

# 7 System Analysis

## 7.1 Introduction

There are many ways to gauge the performance of Florida's aviation system in meeting the needs of users and achieving system goals. This Chapter includes the results of several Florida Aviation System Plan (FASP) analyses, starting with the measurement of system performance in meeting overarching goals, objectives, performance measures (PMs), and performance indicators (PIs). For most of the PMs and PIs presented, analyses were completed at the statewide level as well as by Florida Department of Transportation (FDOT) District. Due to the allocation and distribution of funding to Districts, this FASP 2035 Update utilized Districts in the evaluation of the system's performance and needs, as compared to Continuing Florida Aviation Systems Planning Process (CFASPP) Regions. This dual-level analysis provides FDOT an understanding of the performance in the Districts that coordinate most closely with airports and make decisions on project funding.

Evaluating system accessibility from the ground and the air is also an important exercise in reviewing system success. Airports should be accessible from the ground as people travel to and from airports and from the air by pilots looking for certain airport characteristics. A drive time analysis was completed to gauge the accessibility of Florida's airports and identify locational gaps in access.

An intermodal connectivity analysis was completed to identify existing connections between Florida's airports and other modes of transportation across the state to further evaluate accessibility. The connectivity of the modes is an essential aspect of the airport system's accessibility from the ground, and, as such, linkages between the airports and highway, passenger rail, transit, rental car, and other applicable modes were examined.

Florida is a national and global leader for aviation, providing a gateway between the United States (U.S.) and major international markets, a skilled labor pool, a complex ground transportation network, and tax incentives designed to draw industries to the state. However, despite this statewide strength, the aviation industry is unequally distributed across regions throughout the state, with significant differences in both the type and volume of activity that occurs. This is due in large part to Florida's clustering of population, business, and tourism centers. A demand drivers analysis was conducted to evaluate the drivers that foster aviation industry activity in Florida.

The results of each of these four analyses are presented in the following sections.

## 7.2 System Performance

Data for this analysis was obtained from many different sources as detailed in **Chapter 5 – Data Collection and Inventory**, including statewide airport surveys, the National Flight Data Center (NFDC), the Florida Aviation Database (FAD), as well as other FDOT and Federal Aviation Administration (FAA) sources. Different sources are required to fulfill the analysis of all PMs and PIs, as the information is not available from only a single source. The following sections present the goals of the FASP as well as provide a summary of the PMs and PIs associated with each goal.

### 7.2.1 Goal 1: Provide safe, efficient, secure, and convenient service to Florida's citizens, businesses, and visitors.

For Florida airports to fulfill their role in Florida's multimodal transportation system, they must be efficient and safe. Further, airports in Florida should provide convenient access for the state's residents, businesses, and visitors. The objectives, performance measures, and PIs used to evaluate this goal are shown in **Table 7-1** and the system evaluation of each is provided immediately following.

**Table 7-1: Goal 1 Objectives, Performance Measures, and Performance Indicators**

Objectives		Performance Measures		Performance Indicators	
1.1	Ensure that FASP airports operate at an efficient demand/capacity (D/C) ratio.	1.1.1	The number of FASP airports with an annual airfield D/C ratio of 60 percent or more (FDOT PM). <sup>1</sup>	1.1.1	The number of FASP airports with terminal-related development projects (building, rental car, parking) and the amount of Joint Automated Capital Improvement Program (JACIP) funding identified for these projects.
		1.1.2	The number of FASP airports with an annual airfield D/C ratio of 80 percent or more (FDOT PM). <sup>1</sup>	1.1.2	The percentage of "on time" flights relative to departure reliability (FDOT PM). <sup>1</sup>
		1.1.3	The number of FASP airports identified in FAA Future Airport Capacity Task (FACT) reports for capacity concerns.		
1.2	Achieve and maintain 100 percent of primary runways at FASP airports in compliance with FAA and Florida Administrative Code (FAC) 14-60 Runway Safety Area (RSA) standards.	1.2.1	The number of FASP airports identified by FDOT inspection that do not meet relevant RSA standards on their primary runway.		
1.3	Achieve and maintain 100 percent of nonprimary runways at	1.3.1	The number of FASP airports identified by FDOT inspection that		

Objectives		Performance Measures		Performance Indicators	
	FASP airports in compliance with FAA and FAC 14-60 RSA standards.		do not meet relevant RSA standards on their nonprimary runways.		
<b>1.4</b>	Support protection of people and appropriate land uses and controls of runway protection zones (RPZs) at FASP airports.	1.4.1	The number of FASP airports, as determined by a statewide database of land use, that control (through fee simple) the land for the RPZs of the primary runway.	1.4.1	The number of FASP airports that have incompatible land uses within the RPZs of the primary runway.
		1.4.2	The number of FASP airports, as determined by a statewide database of land use, that control (through fee simple) the land for the RPZs of nonprimary runways.	1.4.2	The number of FASP airports that have incompatible land uses within the RPZs of the nonprimary runways.
<b>1.5</b>	Achieve compliance with Florida Statute (F.S.) regarding security plans.			1.5.1	The number of FASP airports with a runway greater or equal to 5,000 feet in length that report having a security plan.
<b>1.6</b>	Ensure FASP airports can maintain operational capabilities during disasters.			1.6.1	The number of FASP airports with standby emergency power for airfield lighting.
				1.6.2	The number of FASP airports with standby emergency power for fueling operations.
				1.6.3	The number of FASP airports with standby emergency power for its terminal.
<b>1.7</b>	Ensure FASP airports address wildlife incompatible uses through appropriate means.	1.7.1	The number of FASP airports with completed wildlife hazard site visits,		

Objectives		Performance Measures		Performance Indicators	
			assessments, and/or management plans.		
1.8	Support FASP airports in meeting FAA airfield geometric design criteria to promote operational safety.	1.8.1	The number of FAA-obligated FASP airports that meet current FAA taxiway design standards.		
		1.8.2	The number of FAA-obligated FASP airports that have FAA-designated airfield "hot spots."		

Source: Florida Aviation System Plan (FASP) 2035

<sup>1</sup> FDOT PM = Aviation PMs that are reported in the FDOT Source Book

#### 7.2.1.1 Objective 1.1: Ensure that FASP airports operate at an efficient D/C ratio.

Ensuring that Florida's airports have adequate capacity to handle the demand for aircraft at their airport is paramount to the overall success of the system. If users are not able to quickly and efficiently access an airport, the overall viability of the system greatly diminishes. As such, a set of three PMs and two PIs were developed to support this objective:

- PM 1.1.1 – The number of FASP airports with an annual airfield D/C ratio of 60 percent or more (FDOT PM).
- PM 1.1.2 – The number of FASP airports with an annual airfield D/C ratio of 80 percent or more (FDOT PM).
- PM 1.1.3 – The number of FASP airports identified in FAA FACT reports for capacity concerns.
- PI 1.1.1 – The number of FASP airports with terminal-related development projects (building, rental car, parking) and the amount of JACIP funding identified for these projects.
- PI 1.1.2 – The percentage of "on time" flights relative to departure reliability.

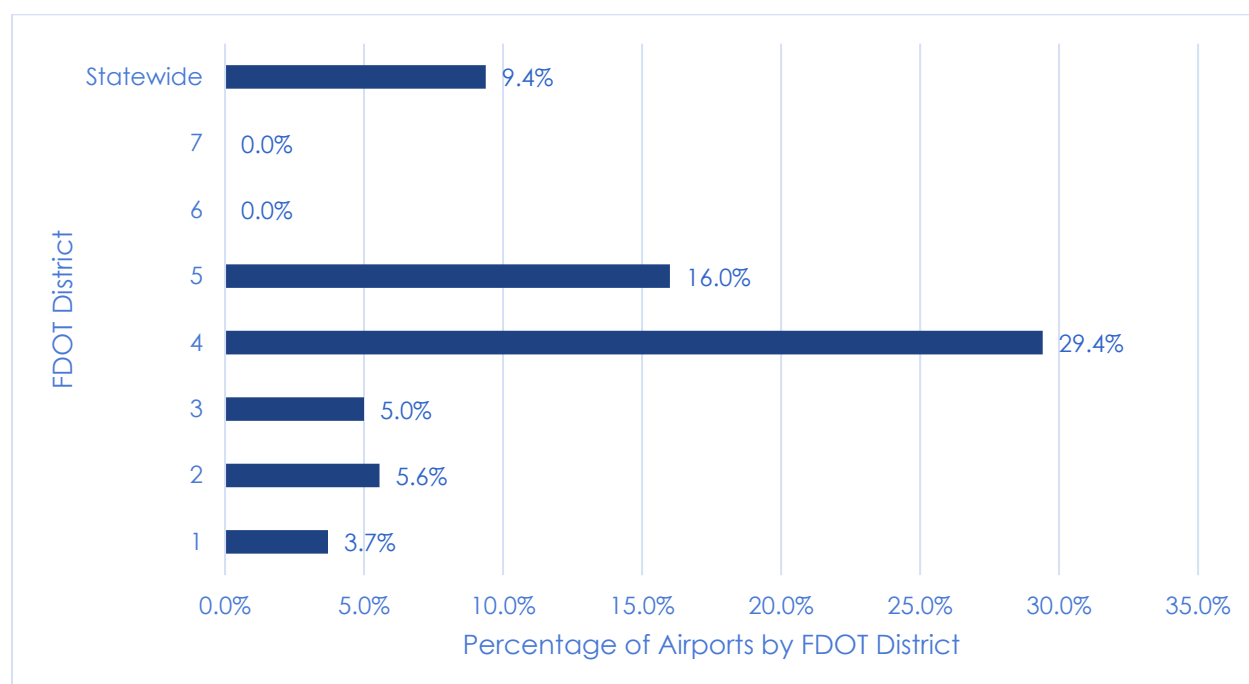
The system evaluation of each is provided in the following sections.

##### 7.2.1.1.1 PM 1.1.1 – THE NUMBER OF FASP AIRPORTS WITH AN ANNUAL AIRFIELD D/C RATIO OF 60 PERCENT OR MORE (FDOT PM)

Ensuring that Florida's airports have adequate capacity to handle the demand for aircraft at their airport is paramount to the overall success of the system. If users are not able to quickly and efficiently access an airport, the overall viability of the system greatly diminishes. To assess this PM and achieve the objective, the ratio of airfield demand to capacity was analyzed to understand the number of airports that currently have a D/C of 60 percent or greater. A D/C ratio of 60 percent indicates that planning should be initiated to improve capacity. (Note: D/C ratios of 80 percent and greater were also reviewed. Data for this PM includes airports with D/C

ratios of greater than 60 percent but less than 80 percent). D/C ratios depend on several factors, including runway alignment, number of runways, type of operations at an airport, and others. Data for this PM was obtained from the D/C analysis in **Chapter 6 – Aviation Activity Forecasts**. Airports were grouped by FDOT District to provide an understanding of statewide performance by region. Based on the analysis, approximately nine percent of airports statewide have a D/C ratio between 60 and 80 percent. Most notably, 29 percent of airports in District 4 are above this threshold, while no airports in FDOT District 6 and 7 are within this threshold. A summary of this PM is provided in **Figure 7-1**.

**Figure 7-1: Percentage of FASP Airports with a D/C Ratio Greater than 60 Percent and Less than 80 Percent**



Source: Florida Aviation System Plan (FASP) Analysis

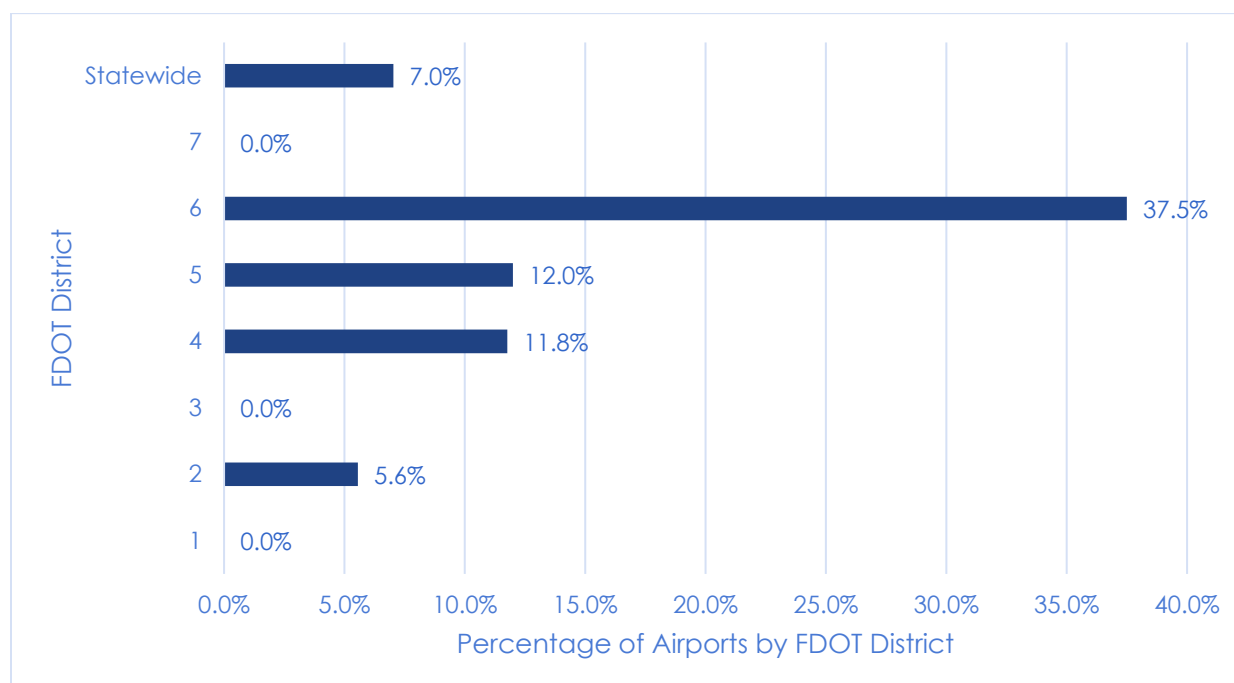
This data indicates that, statewide, airfield capacity is not a major concern; however, a more complete look at the system's capacity includes the evaluation of airports with a D/C ratio of 80 percent or more. This analysis is provided in the following section.

