center are LeJeune Road, SR 836, and SW 57<sup>th</sup> Avenue.

**FIU:** The university campus lies in the southeast corner of SW 8<sup>th</sup> Street and HEFT In Miami-Dade County. It is a major employment generator. The FIU has limited on-campus housing.

**Miami Civic Center:** West of Downtown Miami and north of State Road 836, this area is roughly bounded by NW 20th Street, the Miami River, NW 7th Avenue, and NW 12th Avenue. It is home to many local medical, legal, and educational institutions including the University of Miami School of Medicine, Jackson Memorial Hospital, Veteran Administration Medical Center, Cedars Medical Center, Richard E. Gerstein Justice Building, the State's Attorney's Office, Miami-Dade College Medical Campus, and the Lindsey Hopkins Technical Education Center. The area boasts three mass-transit stations and eight bus routes and can be accessed from I-95, SR 836, and SR 122. According to a University of Miami Study, the Civic Center area provided an average of one in 28 jobs in the State of Florida.

**Downtown Miami:** This activity center is the main central business district for Miami-Dade County. It consists of government service buildings and high-rise office buildings. Downtown Miami continues to grow with the opening of several condominium projects. The main feeder roads are US 1, US 41, I-95, and SR 836.

**Mt. Sinai:** The Mt. Sinai Medical Center is a major employment center north of the Miami Beach RAC, and east of the Julia Tuttle Causeway.

**Miami Beach:** This RAC is one of the major tourist attraction areas in the region with a high concentration of hotels, restaurants, and high-rise residential buildings. This area is served by SR A1A, I-195, and MacArthur Causeway.

**Miami Port:** The Miami Port is a major component in providing support for cruise industry from passenger travel standpoint. It also provides a large employment base for the people in the South Florida region.

**Coral Gables:** This area has characteristics of a central business district, and is enclosed by Bird Road, LeJeune Road, Douglas Road, and SW 24<sup>th</sup> Street.

**University of Miami (UM):** The university is located west of US 1 in the City of Coral Gables. The major roads serving the university are Ponce De Leon Boulevard, San Amaro Drive, Granada Boulevard, and Blue Road. More than 15,000 students are enrolled at UM.

**Miami-Dade Community College North (MCC-N):** The 245 acre MCC-N campus is located in unincorporated Miami-Dade County. It is served by Gratigny Boulevard/SR 934, NW 106<sup>th</sup> Street, SR 9/NW 27<sup>th</sup> Avenue, and NW 32<sup>nd</sup> Avenue.

**Miami-Dade Community College South (MCC-S):** The MCC-S campus lies midway between HEFT and SR 874, along SW 104<sup>th</sup> Street. This 185-acre campus site is also known as the Kendall Campus.

**Dadeland:** This RAC includes the general area in the vicinity of the SR 826/Palmetto Expressway and US 1 interchange at Kendall Drive. It has a mix of uses ranging from low to high intensity commercial development and significant residential development. The terminal station for Metrorail is located in this area.

**Falls Mall:** This large retail employment center is located west of US 1 in southern Miami-Dade County. Other land uses in this area include high density residential, industrial business, single-family residential, and strip commercial centers. Major roads serving this activity center are US 1, SW 136<sup>th</sup> Street/Howard Drive, and SW 87<sup>th</sup> Avenue.

**Cutler Ridge:** This area has a good mix of activities including low and high density residential development, office buildings, government services, and supporting retail business. The area is served by SR 821/HEFT, US 1, Caribbean Boulevard, Eureka Drive, SW 117<sup>th</sup> Avenue, and Quail Roost Drive.

## 5.0 REGIONAL DEMAND

### 5.1 DEFINITION OF A REGIONAL TRIP

Many regions interested in defining a regionally significant trip often find that there are many different definitions and exceptions to what constitutes a “regional” corridor. The definition of regional can be as varied as the geographic area it serves. The Southeast Florida Transportation Council (SEFTC) approached the challenge of defining regional by primarily focusing on roadway corridors. SEFTC defines regional corridors as facilities that cross county lines and connect to the Strategic Intermodal System (SIS), facilities designated SIS corridors, or SIS connectors. While this methodology works for existing roadways, the SFRTA’s effort needed to broaden the SEFTC definition for new regional transit corridors. Research on national best practices was conducted to identify common themes and/or definitions for a regional transit connection.

National literature research resulted in nine sources/documents with definitions of a “regional” transit connection applicable to the South Florida region. These documents and their sources are listed below:

- North Central Texas Council of Governments (NCTCG), 40 CFR 93.101
- Puget Sound Regional Council (PSRC), TIPINFO-3
- Atlanta Regional Commission (ARC), Mobility 2030
- Washington Metropolitan Area Transit Authority (WMATA), Regional Bus Routes
- West Central Florida Chairs Coordinating Committee (WCFCCC), Regional Transit Projects
- USDOT Intelligent Transportation System (ITS) Architecture Guidebook
- New York Metropolitan Transportation Council (NYMTC), LRTP for 2030
- Wisconsin Regional Transportation Planning Organization (RTPO) Planning Guidelines
- USDOT Integrated Corridor Management Concept Development and Foundational Research Technical Memorandum

As a result of the literature search, **Table 5** identifies common regional definitions or themes of a variety of regional projects. Five main criteria were determined to be appropriate and feasible to use in determining regional transit projects or corridors for the SFRTA Strategic Regional Transit Plan:

- Interjurisdictional – crosses county boundaries
- Transit facilities that serve RACs
- Trip length or distance covered
- Connects to existing premium transit service
- Provides intermodal connection

**Table 5: National Best Practice Research: Regional Corridor Definitions**

Common Definition/Theme of a Regional Corridor	Agency								
	NCTCG	PSRC	ARC	WMATA	WCFCCC	USDOT ITS Architecture	NYMTC	Wisconsin RTPO	USDOT
Transportation project that is on a facility which serves regional transportation needs	X				X	X			
Projects to be included into the regional TIP	X	X							
Regionally significant highways		X							
Freeway HOV		X						X	
Interjurisdictional Ferry Service		X							
Transit or Pedestrian Infrastructure that links to communities		X			X			X	
Access and/or connectivity to Major Regional Centers		X	X	X	X	X			
Congestion management of regional corridors			X		X				
Safety improvement of regional corridors			X						
Interjurisdictional environmental benefits			X						
Interjurisdictional route of importance		X	X	X	X	X	X	X	
Create or strengthen major transit centers					X				
Utilizing interstate highway system					X			X	
Regional Economic Development			X		X	X			
Evacuation Routes					X				X
Serves people who live or work between jurisdictions								X	
Freight Movement									X

Source: Carter & Burgess, 2007.