#### 7.2.1.1.2 **PM 1.1.2** – THE NUMBER OF FASP AIRPORTS WITH AN ANNUAL AIRFIELD D/C RATIO OF 80 PERCENT OR MORE (FDOT PM)

Similar to the previous analysis, the ratio of airfield D/C was analyzed to understand the number of airports that currently have a D/C of 80 percent or greater. Airports with a D/C ratio of 80 percent should be implementing steps to enhance airfield capacity to reduce the likely delay that is associated with such a high D/C ratio. Based on the analysis, seven percent of airports statewide have a D/C ratio of 80 percent or greater. FDOT District 6 has the greatest percentage of airports that are at or above this high D/C ratio. Additionally, FDOT Districts 4 and 5 both report

having approximately 12 percent of airports meeting this threshold. No other FDOT District reported a significant percentage. A summary of this PM is provided in **Figure 7-2**.

**Figure 7-2: Percentage of FASP Airports with a D/C Ratio of 80 Percent or More**



Source: Florida Aviation System Plan (FASP) Analysis

When considering both the 60 – 79 percent D/C ratios and the 80+ percent D/C ratios, there does not appear to be a significant overall capacity concern in Florida. Certain FDOT Districts (4, 5, and 6) did report higher than average D/C ratios, so an evaluation of those areas regarding airfield capacity may be warranted. It is especially important to look at the specific airports with a potential capacity concern if those airports are commercial service or are general aviation (GA) airports supporting the state's business and industry, including those with significant flight training. **Chapter 10 – Recommendations** includes a recommendation for a more detailed capacity study, looking specifically at FDOT Districts 4, 5, and 6.

#### 7.2.1.1.3 **PM 1.1.3** – THE NUMBER OF FASP AIRPORTS IDENTIFIED IN FAA FACT REPORTS FOR CAPACITY CONCERNS

The FAA's FACT report was first developed in 2003 with the goal of assessing future capacity needs at domestic airports. Since the original report, there have been two updates, the most recent being *FACT3: Airport Capacity Needs in the National Airspace System (FACT3)*, published January 2015. Per *FACT3*,

"In addition to updated forecasts, the *FACT3* analysis includes current aircraft fleet mix projections, updated NextGen planning, and modeling of gate and surface constraints on airport capacity. *FACT3* also contains refined modeling and selection criteria."

Each published FACT report identified capacity concerns over a 20-year planning horizon on the national and major airport levels. For FACT3, the base year was 2011, with projections for 2020 and 2030. (Note: FACT1 provided data for 2004, 2013, and 2020 while FACT2 provided data for 2007, 2015, and 2025). For each study, airports were categorized as having one of two types of constraints:

1. Constrained in reference case (currently constrained), but unconstrained if planned improvements are implemented.
2. Constrained even after all planned improvements are implemented; additional capacity enhancement is needed; or constrained in base year.

FACT3 evaluated and analyzed 48 airports across the U.S. for capacity concerns. In Florida, six airports were included in this evaluation:

- Fort Lauderdale Executive Airport (FXE)
- Fort Lauderdale-Hollywood International Airport (FLL)
- Orlando International Airport (MCO)
- Miami International Airport (MIA)
- Kendall-Tamiami Executive Airport (now Miami Executive Airport) (TMB)
- Tampa International Airport (TPA)

Of the six Florida airports, only one was identified by FACT3 to have future constraints: Fort Lauderdale-Hollywood International Airport. FACT3 identified that the airport would be “constrained in reference case, but unconstrained if planned improvements are implemented” in 2030. No other airports in Florida were listed in FACT3. (Note: Miami International Airport was identified in FACT1, but not included in subsequent reports).

Based on this analysis, it does not appear that any of Florida's major airports are expected to experience a significant capacity constraint that would be a hindrance to the national airspace system.

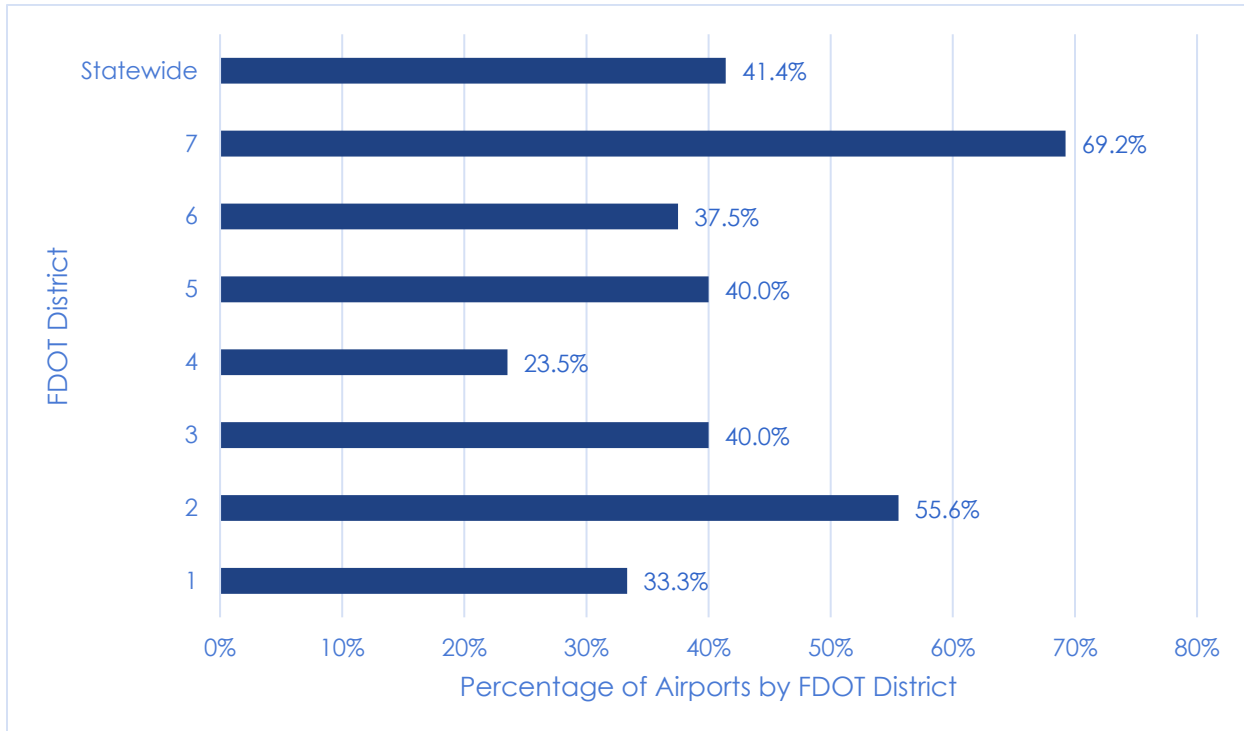
#### 7.2.1.1.4 **PI 1.1.1 – THE NUMBER OF FASP AIRPORTS WITH TERMINAL-RELATED DEVELOPMENT PROJECTS (BUILDING, RENTAL CAR, PARKING) AND THE AMOUNT OF JACIP FUNDING IDENTIFIED FOR THESE PROJECTS**

Airport terminals are the vehicle through which passengers move from their arrival at an airport to their aircraft and vice versa. For commercial service airports, this includes ticketing and baggage, security, and ultimately the terminal and gates. For GA airports, pilots often use terminal facilities for flight planning, to rest, or to eat between flights. Terminal projects are critical to the continued viability of an airport and often include some of the largest projects at an airport. To gain an understanding of the demand for enhanced or new terminal facilities, an analysis was conducted to determine the number of FASP airports that have terminal (or terminal-related) projects programmed in the JACIP. (Note: The JACIP is housed in the FAD and is the program used by airports, FDOT, and the FAA to program and fund projects at airports).

As shown in **Figure 7-3**, over 40 percent of airports in Florida have requested funding for a terminal project between 2017 and 2022. FDOT District 7 reported the highest percentage, with

just under 70 percent of the airports requesting funds for terminal projects, while FDOT District 4 had the lowest percentage (23.5). Across all other districts, an average of approximately 40 percent of airports requested funding for terminal projects between 2017 and 2022. **Table 7-2** provides a summary of the funding, by year, that is identified in JACIP for these terminal projects.

**Figure 7-3: The Percentage of FASP Airports with Terminal-Related Development Projects (2017 – 2022)**



Source: Joint Automated Capital Improvement Program (JACIP) database; Florida Aviation System Plan (FASP) Analysis

**Table 7-2: Total Funding, By Year, for Terminal-Related Projects (2017 – 2022)**

Year	Funding
2017	18,094,707
2018	36,666,375
2019	47,226,216
2020	27,650,000
2022	27,500,000

Source: Joint Automated Capital Improvement Program (JACIP) database; Florida Aviation System Plan (FASP) Analysis



#### 7.2.1.1.5 PI 1.1.2 – THE PERCENTAGE OF "ON TIME" FLIGHTS RELATIVE TO DEPARTURE RELIABILITY (FDOT PM)

The U.S. Department of Transportation (DOT) provides data on the on-time reliability of airlines that serve the nation's commercial service airports. Though delays can be caused by several factors (air carrier, weather, national aviation system, security, late arriving aircraft, cancelled flights, or diverted flights) they all combine to delay aircraft from departing on time. As such, understanding how departure reliability impacts Florida's airports can indicate the overall reliability of Florida's aviation system, regardless of what is influencing reliability. In Florida, 18 airports have "on time" data reported by the U.S. DOT. Of the 20 designated commercial service airports in Florida, two did not have any data reported (Orlando-Sanford International Airport and St. Pete-Clearwater International Airport). As shown in **Table 7-3**, on-time departure reliability ranged from 76 to 89 percent with an overall average of 83 percent. Airports are listed in descending order of reliability.

**Table 7-3: The Percentage of "On Time" Flights Relative to Departure Reliability**

Associated City	Airport Name	FAA ID	FDOT District	Percentage of "on time" flights relative to departure reliability
Daytona Beach	Daytona Beach International Airport	DAB	5	86%
Fort Lauderdale	Fort Lauderdale-Hollywood International Airport	FLL	4	77%
Ft. Myers	Southwest Florida International Airport	RSW	1	82%
Gainesville	Gainesville Regional Airport	GNV	2	83%
Jacksonville	Jacksonville International Airport	JAX	2	84%
Key West	Key West International Airport	EYW	6	89%
Melbourne	Melbourne International Airport	MLB	5	87%
Miami	Miami International Airport	MIA	6	77%
Orlando	Orlando International Airport	MCO	5	80%
Panama City	Northwest Florida Beaches International Airport	ECP	3	88%
Pensacola	Pensacola International Airport	PNS	3	87%
Punta Gorda	Punta Gorda Airport	PGD	1	76%
Sarasota/Bradenton	Sarasota Bradenton International Airport	SRQ	1	80%
St. Augustine	Northeast Florida Regional Airport	SGJ	2	80%
Tallahassee	Tallahassee International Airport	TLH	3	87%
Tampa	Tampa International Airport	TPA	7	82%

Associated City	Airport Name	FAA ID	FDOT District	Percentage of "on time" flights relative to departure reliability
Valparaiso/Destin-Ft. Walton Beach	Destin-Ft Walton Beach Airport	VPS	3	86%
West Palm Beach	Palm Beach International Airport	PBI	4	77%
Average				83%

Source: United States Department of Transportation (U.S. DOT), 2016 data, [www.transtats.bts.gov/airports.asp?pn=1](http://www.transtats.bts.gov/airports.asp?pn=1)

#### 7.2.1.2 Objective 1.2: Achieve and maintain 100 percent of primary runways at FASP airports in compliance with FAA and FAC 14-60 RSA standards

Providing compliant RSAs on primary runways at Florida's airports helps promote operational safety in the event of an aircraft overshoot or underrun. As such, the following PM was developed to support this objective:

- PM 1.2.1 – The number of FASP airports identified by FDOT inspection that do not meet relevant RSA standards on their primary runway.

##### 7.2.1.2.1 PM 1.2.1 – THE NUMBER OF FASP AIRPORTS IDENTIFIED BY FDOT INSPECTION THAT DO NOT MEET RELEVANT RSA STANDARDS ON THEIR PRIMARY RUNWAY

According to the FAA, RSAs are “a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway...The RSA is a rectangular box surrounding the runway and is based on the runway design code. The dimensions range from 120 feet to 500 feet in width and 240 feet to 1000 feet in length beyond the departure end of the runway.”

In addition to the federal standards provided by the FAA, the state of Florida, through FAC 14-60.007, provides the minimum standards for licensed airports shown in **Table 7-4**. All airports licensed by the state, whether public or private, shall comply with these minimum airfield standards.

**Table 7-4: Runway Safety Areas Standards in FAC 14-60.007**

Runway Safety Areas		
Landing Area Type	Safety Area Length	Safety Area Width
Runway (Not Paved)	End of Runway	120 Feet
Runway (Paved)	240 Feet Beyond End of Runway	120 Feet
Ultralight	300 Feet	150 Feet
Heliport	20 Feet Beyond FATO <sup>1</sup>	20 Feet Beyond FATO <sup>1</sup>

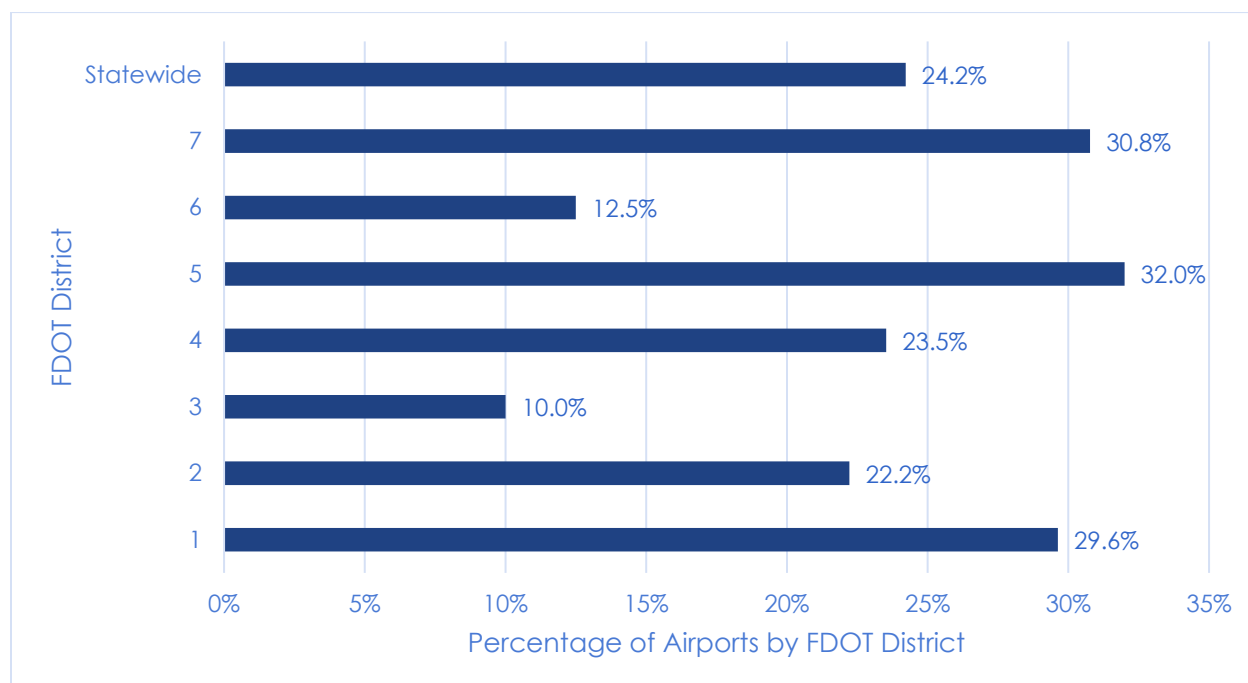
Runway Safety Areas		
Landing Area Type	Safety Area Length	Safety Area Width
Seaplane	N/A	N/A

Source: Florida Administrative Code (FAC) 14-60.007

<sup>1</sup> FATO = Final Approach and Take-Off area

As part of their regularly scheduled airport inspections, FDOT identifies any inconsistencies in RSA standards on each runway at an airport. Following each inspection, runways that are not in compliance with FAC 14-60.007 are identified (Note: This PI is based on compliance with FAC 14-60.007 standards, not FAA standards). This information is uploaded into the FAD where the type of obstruction is identified. This data was used to assess this PI. As shown in **Figure 7-4**, over 24 percent of airports statewide do not meet RSA standards on their primary runway. Notably, FDOT Districts 1, 5, and 7 have approximately 30 percent of their airports not meeting this threshold on primary runways, while FDOT Districts 3 and 6 have close to 10 percent.