## **5.2 REGIONAL SUPERZONES AND MAJOR TRIP FLOWS**

Major trip flows between regional superzones throughout the project study area were analyzed to determine the magnitude of travel demand between RACs and other regions within the study area. The study area was divided into 85 regional superzones (**Figure 36**), created by aggregating TAZs, excluding those TAZs that were part of RACs. The boundaries of the regional superzones were defined by major transportation facilities. Generally, areas with similar residential character, identity, and densities were aggregated together to make up one superzone. The RACs were each considered their own superzones. For analysis purposes, regional superzones representing RACs are typically considered trip destinations, while all other superzones are generally considered trip origins.

The SERPM V was used to analyze trip flows throughout the region using Year 2030 demographics. Trip flows of the AM Peak Hour with destinations in the RACs are shown in a series of figures (**Figure 37, 38, and 39**).

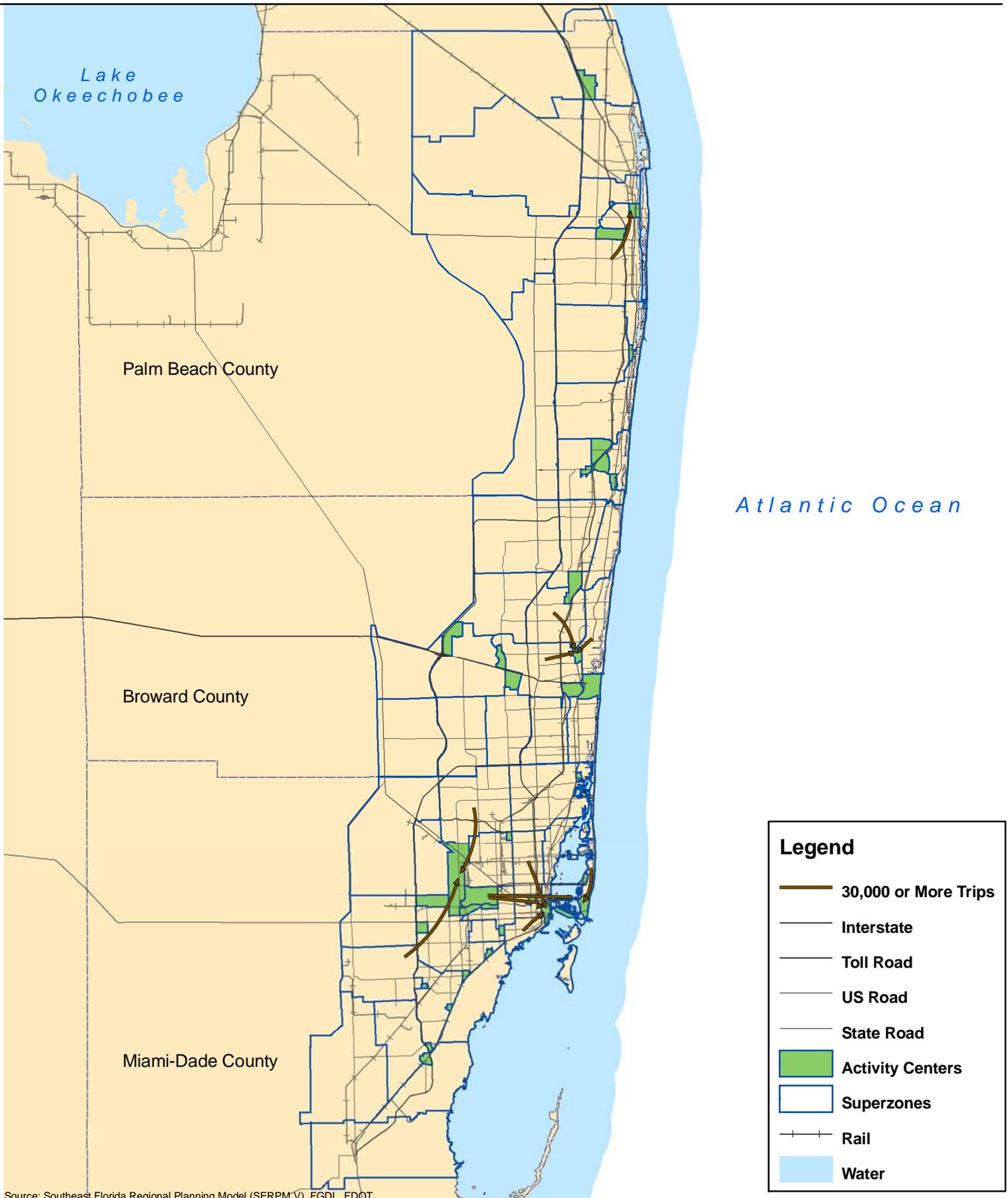
**Figure 36** displays more than 30,000 trip flows between superzones. The trip flow pattern for such high travel demand is confined within a 5- to 8-mile radius of a RAC. Palm Beach and Broward Counties show high travel demand to the Downtown West Palm Beach RAC and the Downtown Fort Lauderdale RAC. Miami-Dade County has a much higher number of RACs that attracts more than 30,000 trips, including Downtown Miami, Miami Beach, Palmetto Expressway Corridor, and MIA. Intense travel demand is revealed between MIA and Downtown Miami as well as between MIA and Miami Beach. The demand across county lines is limited when traveling from superzones to RACs. However, though additional analysis, it becomes evident that trips cross county lines when traveling between superzones.

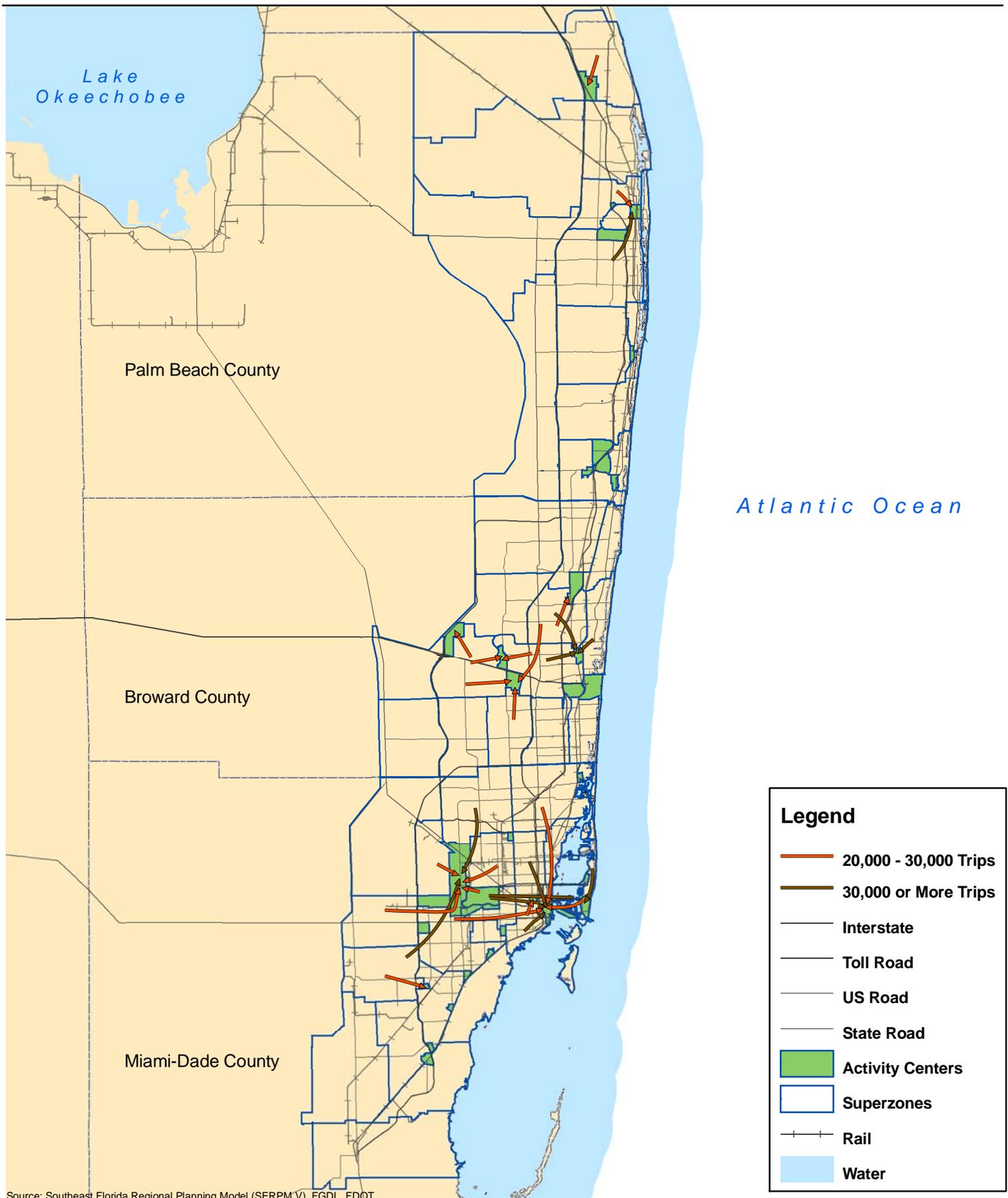
**Figure 37** illustrates occurrences of greater than 20,000 trips from superzones to RACs. This figure shows the radius of influence increased with such travel demand generated with an 8- to 10-mile radius of these activity centers. The RACs served by 20,000 or more trip flows include the proposed Scripps project in Palm Beach County, the Cypress Creek area, Plantation Mid-town, SFEC, Sawgrass Mills Mall, the Miami Civic Center, and MCC-S.

**Figure 38** shows most RACs in the study area are capable of attracting up to 10,000 trips, with the exception of Palm Beach Mall, FLL Airport, Port Everglades, and Falls Mall. The area of influence of RACs for this level of travel demand overlaps in most cases and proves to occur over longer distances. The average trip length for this magnitude of trip flows would be more compared to those for more intense travel demand as seen above.

As shown in **Figure 40**, all RACs in the study area are capable of attracting at least 5,000 trips. The area of influence for this level of travel demand is overlapping in most cases, and cross-county trips have greatly increased.

**Figure 41** shows the superzone to superzone trip flow for 20,000 or more trips. This figure shows a much greater radius of influence, and vastly increases the occurrence of cross-county trips.