**Figure 7-4: The Percentage of FASP Airports Identified by FDOT Inspection That Do Not Meet Relevant RSA Standards on Their Primary Runway**



Source: Florida Aviation Database (FAD), Florida Aviation System Plan (FASP) Analysis

#### 7.2.1.3 Objective 1.3: Achieve and maintain 100 percent of nonprimary runways at FASP airports in compliance with FAA and FAC 14-60 RSA standards

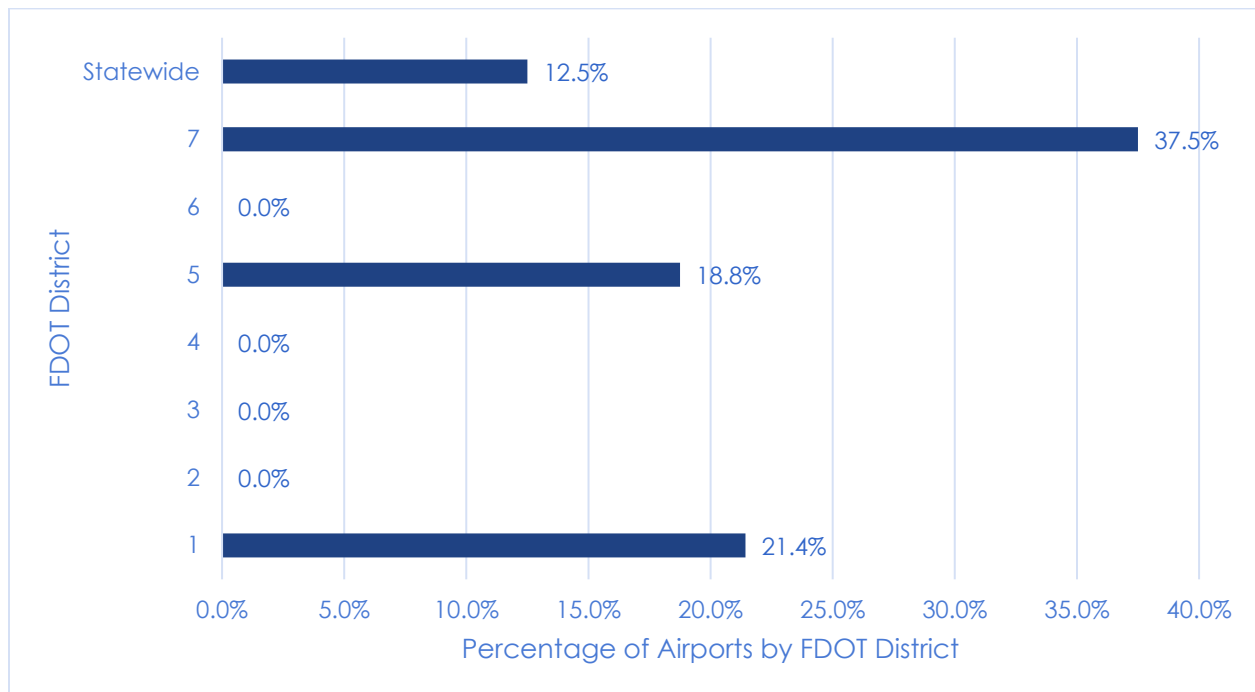
In addition to primary runways, it is important that Florida's airports provide compliant RSAs on all of their runways to promote operational safety in the event of an aircraft overshoot or underrun. The following PM was developed to support this objective:

- PM 1.3.1 – The number of FASP airports identified by FDOT inspection that do not meet relevant RSA standards on their nonprimary runways.

#### 7.2.1.3.1 **PM 1.3.1 – THE NUMBER OF FASP AIRPORTS IDENTIFIED BY FDOT INSPECTION THAT DO NOT MEET RELEVANT RSA STANDARDS ON THEIR NONPRIMARY RUNWAYS**

In addition to understanding RSA compliance for the primary runways, an analysis was completed to see how many airports had deficiencies in the RSA standards for any of their nonprimary runways. Statewide, 72 airports have more than one runway. Based on the findings, just over 12 percent of airports with two runways were identified as having RSA deficiencies on one of their nonprimary runways during FDOT inspections. As shown in **Figure 7-5**, only FDOT Districts 1, 5, and 7 reported having these deficiencies, with FDOT District 7 reporting close to 38 percent of their airports have deficient RSAs for the nonprimary runways. In total, nine airports were identified as having RSA deficiencies during their FDOT inspections.

**Figure 7-5: The Percentage of FASP Airports (with two or more runways) Identified by FDOT Inspection That Do Not Meet Relevant RSA Standards on Their Nonprimary Runways**



Source: Florida Aviation Database (FAD); Florida Aviation System Plan (FASP) Analysis

#### 7.2.1.4 **Objective 1.4: Support protection of people and appropriate land uses and controls of RPZs at FASP airports**

RPZs are “trapezoidal areas off the end of the runway end that serve to enhance the protection of people and property on the ground in the event an aircraft lands or crashes beyond the runway end.” The dimensions of each runway end’s RPZ are based on numerous factors, including aircraft approach categories, airplane design groups, and visibility minimums. Both federal and state guidance strongly encourage airports to remove all potential incompatibilities

from the RPZ area. As such, the following four PMs and PIs were developed to assess this objective at a statewide level.

- PM 1.4.1 – The number of FASP airports, as determined by a statewide database of land use, that control (through fee simple) the land for the RPZs of the primary runway
- PM 1.4.2 – The number of FASP airports, as determined by a statewide database of land use, that control (through fee simple) the land for the RPZs of nonprimary runways
- PI 1.4.1 – The number of FASP airports that have incompatible land uses within the RPZs of the primary runway
- PI 1.4.2 – The number of FASP airports that have incompatible land uses within the RPZs of the nonprimary runways

The two PMs above were identified during Phase I of the FASP to be tracked and measured as part of the FASP Update. This data was anticipated to be supplied through an alternative study expected to be completed by FDOT that would assess compliance with recent amendments to F.S. Ultimately, this statewide database of land use was never completed and obtaining complete data for evaluation of these PMs was not possible as a part of the FASP 2035. In the future, it is recommended that FDOT pursue the completion of this statewide database for future evaluation of these PMs in future updates to the FASP. **Chapter 10 – Recommendations** includes this recommendation.

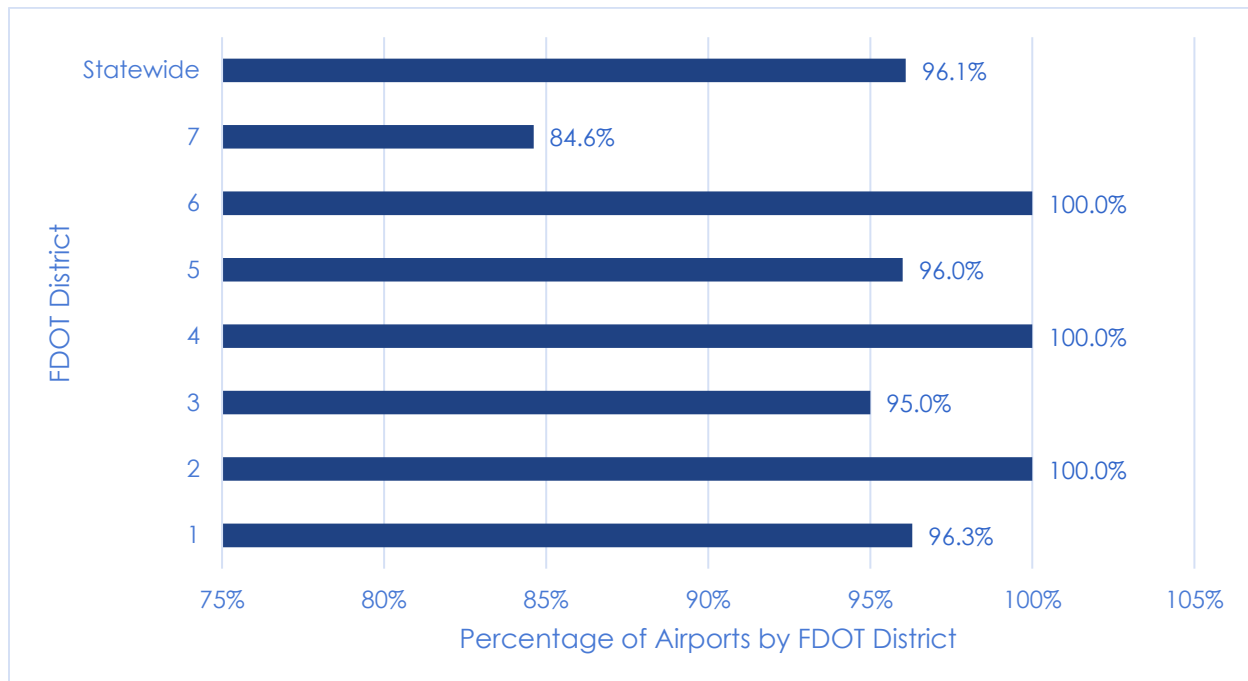
#### 7.2.1.4.1 **PI 1.4.1 – THE NUMBER OF FASP AIRPORTS THAT HAVE INCOMPATIBLE LAND USES WITHIN THE RPZS OF THE PRIMARY RUNWAY**

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An analysis was conducted to identify the presence of incompatible uses in RPZs including roads, vegetation, buildings, or other incompatible elements within the RPZs of each airport's primary runway. The data for this analysis was obtained from airport layout plans (ALPs) on file with the FAA and FDOT. For each runway, the aircraft approach category and airplane design group information as well as the visibility minimums were noted. This information was then used to identify the dimensions of the RPZs based on the standards provided in the *Runway Design Standards Matrix in FAA Advisory Circular 150/5300-13A*. Using these dimensions, a visual analysis was conducted, overlaying Google Earth aerials to determine if any incompatible land uses could be identified. Data to develop the RPZs came from ALPs on file with the FAA and FDOT.

As identified in **Figure 7-6**, approximately 96 percent of Florida's airports were found to have at least one incompatible use within the RPZs of their primary runway. In three FDOT Districts, the primary runway RPZs for all airports were noted to have incompatible uses. No FDOT District was determined to have less than 80 percent of their airports with having incompatible uses in the RPZ of their primary runway, with many reporting over 90 percent. RPZ protection is a significant issue throughout Florida's airport system.

**Figure 7-6: The Percentage of FASP Airports That Have Incompatible Land Uses within the RPZs of the Primary Runway**

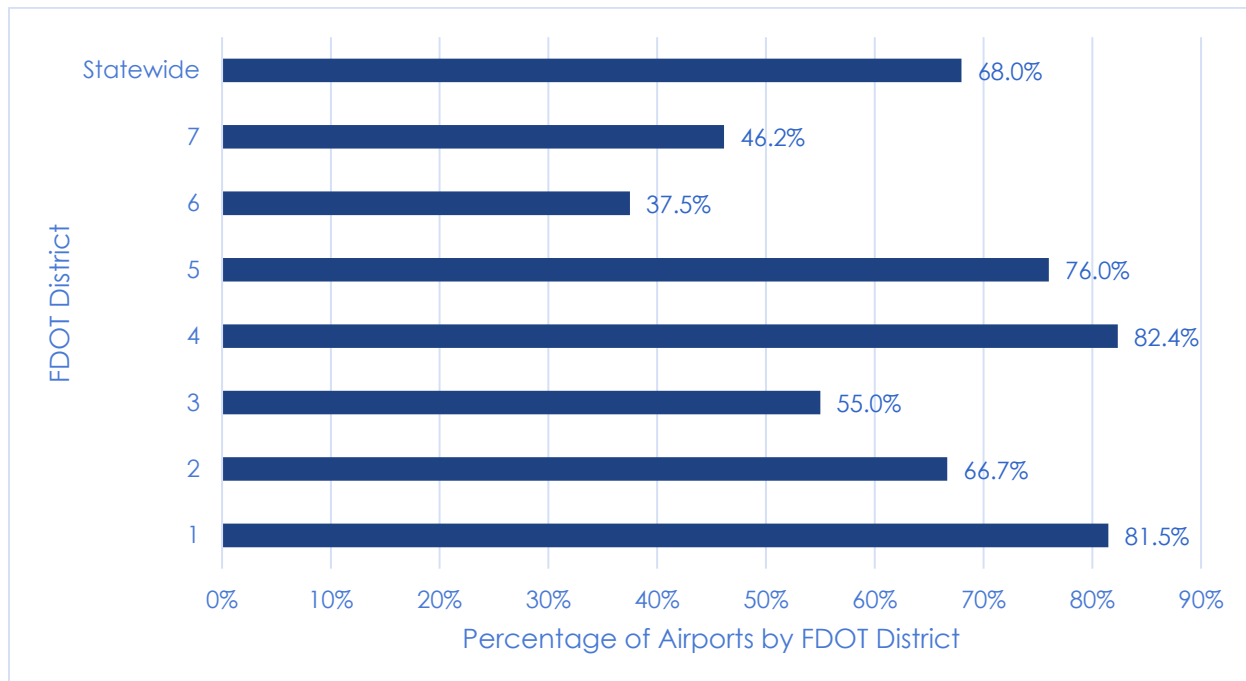


Source: Airport Layout Plans (ALPs); Florida Aviation System Plan (FASP) Analysis

#### 7.2.1.4.2 PI 1.4.2 – THE NUMBER OF FASP AIRPORTS THAT HAVE INCOMPATIBLE LAND USES WITHIN THE RPZS OF THE NONPRIMARY RUNWAYS

In addition to analyzing the RPZs of Florida airports' primary runways, a review of incompatible uses in the RPZs of the nonprimary runways was also conducted. As shown in **Figure 7-7**, 68 percent of airports have incompatible uses within the RPZ of their nonprimary runways. Two FDOT Districts, 1 and 4, both reported over 80 percent of their airports having incompatible uses in the RPZ of a nonprimary runway while FDOT Districts 2, 3, and 5 all had over 50 percent of airports with incompatible uses.