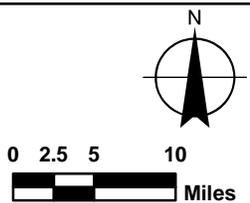




Source: Southeast Florida Regional Planning Model (SERPM V), FGDL, FDOT

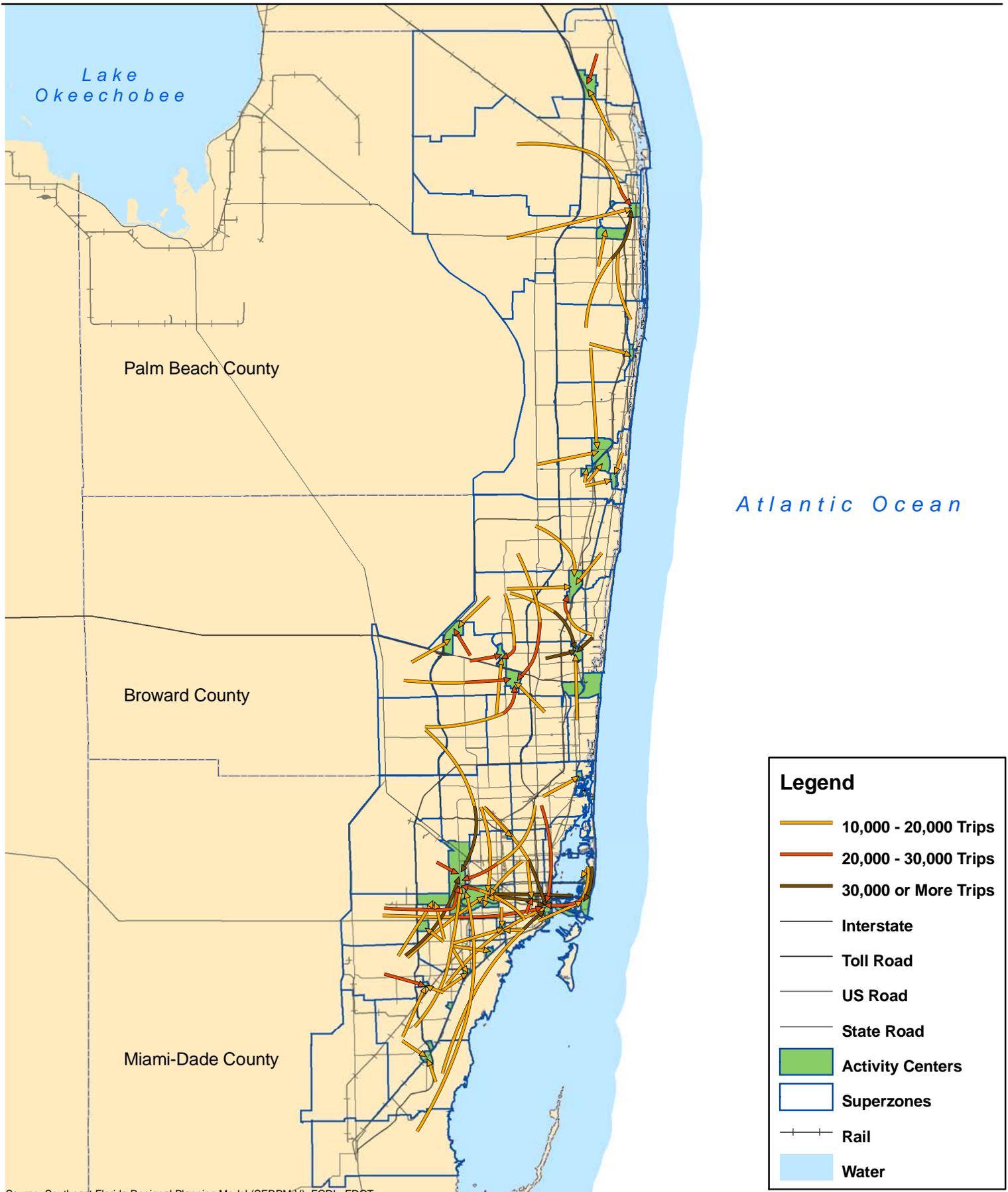


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**ACTIVITY CENTER  
 ATTRACTION  
 20,000 OR MORE TRIPS  
 (A.M. PEAK HOUR TRIP FLOWS)**

**Figure  
 38**



Source: Southeast Florida Regional Planning Model (SERPM V), FGDL, FDOT



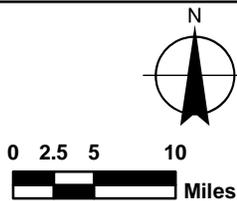
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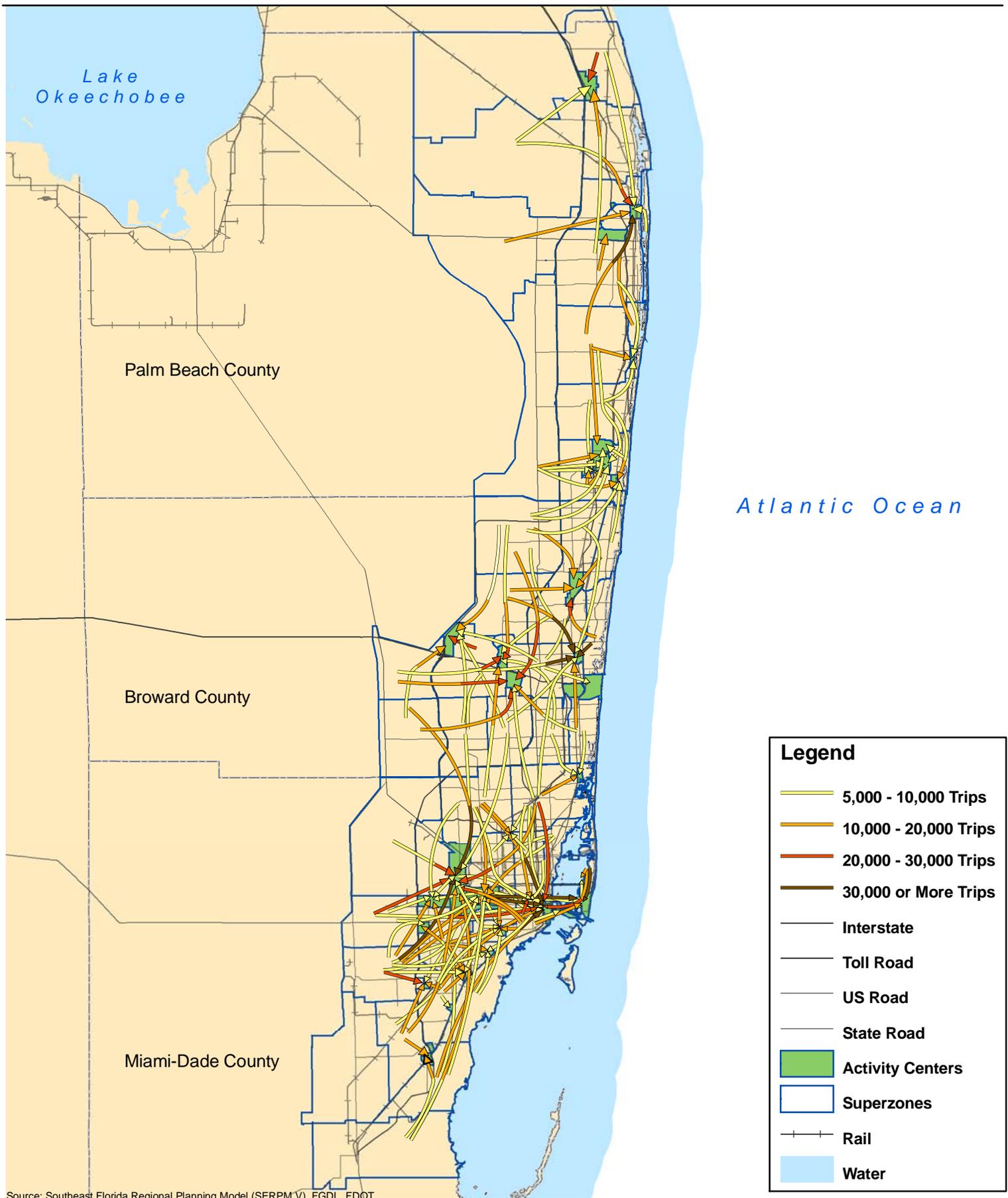
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**ACTIVITY CENTER  
ATTRACTION  
10,000 OR MORE TRIPS  
(A.M. PEAK HOUR TRIP FLOWS)**

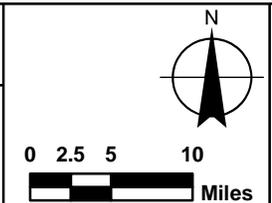
**Figure  
39**



Source: Southeast Florida Regional Planning Model (SERPM V), FGDL, FDOT

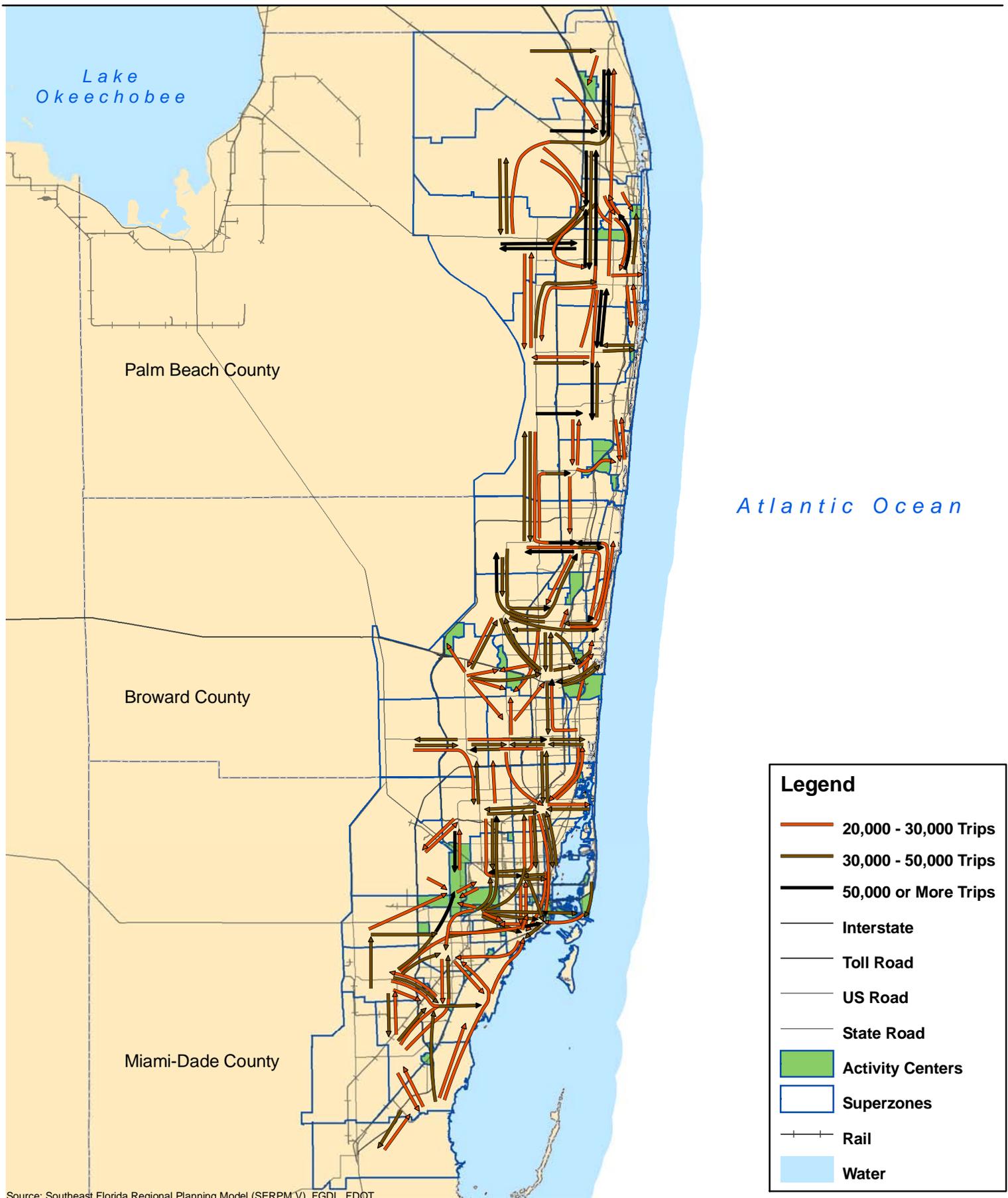


Prepared: May 2007  
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**ACTIVITY CENTER  
 ATTRACTION  
 5,000 OR MORE TRIPS  
 (A.M. PEAK HOUR TRIP FLOWS)**

**Figure  
 40**

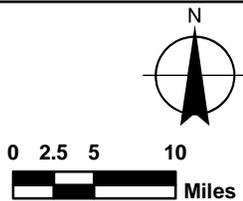


Source: Southeast Florida Regional Planning Model (SERPM V), FGDL, FDOT



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**ZONE TO ZONE  
 ATTRACTION  
 20,000 OR MORE TRIPS  
 (A.M. PEAK HOUR TRIP FLOWS)**