**Figure 7-7: The Percentage of FASP Airports That Have Incompatible Land Uses within the RPZs of the Nonprimary Runways**



Source: Airport Layout Plans (ALPs); Florida Aviation System Plan (FASP) Analysis

#### 7.2.1.5 Objective 1.5: Achieve compliance with F.S. regarding security plans

Florida takes compliance with F.S. very seriously. The ability of airports to meet state statutes regarding security plans was evaluated to determine compliance. The following PI was developed to support this objective:

- PI 1.5.1 – The number of FASP airports with a runway greater or equal to 5,000 feet in length that report having a security plan.

##### 7.2.1.5.1 PI 1.5.1 – THE NUMBER OF FASP AIRPORTS WITH A RUNWAY GREATER OR EQUAL TO 5,000 FEET IN LENGTH THAT REPORT HAVING A SECURITY PLAN

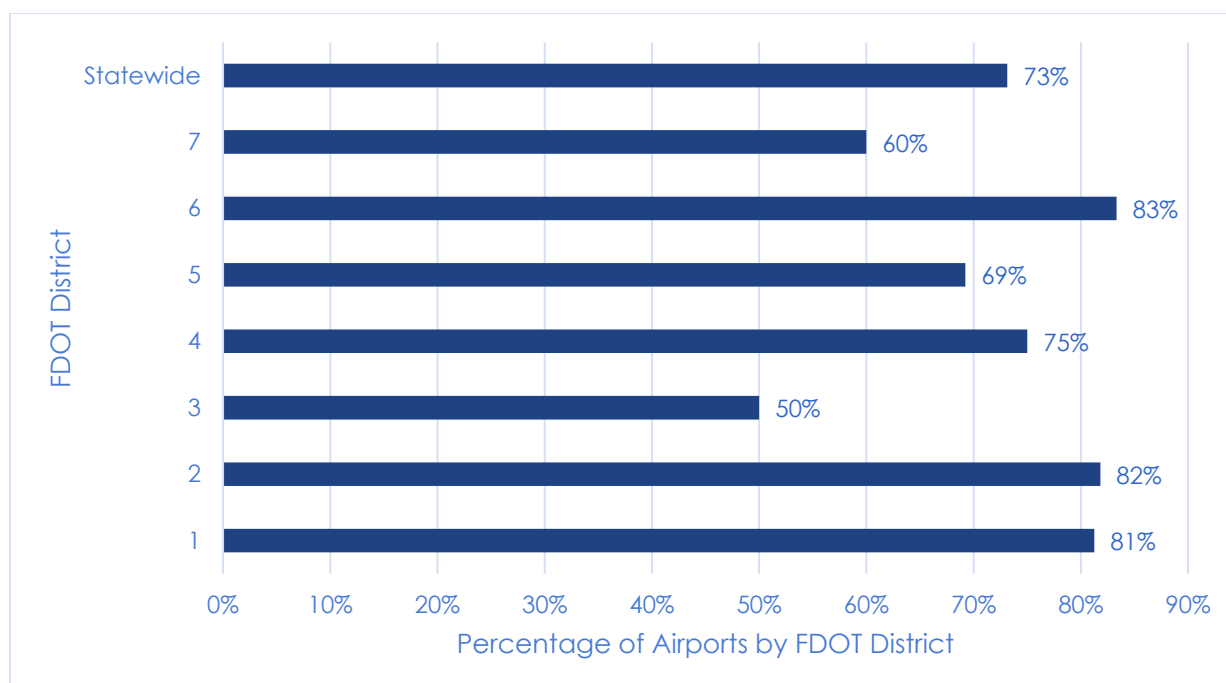
Security at all airports is important, but as the facilities at an airport become more complex, having a detailed security plan in place is important to ensure the continued security of the airport. As an airport's storage capacity and use increase, security becomes even more important. Additionally, per F.S. Chapter 330:

"After initial licensure, a license of a publicly or privately owned GA airport that is open to the public, that has at least one runway greater than 4,999 feet in length, and that does not host scheduled passenger-carrying commercial service operations regulated under 14 C.F.R. Part 139 shall not be renewed or reissued unless an approved security plan has been filed with the department, except when the department determines that the airport is working in good faith toward completion and filing of the plan."

Security plans can provide information on several different elements of the airport, including fencing, closed caption TV (CCTV), perimeter access gates, and numerous other components. For this analysis, airports with at least one runway longer than 4,999 feet were evaluated to determine if they had a security plan on file with FDOT. Both the runway data and security plan information were obtained from the FAD.

As shown in **Figure 7-8**, statewide, 73 percent of airports with runways of at least 5,000 feet had a security plan on file with FDOT, indicating that 27 percent of airports with a runway of at least 5,000 feet do not have a security plan on file. Statewide, 38 percent of all airports were found to have a runway of at least 5,000 feet and a security plan on file with FDOT. Most notably, FDOT District 6 reported over 83 percent of the required airports have a security plan, while FDOT Districts 3 and 7 had 50 and 60 percent, respectively. All other FDOT Districts reported having between 70 and 85 percent of airports meeting this PI. Figure 7-8 provides a summary of this PI statewide.

**Figure 7-8: The Percentage of FASP Airports with a Runway Greater or Equal To 5,000 Feet in Length That Report Having a Security Plan**



Source: Florida Aviation Database (FAD); Florida Aviation System Plan (FASP) Analysis

#### **7.2.1.6 Objective 1.6: Ensure FASP airports can maintain operational capabilities during disasters**

Disasters, both natural and manmade, can have serious effects on communities, states, and residents. Being able to remain operational throughout such tragedies is critical to the movement of people, goods, and equipment to service affected areas. To assess this, three PIs were evaluated to determine how Florida's airports are prepared to remain operational during a disaster. These PIs include:



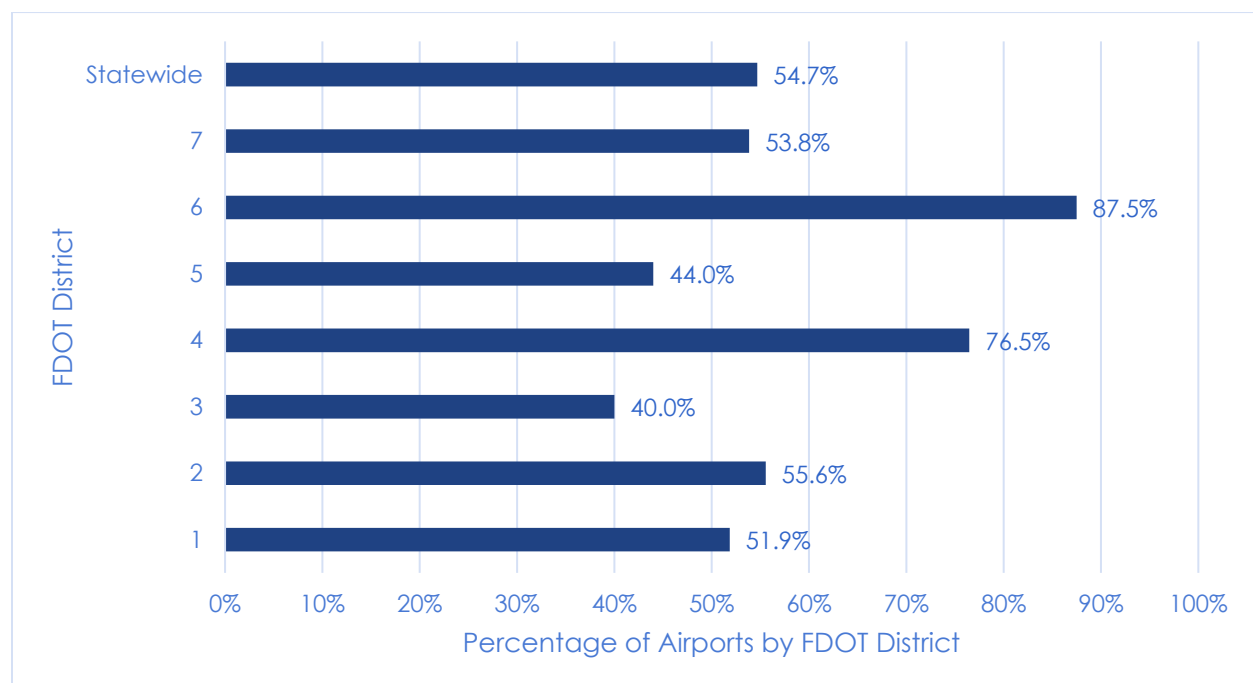
- PI 1.6.1 – The number of FASP airports with standby emergency power for airfield lighting
- PI 1.6.2 – The number of FASP airports with standby emergency power for fueling operations
- PI 1.6.3 – The number of FASP airports with standby emergency power for its terminal

Together, the performance of these PIs identifies how prepared airports statewide are to remain operational following a disaster. Data for these PIs was collected as part of a statewide survey to airports and are self-reported. Brief summaries of each of these PIs are provided in **Figure 7-9** through **Figure 7-11**.

#### 7.2.1.6.1 PI 1.6.1 – THE NUMBER OF FASP AIRPORTS WITH STANDBY EMERGENCY POWER FOR AIRFIELD LIGHTING

As shown in Figure 7-9, over 54 percent of airports statewide reported having standby emergency power for airfield lighting. This is important for emergencies because it allows for continued nighttime or low visibility operations even if local power has been cut off.

**Figure 7-9: The Percentage of FASP Airports with Standby Emergency Power for Airfield Lighting**

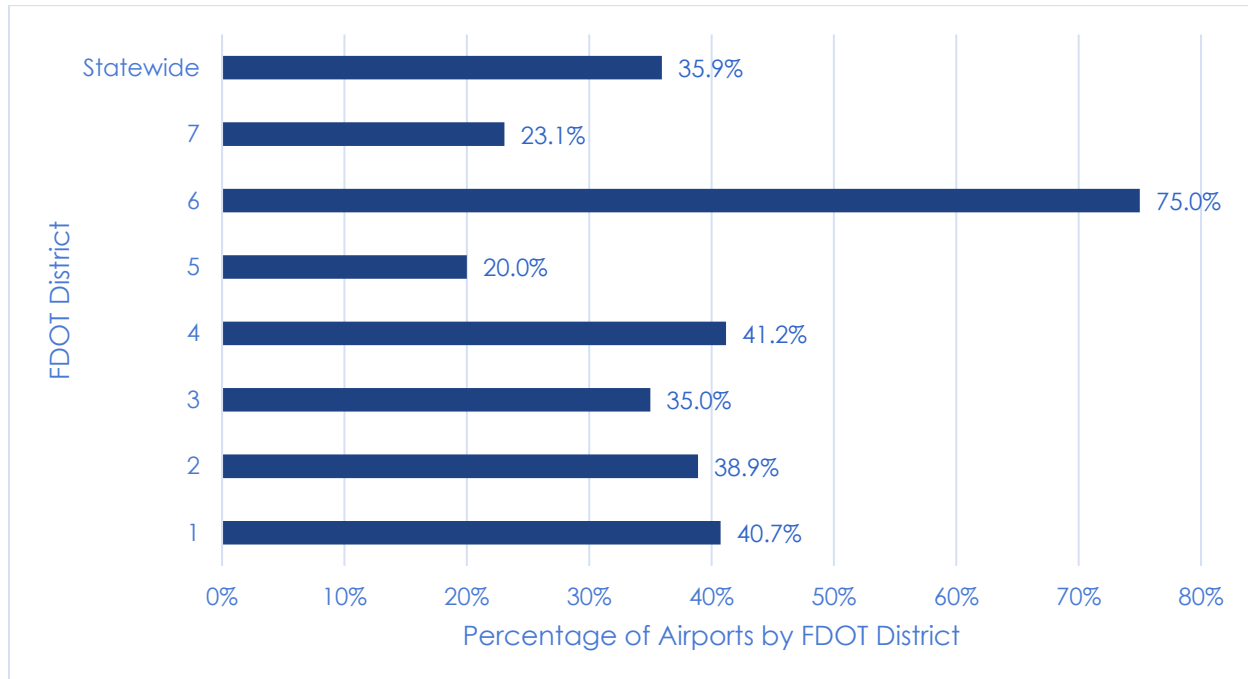


Source: Airport Survey; Florida Aviation System Plan (FASP) Analysis

#### 7.2.1.6.2 PI 1.6.2 – THE NUMBER OF FASP AIRPORTS WITH STANDBY EMERGENCY POWER FOR FUELING OPERATIONS

As shown in **Figure 7-10**, close to 36 percent of airports statewide reported having standby emergency power for fueling operations. It is important to be able to provide fuel to emergency responders, even if there is no power, to ensure that emergency services remain operational throughout a disaster.