**Figure  
 41**

## 6.0 PRELIMINARY CORRIDORS AND ALTERNATIVES

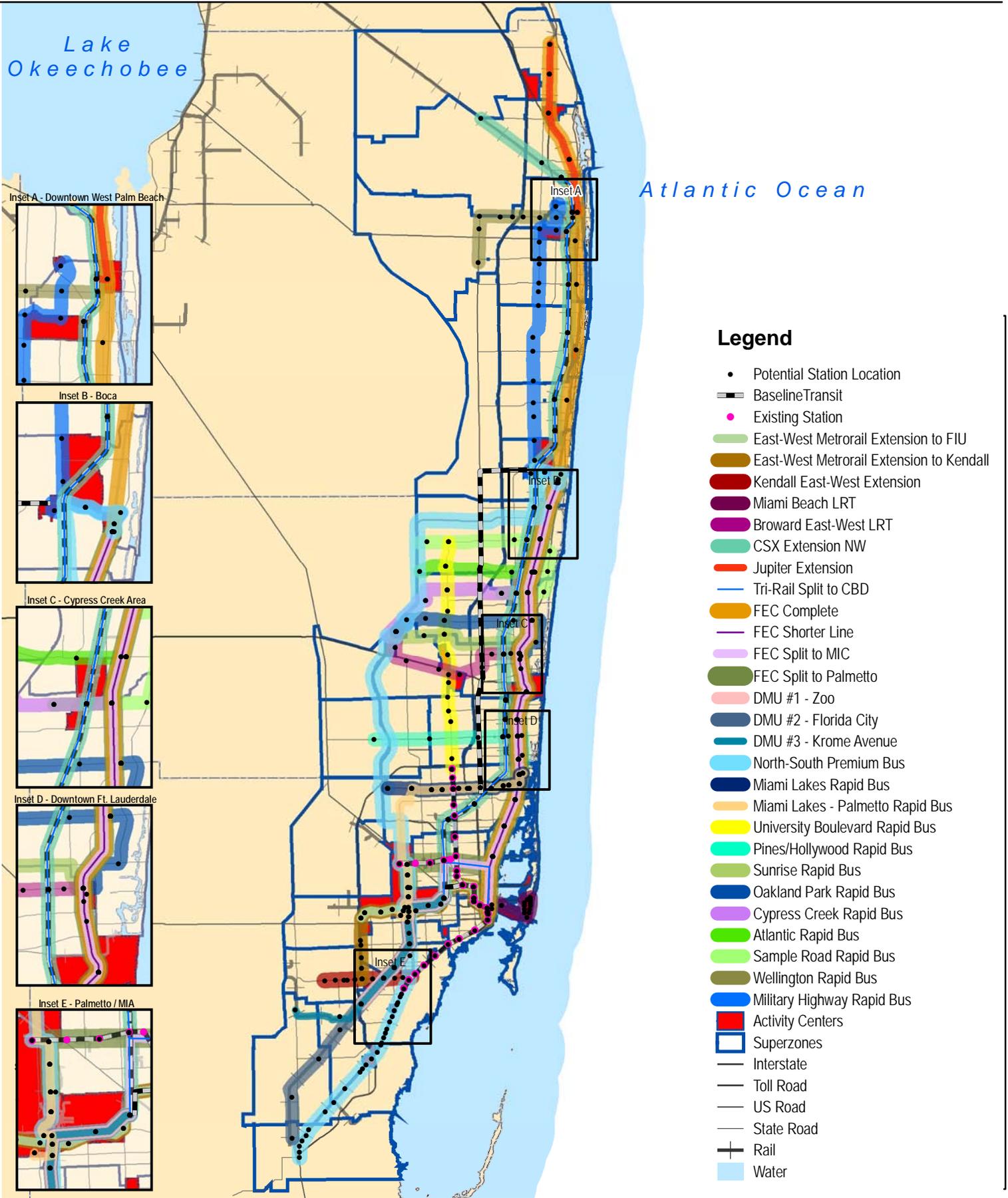
The analysis of major trip flows between superzones and RACs was used to identify directional attractiveness and generalized preliminary corridors for premium transit service. In addition to major trip flows, availability of right-of-way, connections to other RACs, and connections to existing transit service were also considered when developing these initial alternatives.

Twenty-seven alternatives were analyzed against the baseline during the preliminary analysis phase, as shown in **Figure 42**. Out of 27 alternatives, 13 alternatives are oriented in the north-south direction and 14 alternatives have east-west orientation. The following is a brief discussion of the technology, mode, and operating characteristics of the initial alternatives.

### 30A *Baseline*

Several BRT and fixed-guideway transit projects are included in the Baseline:

- Existing Tri-Rail service
- Existing Metromover service
- Metrorail extension along NW 27<sup>th</sup> Avenue from the Martin Luther King Metrorail station to NW 215<sup>th</sup> Street. The nine mile extension includes eight stations. Trains operate at 6/15 minute headways during peak hours and 10/15 minute headways during off-peak hours.
- 104<sup>th</sup> Street Extension is a one-mile Metrorail extension south from the Dadeland South Metrorail station and includes one new terminal station. Trains operate at 6/15 minute headways during peak hours and 10/15 minute headways during off-peak hours.
- A 2.3-mile long Metrorail extension between the existing Metrorail Earlington Heights Station and the Miami Intermodal Center (MIC).
- MDT MAX service:
  - Flagler MAX is a limited stop bus service that runs largely along Flagler St from 137<sup>th</sup> Ave to the Miami CBD. Vehicles operate at 15 and 30 minute headways during peak and off-peak hours, respectively.
  - Biscayne MAX is a limited stop bus service on Biscayne Blvd from Aventura to the Miami CBD. Vehicles operate at 15 minute headways.
  - Bird Road MAX is a limited stop bus service from 142<sup>nd</sup> Street to Dadeland largely along Bird Road and the Palmetto Expressway. Vehicles operate at 20 minute headways during peak hours and 40 minute headways during off-peak hours.
  - Ludlam MAX service is a limited stop bus service running along Ludlam Road from Miami Gardens to Okeechobee Metrorail Station. Vehicles operate at 20 minute headways.