**Figure 7-10: The Percentage of FASP Airports with Standby Emergency Power for Fueling Operations**

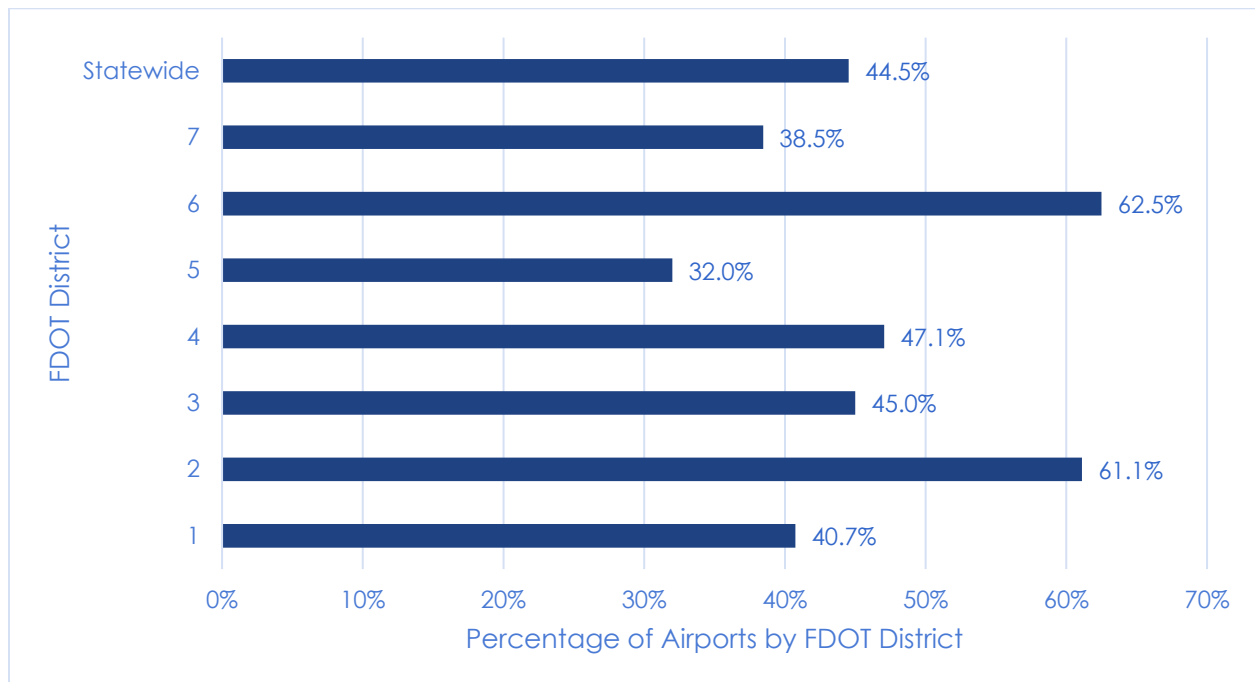


Source: Airport Survey; Florida Aviation System Plan (FASP) Analysis

#### 7.2.1.6.3 PI 1.6.3 – THE NUMBER OF FASP AIRPORTS WITH STANDBY EMERGENCY POWER FOR THEIR TERMINAL

As shown in Figure 7-11, over 44 percent of airports statewide have standby emergency power for their terminals. Keeping terminals open for operations allows for the continued movement of people, which is critical following a disaster.

**Figure 7-11: The Percentage of FASP Airports with Standby Emergency Power for Their Terminal**



Source: Airport Survey, Florida Aviation System Plan (FASP) Analysis

#### **7.2.1.7 Objective 1.7: Ensure FASP airports address wildlife incompatible uses through appropriate means**

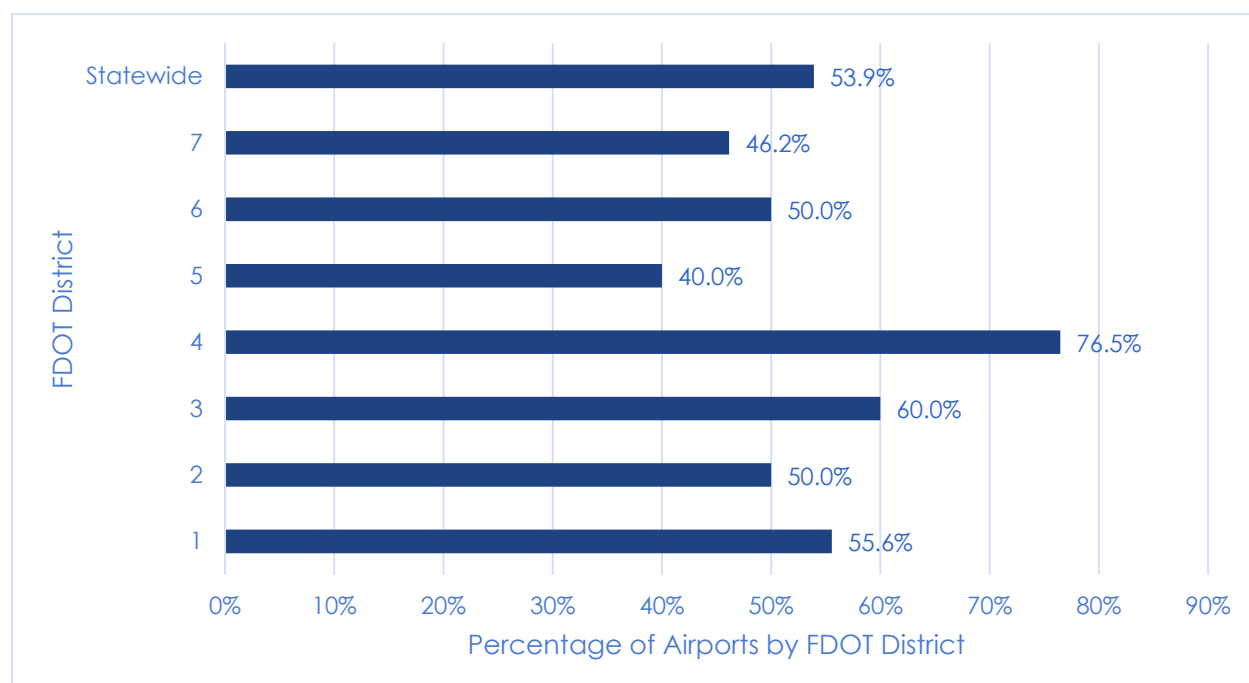
In recent years, the FAA has emphasized the need to control wildlife near airports. Determining the appropriate measures to do this requires conducting at least a site visit, with the potential need for more aggressive methods to assess and/or manage wildlife hazards that are identified. The following PM was developed to support this objective:

- PM 1.7.1 – The number of FASP airports with completed wildlife hazard site visits, assessments, and/or management plans.

##### **7.2.1.7.1 PM 1.7.1 – THE NUMBER OF FASP AIRPORTS WITH COMPLETED WILDLIFE HAZARD SITE VISITS, ASSESSMENTS, AND/OR MANAGEMENT PLANS**

Wildlife can present as an incompatible use at airports when animals are in proximity to an airfield and cause concern for the safe and efficient operation of users. Though birds are the most common type of wildlife hazard at an airport, representing 97 percent of reported strikes, animals such as deer, coyotes, and alligators have also been reported in Florida. To mitigate against these threats, airports can perform wildlife site visits to understand what potential threats exist for their airport or develop wildlife hazard assessments or management plans to develop a strategy for mitigating against these hazards. To assess this PM, data was collected statewide through a survey to airports to determine which airports had completed wildlife hazard site visits, assessments, and/or management plans. As shown in **Figure 7-12**, nearly 54 percent of airports statewide reported completing at least one wildlife hazard document.

**Figure 7-12: The Percentage of FASP Airports with Completed Wildlife Hazard Site Visits, Assessments, and/or Management Plans**



Source: Airport Survey; Florida Aviation System Plan (FASP) Analysis

#### **7.2.1.8 Objective 1.8: Support FASP airports in meeting FAA airfield geometric design criteria to promote operational safety**

In recent years, federal standards for airfield geometric design have been amended to increase the overall operational safety of airports. This includes the development of new taxiway design standards, as well as the identification of airport “hot spots” to identify where there are significant deficiencies in airfield geometry. For this objective, two PMs were developed to evaluate how well Florida’s system is meeting FAA airfield geometric design criteria.

- PM 1.8.1 – The number of FAA-obligated FASP airports that meet current FAA taxiway design standards
- PM 1.8.2 – The number of FAA-obligated FASP airports that have FAA-designated airfield “hot spots”

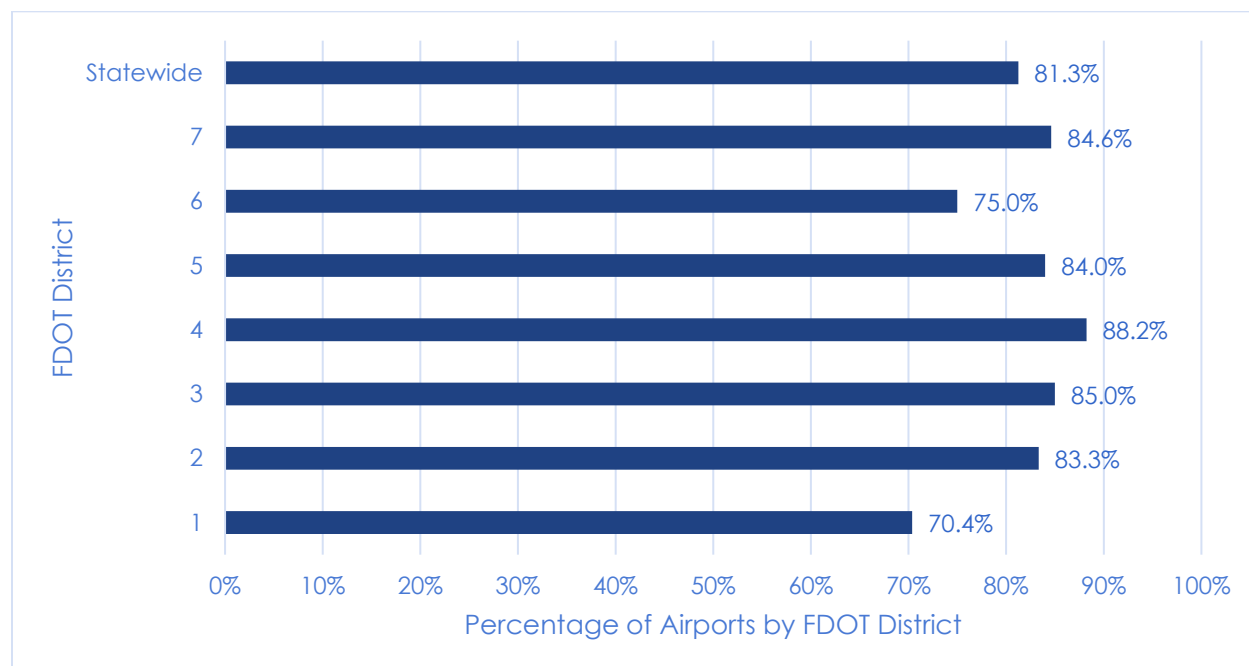
A summary of these PMs is provided in the following sections.

##### **7.2.1.8.1 PM 1.8.1 – THE NUMBER OF FAA-OBLIGATED FASP AIRPORTS THAT MEET CURRENT FAA TAXIWAY DESIGN STANDARDS**

The current FAA design standards identify three types of taxiway design deficiencies: direct runway access, wide expanse of pavement, and three-node conflicts. For this PM, only airports with paved runways were evaluated. (Note: Sixteen grass strip airports were not included in this PM). To perform this analysis, a visual survey was completed using Google Earth to determine if

any of these deficiencies existed. As shown in **Figure 7-13**, approximately 81 percent of Florida's airports are not meeting the current FAA taxiway design standard, with all FDOT Districts reporting over 70 percent of airports not meeting the criteria.

**Figure 7-13: The Percentage of FAA-Obligated FASP Airports That Do Not Meet Current FAA Taxiway Design Standards**

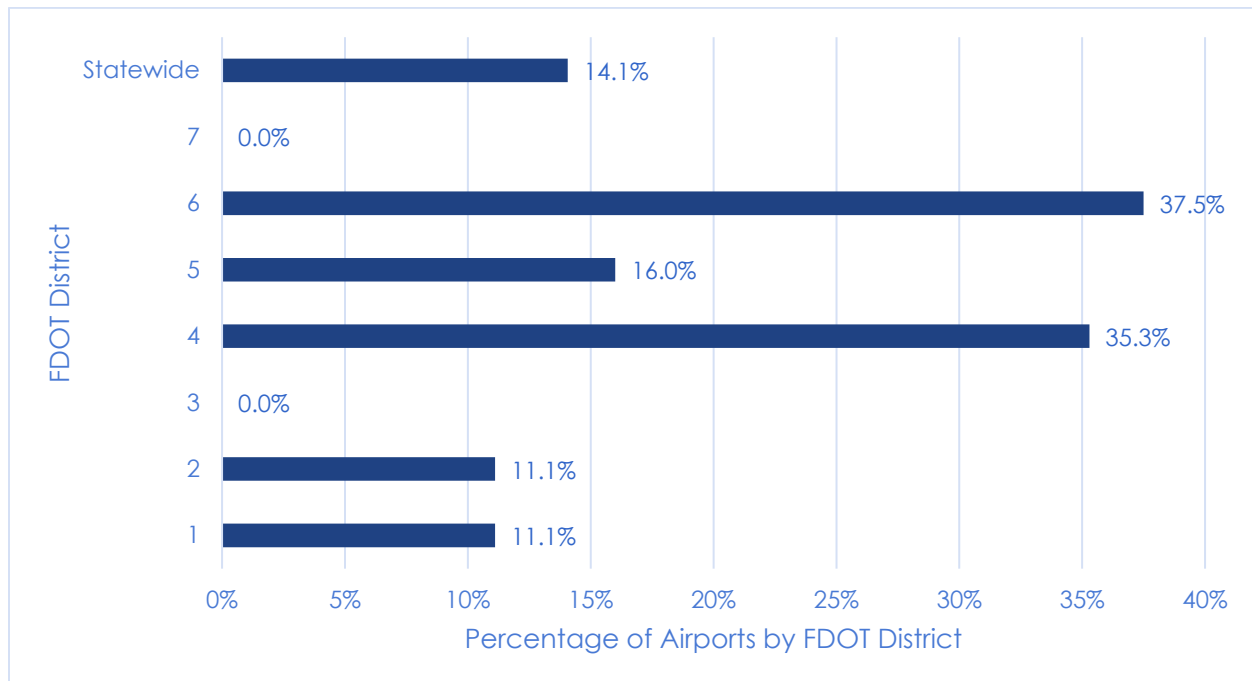


Source: Statewide review of aerials; Florida Aviation System Plan (FASP) Analysis

#### 7.2.1.8.2 **PM 1.8.2** – THE NUMBER OF FAA-OBLIGATED FASP AIRPORTS THAT HAVE FAA DESIGNATED AIRFIELD "HOT SPOTS"

According to the FAA, "A 'hot spot' is a runway safety related problem area or intersection on an airport. Typically, it is a complex or confusing taxiway/taxiway or taxiway/runway intersection. A confusing condition may be compounded by a miscommunication between a controller and a pilot, and may cause an aircraft separation standard to be compromised. The area may have a history of surface incidents or the potential for surface incidents." To assess this PM, the FAA's hot spot list was reviewed to determine the number of Florida airports that were reported to have hot spots, as defined by the FAA. As shown in **Figure 7-14**, just over 14 percent of airports statewide were identified by FAA to have designated hot spots. Notably, FDOT Districts 4 and 6 reported having over 35 percent of their airports having FAA-designated hot spots. Two FDOT Districts, 3 and 7, reported having no FAA-designated hot spots.