- Beach MAX is a limited stop bus service that runs largely along Collins Ave and I-595 from Aventura to the Miami CBD. Vehicles operate at 15 minute headways.
- 7<sup>th</sup> Avenue MAX is a limited stop bus service on 7<sup>th</sup> Avenue from Golden Glades to the Miami CBD. Vehicles operate at 15 minute headways.
- Coral Way MAX is a limited stop bus service from 147<sup>th</sup> Ave to Douglas Road Metrorail Station largely along Coral Way and Douglas Road. Vehicles operate at 20 minute headways.
- Killian KAT service is a limited stop and express bus service running along Lillian Drive, SR874, and SR878 from Hammocks to Dadeland. Vehicles operate at 7.5 minute headways.
- Sunset KAT is a limited stop and express bus service that runs along Sunset and SR 878 from 152<sup>nd</sup> Ave to Dadeland. Vehicles operate at 10 minute headways during peak hours and 60 minute headways during off-peak hours.
- Kendall KAT is a limited stop and express bus service on Kendall, SR 874, and ST 878 from the Turnpike to Dadeland then extended via the Palmetto Expressway and SR836 to the MIC. Vehicles operate at 15 and 30 minute headways during peak and off-peak hours, respectively.
- 95X – Civic Center is an express bus service from Golden Glades to the Civic Center along I-95. Vehicles operate at 20 minute headways during peak hours and 120 minute headways during off-peak hours.
- 95X Norwood-Brickell is a limited stop and express bus service running along I-95 from SR 7 and 199<sup>th</sup> Street to Brickell Vehicles operate at 20 minute headways during peak hours and 120 minute headways during off-peak hours.
- 95X Carol City-Omni is a limited stop and express bus service that runs largely along I-95 from Red Road and the Palmetto to the Omni. Vehicles operate at 20 minute headways during peak hours and 120 minute headways during off-peak hours.
- 95X Norwood – West is a limited stop and express bus service on I-95 and 36<sup>th</sup> Street from SR & 199<sup>th</sup> Street to Doral. Vehicles operate at 20 and 120 minute headways during peak and off-peak hours, respectively.
- Broward SR 7 Fast Bus Extended is a limited stop and express bus service from Boca Raton to the Miami CBD largely along SR 7 and I-95. Vehicles operate at 10 minute headways during peak hours and 120 minute headways during off-peak hours.

### **30C East-West Metrorail Extension West to FIU**

This project extends Metrorail from the MIC to FIU along SR 836/Dolphin Expressway corridor. This 8.8 mile alternative has seven stations. Trains operate at five minute headways during peak hours and 10 minute headways during off-peak hours. Due to Metrorail's heavy rail characteristics, the right-of-way is completely grade separated (elevated).

### **30D East-West Metrorail Extension South to Kendall**

This project extends Metrorail from the MIC to Kendall via FIU along SR 836/Dolphin Expressway and the HEFT corridor. This 14.4 mile alternative includes 12 stations. Trains operate at five minute headways during peak hours and 10 minute headways during off-peak hours. The vertical profile for this alternative is largely grade separated (elevated).

### **30E Kendall East-West Extension**

This project is a 7.8 mile Metrorail extension that operates along SW 104<sup>th</sup> Street from Kendall in the west to the proposed terminal station for the one-mile extension to the east. The alternative has 10 stations. Trains operate at five minute headways during peak hours and 10 minute headways during off-peak hours. The transit guideway is completely elevated or aerial.

### **30F Miami Beach LRT**

This project is an 8.6 mile long at-grade LRT alignment connecting Miami Beach and Downtown Miami with 16 stations. Trains operate at five and 10 minute headways during peak and off-peak hours, respectively.

### **30G Broward East-West LRT**

This project is an elevated LRT alignment connecting Sawgrass Mills Mall in the west to FLL Airport in the east. The 20.8 mile alignment has 15 stations. The alignment follows NW 136<sup>th</sup> Avenue, I-595, SR 7, Broward Boulevard, Andrews Avenue, SW 17<sup>th</sup> Street, and US 1. Trains operate at 7.5 and 15 minute headways during peak and off-peak hours, respectively.

### **30H CSX Extension Northwest**

This project is a 9.3 mile northwest extension of the existing Tri-Rail commuter rail service along the CSX rail tracks in the SR 710 corridor beginning at Mangonia Station (existing Tri-Rail station). The alternative includes two new stations. Trains would operate at 20 minute and 30 minute headways during peak and off-peak hours, respectively. The entire alignment is at-grade.

### **30I Jupiter Extension**

This project is a 17.9 mile extension of the existing Tri-Rail commuter rail service from Downtown West Palm Beach to Indiantown Road in Jupiter. The at-grade alignment has four stations with trains operating at 20 minute and 30 minute headways during peak and off-peak hours, respectively. The alignment is on FEC rail right-of-way.

### **30J Tri-Rail Split to CBD**

This project is 9.55 mile spur extending from the existing Tri-Rail alignment in the vicinity of W 21<sup>st</sup> Street, going east and then south to terminate in Downtown Miami. The at-grade commuter rail has one new station. Trains operate at 30 and 40 minute headways during peak and off-peak hours. The entire alignment is on exiting rail tracks.

### **30K *FEC Complete***

This project is an at-grade commuter rail alignment operating in existing FEC rail right-of-way from Indiantown Road in Jupiter, Palm Beach County, to Downtown Miami. There are 25 stations along the 83.3 mile corridor. Trains operate at 20 and 30 minute headways during peak and off-peak hours, respectively.

### **30L *FEC Shorter Line***

This project is an at-grade commuter rail alignment operating in existing FEC rail right-of-way extending from Mizner Park in City of Boca Raton (in vicinity of Glades Road) to Downtown Miami. There are 16 stations along the 40.6 mile alignment. Trains operate at 20 and 30 minute headways during peak and off-peak hours, respectively.

### **30M *FEC Split to the MIC***

This project is an at-grade commuter rail alignment operating in existing FEC rail right-of-way extending from Mizner Park in City of Boca Raton (in vicinity of Glades Road) to Downtown Miami. The alignment splits just south of NE 79<sup>th</sup> Street, follows the freight rail corridor to the east and south to terminate at the MIC. Combined for both spurs, there are 17 stations along the 48.3 mile alignment. Trains operate at 20 and 40 minute headways during peak and off-peak hours, respectively, on both branches.