**Figure 7-14: The Percentage of FAA-Obligated FASP Airports That Have FAA-Designated Airfield "Hot Spots"**



Source: Federal Aviation Administration (FAA) Hot Spot Report

### 7.2.2 Goal 2: Contribute to operational efficiency, economic growth, and competitiveness while remaining sensitive to Florida's natural environment

There are many factors that influence airports and their ability to serve residents and visitors of a community. This goal is meant to assess how well airports are connected to their community based on numerous intermodal service factors as well as how well airports are marketing and promoting themselves through the development of business plans, master plans, and sustainability plans. A summary of the objectives and PIs that are associated with this goal are shown in **Table 7-5**. There are no PMs associated with this goal.

**Table 7-5: Goal 2 Objectives and Performance Indicators**

Objectives		Performance Indicators	
2.1	Encourage revenue generation at FASP airports to enhance airport self-sufficiency by assisting airports to develop business plans in accordance with FDOT's <i>Florida General Aviation Airport Business Plan Guidebook</i> .	2.1.1	The number of FASP airports that report having a business/marketing plan.

Objectives		Performance Indicators	
2.2	Enhance the competitiveness of Florida Strategic Intermodal System (SIS) airports for intermodal enhancement funding. Provide seamless transportation for Florida's travelers from point of departure to destination.	2.2.1	The number of commercial service SIS airports reporting direct bus service.
		2.2.2	The number of commercial service SIS airports reporting direct passenger rail connections.
		2.2.3	The percentage of levels of service (LOS) on SIS Highway Airport Connectors that are LOS A through C (FDOT PM). <sup>1</sup>
2.3	Encourage economic, environmental, and community sustainability planning for FASP airports.	2.3.1	The number of airports that have plans on file with FDOT (master plans and sustainability plans).

Source: Florida Aviation System Plan (FASP) 2035

<sup>1</sup> FDOT PM = Aviation PMs that are reported in the FDOT Source Book

#### **7.2.2.1 Objective 2.1: Encourage revenue generation at FASP airports to enhance airport self-sufficiency by assisting airports to develop business plans in accordance with FDOT's *Florida General Aviation Airport Business Plan Guidebook***

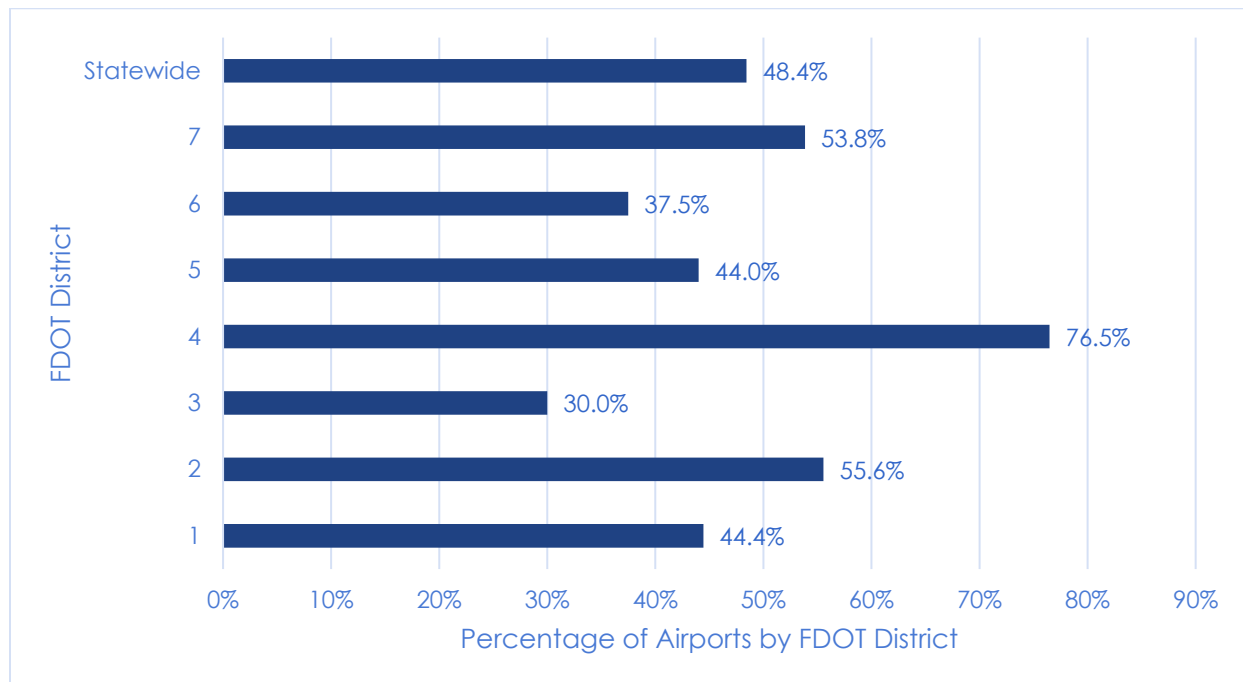
Airports are encouraged to be self-sufficient, generating income to cover the costs of operations and capital needs. For many airports, this is a challenging goal. FDOT developed the *Florida General Aviation Airport Business Plan Guidebook* to provide suggestions and ideas for addressing this goal. The following PI was developed to support this associated objective:

- PI 2.1.1 – The number of FASP airports that report having a business/marketing plan.

##### **7.2.2.1.1 PI 2.1.1 – THE NUMBER OF FASP AIRPORTS THAT REPORT HAVING A BUSINESS/MARKETING PLAN**

Being self-sufficient is a goal of every airport in Florida and is included in both federal and state grant assurances. As such, FDOT has provided resource documents such as the *Business Plan Guidebook* to help airports develop and implement business and marketing plans to promote revenue generating development at airports. This PI evaluated the number of airports in Florida that reported having a business or marketing plan. Data for this PI was collected from a statewide survey of airports. As shown in **Figure 7-15**, 48.4 percent of airports statewide have completed one of these plans. Most notably, over 75 percent of airports in FDOT District 4 reported having a business or marketing plan.

**Figure 7-15: The Percentage of FASP Airports That Report Having a Business/Marketing Plan**



Source: Statewide survey; Florida Aviation System Plan (FASP) Analysis

#### **7.2.2.2 Objective 2.2: Enhance the competitiveness of Florida SIS airports for intermodal enhancement funding. Provide seamless transportation for Florida's travelers from point of departure to destination**

Intermodal connectivity is a critical aspect of Florida's statewide transportation infrastructure. To support intermodal connectivity, FDOT developed the SIS to promote Florida's most critical transportation facilities. In total, there are 20 SIS airports, 18 commercial service airports, and two GA airports in Florida. To assess this objective, commercial service SIS airports were evaluated using the following PIs:

- PI 2.2.1 – The number of commercial service SIS airports reporting direct bus service
- PI 2.2.2 – The number of commercial service SIS airports reporting direct passenger rail connections
- PI 2.2.3 – The percentage of LOS on SIS Highway Airport Connectors that are LOS A through C

Together, these PIs provide insight as to how well Florida's SIS facilities are providing intermodal access.

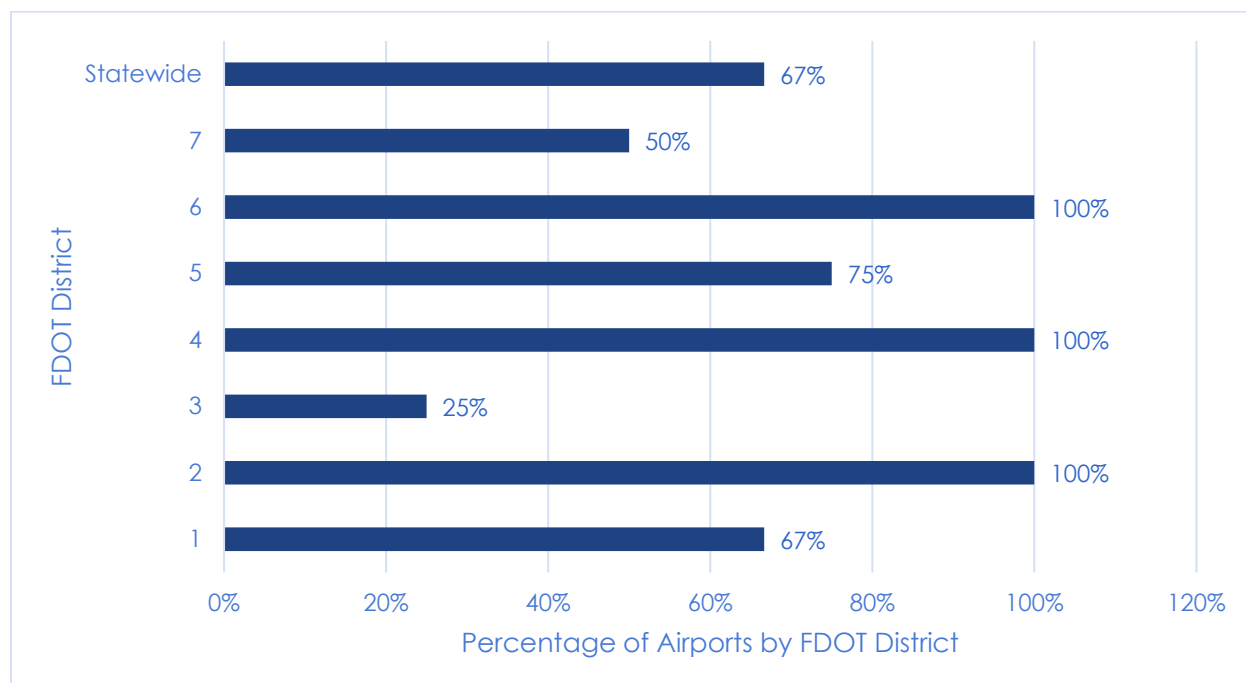
##### **7.2.2.2.1 PI 2.2.1 – THE NUMBER OF COMMERCIAL SERVICE SIS AIRPORTS REPORTING DIRECT BUS SERVICE**

Bus service provides users with a cost-effective mode of transportation that can provide connections throughout most metropolitan areas in Florida. Bus service is commonly provided at a local level, so the services that are provided vary throughout the state. For this analysis, a review was conducted using information available from municipalities to determine if bus



service is provided to the airport. As shown in **Figure 7-16**, 67 percent of Florida's commercial service SIS airports were found to have direct bus service available. Statewide, three FDOT Districts—2, 4, and 6—reported having 100 percent of SIS commercial service airports with bus service while FDOT District 3 reported only 25 percent.

**Figure 7-16: The Percentage of Commercial Service SIS Airports Reporting Direct Bus Service**

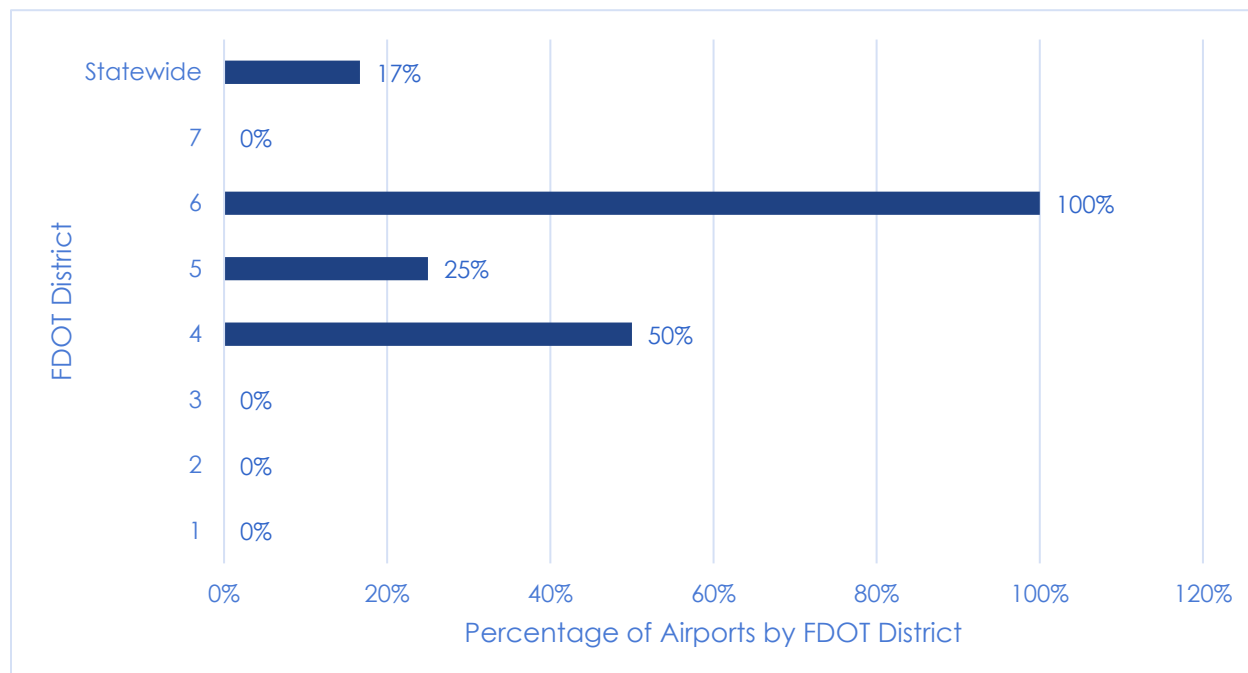


Source: Statewide review of local bus routes; Florida Aviation System Plan (FASP) Analysis

#### 7.2.2.2.2 PI 2.2.2 – THE NUMBER OF COMMERCIAL SERVICE SIS AIRPORTS REPORTING DIRECT PASSENGER RAIL CONNECTIONS

Passenger rail provides users with access to airports via grade separated facilities. Passenger rail is very expensive to develop and incorporate into an airport environment, so very few airports in Florida reported having service. For this analysis, a review was conducted using information available from municipalities to determine if rail service is provided to the airport. As shown in **Figure 7-17**, just 17 percent of SIS commercial service airports in the state reported having a passenger rail connection. Notably, all the SIS commercial service airports in FDOT District 6 have passenger rail connections, while FDOT Districts 4 and 5 have 50 and 25 percent, respectively. No other FDOT Districts were found to have passenger rail connections.

**Figure 7-17: The Percentage of Commercial Service SIS Airports Reporting Direct Passenger Rail Connections**

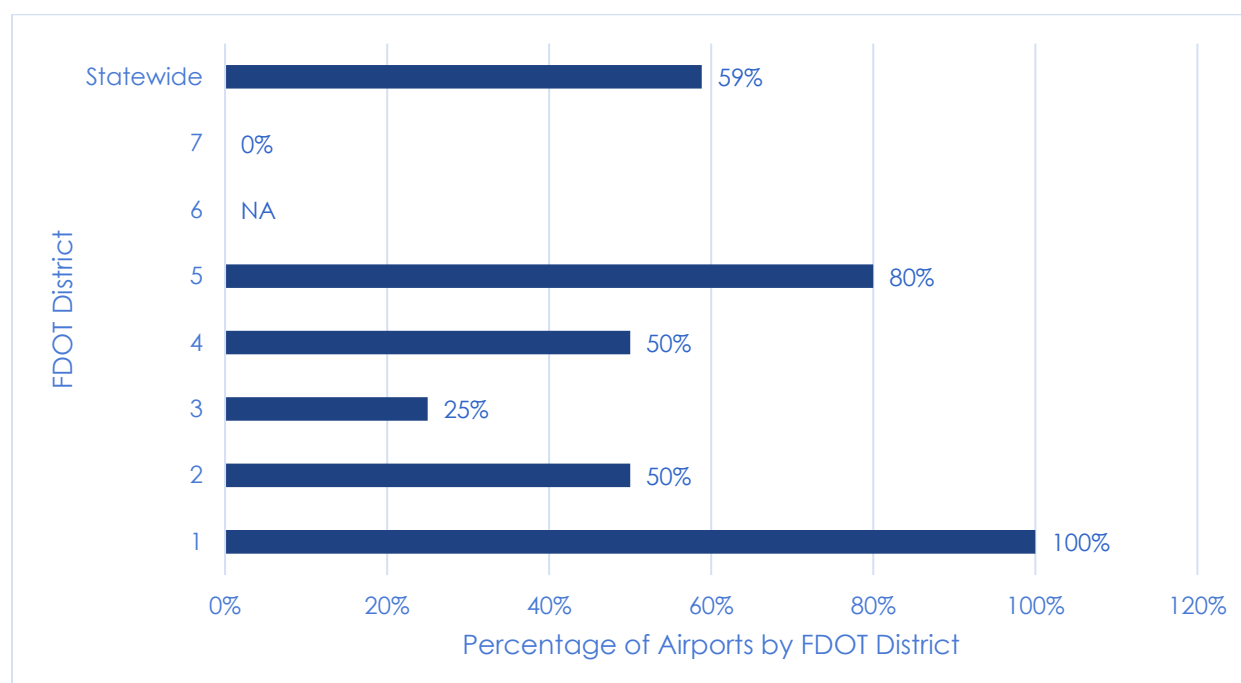


Source: Statewide review of rail connections; Florida Aviation System Plan (FASP) Analysis

#### 7.2.2.2.3 **PI 2.2.3** – THE PERCENTAGE OF LOS ON SIS HIGHWAY AIRPORT CONNECTORS THAT ARE LOS A THROUGH C

LOS is a metric that provides a score for how well traffic can move on a roadway. LOS scores range from A through F, with A being free flowing traffic and F being heavy congestion and delays. All SIS airports have direct highway connections known as SIS connectors. For this PI, these SIS connectors were evaluated for their LOS in the areas leading into the airports. LOS scores were obtained from local planning documents or transportation plans. LOS scores are not provided at a statewide level. **Figure 7-18** provides a summary of the percentage of all SIS airports that reported having an LOS of A, B, or C on their highway connections. (Note: LOS data was not available for three of the 20 SIS airports). As shown, 59 percent of SIS commercial service airports that data was available for had a LOS of C or better for their SIS airport connectors. FDOT Districts 1 and 5 both reported having over 80 percent of SIS airports with this LOS while FDOT Districts 2 and 4 all reported 50 percent of their airports achieving this metric. Data for FDOT District 6 was not available, so no analysis was completed, while FDOT District 7 only had data for one airport, whose LOS standard was below C.

**Figure 7-18: The Percentage of LOS on SIS Highway Airport Connectors That Are LOS A Through C**



Source: Local transportation plans; Florida Aviation System Plan (FASP) Analysis

### 7.2.2.3 Objective 2.3: Encourage economic, environmental, and community sustainability planning for FASP airports

Planning is a first step in evaluating airport needs and can encompass a wide range of activities. From master plans to economic impact studies, environmental documentation, and sustainability planning, airports conduct planning efforts to better understand their future needs and associated impacts. FDOT is interested in maintaining copies of these plans on file for use in working with airports to support aviation needs. The following PI was developed to support this objective:

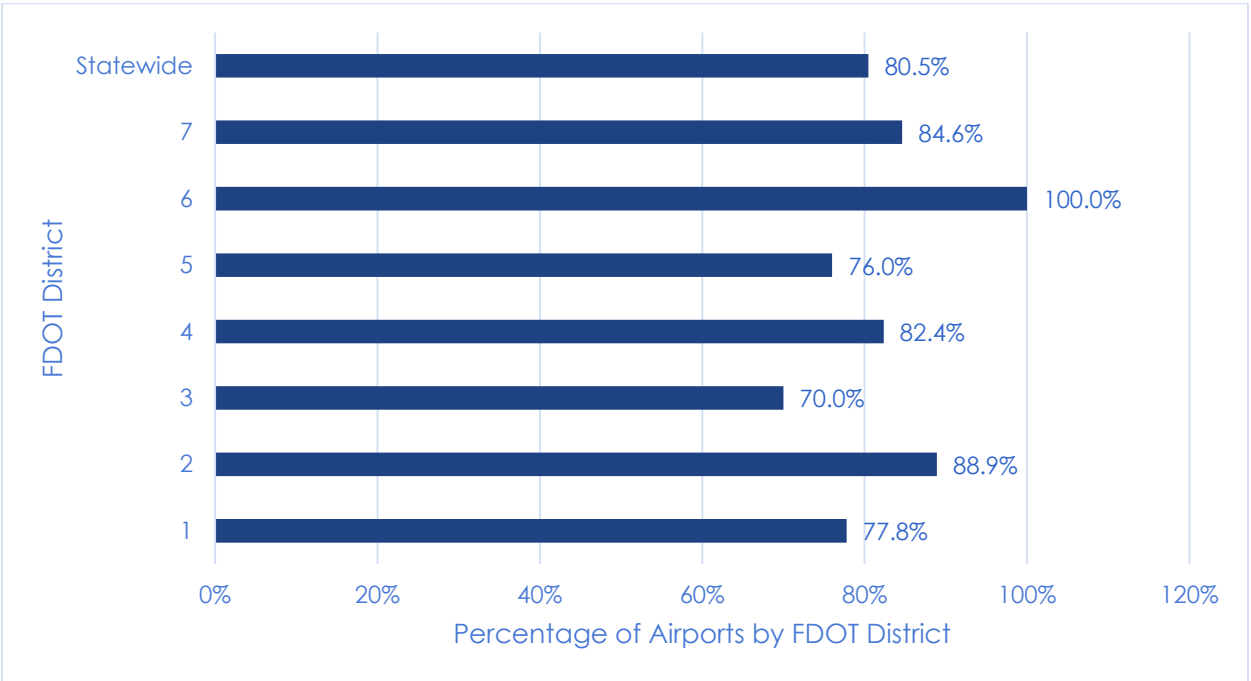
- PI 2.3.1 – The number of airports that have plans on file with FDOT (master plans and sustainability plans).

#### 7.2.2.3.1 PI 2.3.1 – THE NUMBER OF AIRPORTS THAT HAVE PLANS ON FILE WITH FDOT (MASTER PLANS AND SUSTAINABILITY PLANS)

Planning documents are important to airports, as they identify airport needs and establish future development or other activities. These documents are also important to FDOT, as they assist in the evaluation of project and funding needs. For this PI, the number of airports that have master plans and sustainability plans on file with FDOT was analyzed to see how well FDOT is doing in collecting this information. Data for this PI was provided by FDOT and include the date the plan was completed as well as the date of the last ALP. It should be noted that privately owned airports are not required to provide master plans to FDOT; therefore, they are responsible for a significant percentage of airports that do not have master plans on file.

Because sustainability planning is a relatively new initiative for the state and many airports, data for these plans is limited; therefore, only data for master plans is presented. As shown in **Figure 7-19**, over 80 percent of airports statewide have master plans on file with FDOT. Notably, FDOT District 6 reported 100 percent of airports having master plans on file and no FDOT District reported having less than 70 percent of airports on file with FDOT.

**Figure 7-19: The Percentage of Airports That Have Master Plans on File with FDOT**



Source: Florida Department of Transportation (FDOT) Master Plan Records; Florida Aviation System Plan (FASP) Analysis

**7.2.3 Goal 3: Support and enhance the national position of leadership and prominence held by Florida’s aviation industry**

Florida is a known leader in the aviation industry; therefore, the goal to support and enhance the position of leadership and prominence held by Florida’s aviation industry is critical to the long-term success of Florida’s aviation industry. A summary of the objectives and PIs that are associated with this goal are shown in **Table 7-6**. There are no PMs associated with this goal.

**Table 7-6: Goal 3 Objectives and Performance Indicators**

Objectives		Performance Indicators	
3.1	Maintain Florida's status as a national leader in supporting aviation.	3.1.1	The amount of Florida's aviation funding in relation to other states.
		3.1.2	The amount of Florida's aviation economic impact in relation to other states.

Objectives		Performance Indicators	
		3.1.3	The number of pilot certificates held in Florida (by category).
		3.1.4	The number of U.S. Parachute Association (USPA) licenses issued in Florida.
		3.1.5	The number of revenue passengers boarding aircraft (FDOT PM). <sup>1</sup>
		3.1.6	The tonnage of all air cargo landed at FASP airports (FDOT PM). <sup>1</sup>
		3.1.7	The value of air cargo transported at FASP airports (FDOT PM). <sup>1</sup>
		3.1.8	The number of based aircraft in Florida.

Source: Florida Aviation System Plan (FASP) 2035

<sup>1</sup> FDOT PM = Aviation PMs that are reported in the FDOT Source Book

### 7.2.3.1 Objective 3.1: Maintain Florida's status as a national leader in supporting aviation

Florida has one of the most dynamic and unique aviation systems in the world. Boasting 128 public-use airports, including 20 designated commercial service airports and 10 national ASSET category GA airports, Florida is truly a national leader in supporting aviation. A series of eight PIs were developed to evaluate how well the objective is being met:

- PI 3.1.1 – The amount of Florida's aviation funding in relation to other states
- PI 3.1.2 – The amount of Florida's aviation economic impact in relation to other states
- PI 3.1.3 – The number of pilot certificates held in Florida (by category)
- PI 3.1.4 – The number of USPA licenses issued in Florida
- PI 3.1.5 – The number of revenue passengers boarding aircraft (FDOT PM)
- PI 3.1.6 – The tonnage of all air cargo landed at FASP airports (FDOT PM)
- PI 3.1.7 – The value of air cargo transported at FASP airports (FDOT PM)
- PI 3.1.8 – The number of based aircraft in Florida

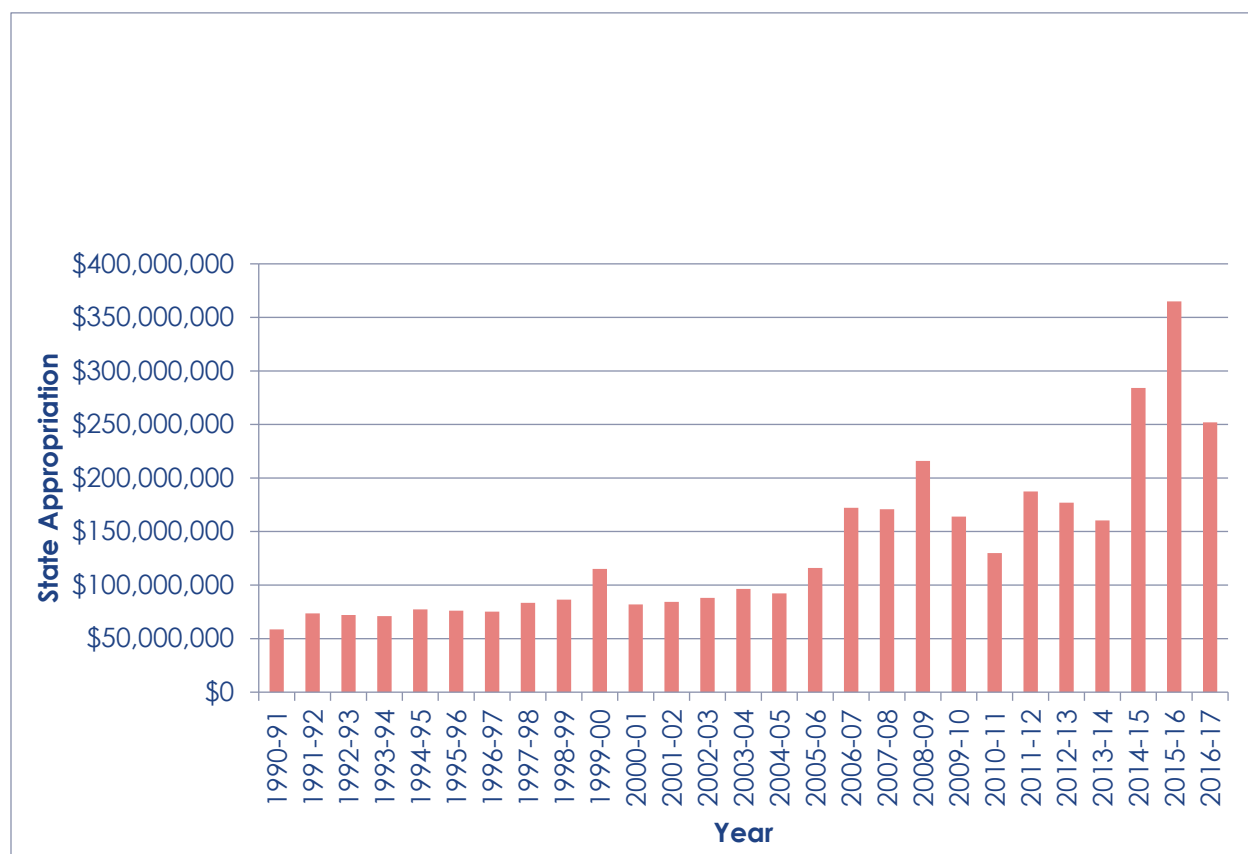
A summary of these PIs is provided in the following sections.