### **30N *FEC Split to Palmetto***

This project is an at-grade commuter rail alignment operating in existing FEC rail right-of-way extending from Mizner Park in City of Boca Raton (in vicinity of Glades Road) to Downtown Miami. The alignment splits just south of NE 79<sup>th</sup> Street, follows the freight rail corridor to the east to SR 826/Palmetto Expressway and south to terminate at MIA. Combined for both spurs, there are 18 stations along the 50.2 mile alignment. Trains operate at 20 and 40 minute headways during peak and off-peak hours, respectively, on both branches.

### **30O *Diesel Multiple Unit (DMU) #1 – Zoo***

This project is an at-grade commuter rail alternative, 14.4 mile long alignment that uses DMU rail technology. It includes seven stations along the existing CSX alignment. The MIC and SW 128<sup>th</sup> Street, in the vicinity of SR 874/Don Shula Expressway, in Kendall are the termini for this alternative. The alignment follows west on SR 836 corridor from the MIC, south to SR 826 corridor and southwest along Don Shula Expressway corridor. Trains operate at 20 and 40 minute headways during peak and off-peak hours, respectively.

### **30P *DMU #2 – Florida City***

This project is an at-grade commuter rail alternative, 30.2 mile long alignment that uses DMU rail technology. It includes 11 stations along the existing CSX alignment, extending from the MIC to Florida City. Trains operate at 20 and 30 minute headways during peak and off-peak hours, respectively.

### **30Q DMU #3 – Krome Avenue**

This project is an at-grade commuter rail alternative. It is a 14.6 mile long alignment that uses DMU rail technology. It includes nine stations along the existing CSX alignment, extending from the MIC to Krome Avenue. Trains operate at 20 and 30 minute headways during peak and off-peak hours, respectively.

### **31A North-South Premium Bus**

This project is the longest of the rapid bus alternatives. It is a 95.5 mile long at-grade/surface BRT services operating largely in freeway right-of-way (Don Shula Expressway, SR 836, SR 826, I-75, Sawgrass Expressway, and I-95) from Florida City to Downtown Boca Raton via the MIC. There are 18 stations along the alignment (excluding the existing Miami-Dade Busway stations). Buses operate at 15 and 20 minute headways during peak and off-peak hours, respectively.

### **31B Miami Lakes Rapid Bus**

This project is a 13.6 mile long at-grade/surface BRT service operating on Miami Gardens Drive (NW 183<sup>rd</sup> Street) from Miami Lakes to Aventura Mall. There are 14 stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31C Miami Lakes – Palmetto Rapid Bus**

This project is a 26.1 mile long at-grade/surface BRT service operating in SR 826/Palmetto Expressway corridor and NW 183<sup>rd</sup> Street/Miami Gardens Drive using NW 67<sup>th</sup> Avenue from Mall of Americas to Aventura Mall. There are 20 stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31D University Boulevard Rapid Bus**

This project is a 21.8 mile long at-grade/surface BRT service operating on SR 817/University Drive from Florida's Turnpike to Sample Road in Broward County. There are 14 stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31E Pines/Hollywood Rapid Bus**

This project is a 17.5 mile long at-grade BRT service operating on Pines/Hollywood Boulevard and south on US 1 from just west of I-75 in Broward County to Aventura Mall in Miami-Dade County. There are nine stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31F Sunrise Rapid Bus**

This project is a 13.8 mile long at-grade BRT service operating on Sunrise Boulevard from Sawgrass Mills Mall to Downtown Fort Lauderdale. There are five stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31G *Oakland Park Rapid Bus***

This project is an 18.3 mile long at-grade BRT service connecting Sawgrass Mills Mall to BCT Central Terminal via Downtown Fort Lauderdale. Buses use Oakland Park Boulevard, US 1, Sunrise Boulevard, and Andrews Avenue to provide transit service. There are nine stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31H *Cypress Creek Rapid Bus***

This project is a 17.4 mile long surface BRT service operating at-grade and on freeway from Sawgrass Mills Mall to existing Cypress Creek Tri-Rail station. Buses use Sawgrass Expressway, Commercial Boulevard, Nob Hill Road, and McNab Road/Cypress Creek Road to provide transit service. There are six stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31I *Atlantic Rapid Bus***

This project is a 15.8 mile long at-grade BRT service operating largely on Atlantic Boulevard from Sawgrass Expressway to Cypress Creek area in the vicinity of existing Cypress Creek Tri-Rail station. There are eight stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31J *Sample Road Rapid Bus***

This project is a 20.6 mile long at-grade BRT service operating largely on Sample Road, US 1, and Cypress Creek Road from Sawgrass Expressway to Cypress Creek area in the vicinity of existing Cypress Creek Tri-Rail station. There are 11 stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31K *Wellington Rapid Bus***

This project is a 13.8 mile long at-grade BRT service operating largely on Okeechobee Boulevard from Wellington in vicinity of US 441 and Forest Hill Boulevard, to Downtown West Palm Beach. There are 11 stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

### **31L *Military Highway Rapid Bus***

This project is a 32.2 mile long at-grade BRT service operating largely on Military Trail from Downtown Boca Raton to just north of Downtown West Palm Beach. There are 21 stations along the alignment. Buses operate at 10 and 15 minute headways during peak and off-peak hours, respectively.

## **7.0 PHASE II**

During Phase II, the preliminary alternatives will be tested using national best practice criteria. The outcome of this analysis will include an understanding of which corridors perform well, which might need adjustment to perform better, and which may not meet regional criteria or metric thresholds. A new set of alternatives will be defined in detail in terms of station location and operating characteristics. Ridership forecasts will be refined and station boardings and link volumes analyzed. Based on this data capital and operating and maintenance cost estimates will be developed. The highest opportunity corridors will be evaluated using FTA evaluation criteria and SFRTA policy goals to identify cost-effective transit projects that could be prioritized for a phased implementation of a regional transit system.