#### 7.2.3.1.1 PI 3.1.1 – THE AMOUNT OF FLORIDA'S AVIATION FUNDING IN RELATION TO OTHER STATES

FDOT supports Florida's airports through a robust state grant program. In fact, per the *Florida Aviation Project Handbook*, "as of January 1, 2014, a 6.9¢ per gallon tax is imposed on qualifying aviation fuel sales. After administrative costs and commercial carrier refunds are obtained out of the collected taxes, 92 percent of the remaining aviation fuel tax is deposited into the State Transportation Trust Fund (STTF). The outstanding eight percent of the remainder is deposited into the general revenue fund. Over \$3 billion has been appropriated by the Florida Legislature towards the Aviation program since 1990...The Florida Aviation Grant Program is funded from the

STTF. The aviation industry contributes to this fund through Florida's aviation fuel tax. By Statute, at least 15 percent of the STTF revenues must be set aside for the office of Freight, Logistics and Passenger Operations (FLP). The FLP office then allocates funding to the four modal offices, including the Aviation and Spaceports Office." In fiscal year (FY) 2016/2017, over \$250 million was programmed for the state aviation grant program. As much as \$370 million was previously allocated in FY 2015/2016. For reference, previous years of funding are provided in **Table 7-7**.

**Table 7-7: Florida's Historic State Aviation Funding**



Source: Florida Department of Transportation (FDOT) Project Handbook, 2016

#### 7.2.3.1.2 **PI 3.1.2** – THE AMOUNT OF FLORIDA'S AVIATION ECONOMIC IMPACT IN RELATION TO OTHER STATES

Airports are a significant driver of economic activity throughout the U.S. Because of the important role that airports play in both state and local economies, this PI identifies how Florida's aviation economic impact compares to other states. It should be noted that Florida, as well as many other states, develops its own statewide economic impact studies; however, the timing of the data and the methodologies and statistical programs used vary greatly. As such, the FAA document *The Statewide Impact of Aviation in the U.S. Economy*, of January 2015, was used for this analysis. **Table 7-8** provides a summary of the findings of this report in descending order of

output. As shown, Florida ranks third in total economic output but second in earnings, value added, and jobs.<sup>1</sup>

**Table 7-8: Economic Impact by State**

State	Output (\$ Millions)	Earnings (\$ Millions)	Value Added (\$ Millions)	Jobs	% of GDP	Aviation Related Jobs (% of Total Jobs)
California	168,651	50,478	93,986	1,202,537	4.7	5.8
Texas	97,817	28,958	53,793	777,753	3.8	5.1
<b>Florida</b>	<b>94,047</b>	<b>29,530</b>	<b>55,716</b>	<b>832,608</b>	<b>7.2</b>	<b>8.1</b>
New York	80,663	22,198	48,293	552,473	4	4.9
Illinois	51,034	15,030	28,924	366,165	4.2	4.9
Washington	48,787	13,723	25,201	335,092	6.7	8.7
Georgia	44,996	13,253	24,661	352,553	5.7	6.5
Arizona	38,161	11,423	21,071	291,313	7.9	8.8
Pennsylvania	31,614	8,860	17,804	258,655	3	3.6
Colorado	29,797	9,165	16,911	243,926	6.2	7.5
Nevada	27,072	8,324	16,168	224,207	12.1	14.7
North Carolina	26,136	7,698	14,481	241,553	3	4.5
Ohio	25,407	7,067	13,486	199,612	2.6	3
Massachusetts	22,727	6,665	13,408	165,894	3.3	3.9
Tennessee	22,528	6,284	12,950	172,768	4.7	4.7
New Jersey	22,523	6,174	13,044	151,833	3	3
Hawaii	21,989	6,771	12,995	187,037	17.9	21.8
Michigan	19,831	5,900	11,299	181,586	2.8	3.5
Connecticut	19,187	4,978	9,757	106,275	4.3	4.8
Missouri	17,431	4,736	9,801	139,127	3.8	3.9
Virginia	16,639	4,703	9,569	134,140	2.1	2.8

<sup>1</sup> The state-level estimates that appear in this report are based on the same methodology as the estimates that appear in the National Report and represent direct and indirect expenditures on aviation-related economic activities. These direct and indirect expenditures are called primary impacts. Civil aviation-related economic activities include: airline operations, airport operations, GA, aircraft related manufacturing, air couriers, visitor expenditures, and travel arrangements. These state-level primary expenditures are entered into the Regional Input-Output Modeling System (RIMS II) for each state to produce estimates of the secondary effects of the expenditures on economic output, earnings, and jobs. These secondary impacts, or induced impacts, comprise spending by businesses and individuals who receive aviation-related direct and indirect expenditures as revenue or earnings.

State	Output (\$ Millions)	Earnings (\$ Millions)	Value Added (\$ Millions)	Jobs	% of GDP	Aviation Related Jobs (% of Total Jobs)
Minnesota	16,526	4,921	9,342	146,029	3.2	4.2
Kansas	13,510	3,228	6,260	77,633	4.5	4.2
Maryland	13,466	3,747	7,826	92,490	2.5	2.7
Utah	12,965	3,861	7,255	118,886	5.6	7
Kentucky	12,543	3,280	7,015	98,017	4	4.1
Indiana	12,162	3,440	6,565	108,684	2.2	3
Oregon	11,933	3,348	6,944	109,310	3.5	4.9
Wisconsin	10,865	3,182	5,981	109,682	2.3	3.1
Louisiana	9,345	2,726	5,103	75,936	2.1	2.9
Alaska	6,847	2,054	3,882	59,870	7.5	13
District of Columbia	6,696	574	3,918	15,188	4	2
Alabama	6,609	1,912	3,552	63,105	1.9	2.5
Oklahoma	6,366	1,895	3,471	61,602	2.2	2.8
South Carolina	6,307	1,856	3,543	59,855	2	2.4
Arkansas	5,409	1,500	2,764	47,188	2.5	3
Nebraska	3,901	1,113	2,242	42,267	2.3	3.4
New Mexico	3,864	1,173	2,180	38,452	3	3.6
Maine	2,938	792	1,493	26,657	2.8	3.3
Iowa	2,927	847	1,651	30,819	1.1	1.5
Mississippi	2,915	803	1,500	23,895	1.5	1.6
Montana	2,772	855	1,580	31,804	3.9	5.1
Idaho	2,702	825	1,547	30,992	2.7	3.5
Rhode Island	2,645	757	1,580	22,443	3	3.8
New Hampshire	2,356	675	1,383	20,768	2	2.5
North Dakota	2,162	571	1,192	20,949	3	3.7
West Virginia	1,617	413	845	12,501	1	1.4
South Dakota	1,359	417	785	15,333	2	2.7
Vermont	1,124	316	622	11,081	2.3	2.6



State	Output (\$ Millions)	Earnings (\$ Millions)	Value Added (\$ Millions)	Jobs	% of GDP	Aviation Related Jobs (% of Total Jobs)
Wyoming	1,045	307	594	10,273	1.5	2.6
Delaware	477	119	275	3,938	0.4	0.7

Source: Federal Aviation Administration (FAA), 2015. [www.faa.gov/air\\_traffic/publications/media/2015-economic-impact-report.pdf](http://www.faa.gov/air_traffic/publications/media/2015-economic-impact-report.pdf)

#### 7.2.3.1.3 PI 3.1.3 – THE NUMBER OF PILOT CERTIFICATES HELD IN FLORIDA (BY CATEGORY)

There are numerous types of pilots' licenses that a person can get, depending on the type of aircraft that is flown and the different types of flying that a person conducts. For this PI, six different types of pilots' certificates were evaluated: student, private, commercial, airline transport, flight instructor, and remote pilot. As summary of these is provided in **Table 7-9**. As shown, Florida has over 55,000 pilot certificate holders, representing over 10 percent of all pilots' certificates in the U.S. Of all other states, only California has more total pilot certificate holders, with 58,008 being reported. Florida ranks first in student, airline transport, and flight instructor pilots' certificate holders. Data for this analysis was obtained from the FAA's 2016 *Civil Airmen Statistics Report*.

**Table 7-9: The Number of Pilot Certificates Held (national ranking) in Florida (By Category)**

State	Total Pilots	Students	Private*	Commercial	Airline Transport	Misc.	Flight Instructor	Remote Pilots
Florida	55,692	13,844	13,090	9,959	18,249	550	10,183	1,783
Ranking	2	1	3	2	1	1	1	2

Source: Federal Aviation Administration (FAA) U.S. Civil Airmen Statistics, 2016

\*Includes those with an airplane and/or a helicopter and/or glider certificate. Pilots under the "Rotorcraft (only)" and "Glider (only)"

#### 7.2.3.1.4 PI 3.1.4 – THE NUMBER OF USPA LICENSES ISSUED IN FLORIDA

Skydiving is a common activity that occurs at many airports in Florida and around the U.S. While many people skydive as a one-time activity, the USPA also issues licenses for registered skydivers. There are four primary license types, each that have their own requirements and allowances. Below is a summary of the different license type and a summary of each. (Note: Each license type had additional requirements that can be accessed at <http://www.uspa.org/Safety-Training/Licenses>).

- A License: Persons holding a USPA A license may jump without supervision, pack their own main parachute, engage in basic group jumps, and perform water jumps
- B License: Persons holding a USPA B license are able to exercise all privileges of an A License holder, perform night jumps, and with 100 jumps are eligible for the USPA Coach Rating

- C License: Persons holding a USPA C license are able to exercise all privileges of a B License holder, are eligible for the USPA Instructor rating (except USPA Tandem Instructor), participate in certain demonstration jumps, and may ride as passenger on USPA Tandem Instructor training and rating renewal jumps
- D License: Persons holding a USPA D license are able to exercise all privileges of a C License holder and are eligible for all USPA ratings

As shown in **Table 7-10**, Florida has a total of 2,567 skydiving license holders.

**Table 7-10: Number and Type of USPA License Holders in Florida**

License Type	Number of License Holders
A	1,916
B	1,227
C	1,102
D	1,093
<b>Total*</b>	<b>2,567</b>

Source: U.S. Parachute Association (USPA), as of March 2017

\* Does not add-up to 2,567 since many have multiple licenses

#### 7.2.3.1.5 PI 3.1.5 – THE NUMBER OF REVENUE PASSENGERS BOARDING AIRCRAFT (FDOT PM)

To support the development of the Airport Improvement Program (AIP), the FAA produces a report that summarizes revenue passenger boardings at U.S. airports. This report, published each fall, provides the most current full year of data by both airport and state. **Table 7-11** provides the top 10 states in terms of revenue passenger boardings. As shown, Florida ranked third based on calendar year (CY) 2015 and represented over 10 percent of total revenue passenger boardings in the U.S. that year.

**Table 7-11: Number of Revenue Passenger Boardings**

Rank	State	Revenue Passengers
1	CA	98,654,715
2	TX	79,669,001
<b>3</b>	<b>FL</b>	<b>78,074,209</b>
4	GA	50,764,114
5	NY	50,021,973
6	IL	48,364,870
7	NC	29,127,000

Rank	State	Revenue Passengers
8	CO	27,914,676
9	VA	25,755,881
10	AZ	24,338,312

Source: Federal Aviation Administration (FAA) Calendar Year (CY) 2015 Passenger Boarding Data

#### 7.2.3.1.6 PI 3.1.6 – THE TONNAGE OF ALL AIR CARGO LANDED AT FASP AIRPORTS (FDOT PM)

See following PI below.

#### 7.2.3.1.7 PI 3.1.7 – THE VALUE OF AIR CARGO TRANSPORTED AT FASP AIRPORTS (FDOT PM)

Air cargo is a significant part of the overall state aviation system. To support this fact, FDOT commissioned the Florida Air Cargo System Plan to evaluate statistics related to air cargo in Florida. To support PI 3.1.6 and 3.1.7, cargo information from this report was used to determine both the tonnage and value of cargo at Florida's airports. For this report, only freight data was reported, but it was noted that cargo data was provided.

As shown in **Table 7-12**, Florida landed 560,001 tons of air freight in 2014.

**Table 7-12: FDOT Freight and Cargo Study**

	Tons	Value (m\$)	Value/Ton	% Tons	% Value
<b>Exports</b>					
From Florida	174,363	\$28,652	\$164,326	14%	22%
From Other U.S.	263,997	\$26,603	\$100,771	21%	20%
Exports Total	438,360	\$55,256	\$126,051	35%	42%
<b>Imports</b>					
To Florida	560,001	\$16,129	\$28,802	45%	12%
To Other U.S.	103,603	\$49,471	\$477,509	8%	37%
Imports Total	663,604	\$65,601	\$98,855	54%	49%
<b>Domestic (Intra-National)</b>					
Intrastate	2,856	\$139	\$48,786	0%	0%
Inbound	69,291	\$6,680	\$96,399	6%	5%
Outbound	63,159	\$4,866	\$77,045	5%	4%
Domestic Total	135,305	\$11,685	\$86,360	11%	9%

	Tons	Value (m\$)	Value/Ton	% Tons	% Value
<b>Total</b>					
Florida-Relevant	869,669	\$56,466	\$64,929	70%	43%
Other U.S.	367,600	\$76,075	\$206,949	30%	57%
<b>Total</b>	<b>1,237,269</b>	<b>\$132,541</b>	<b>\$107,124</b>	<b>100%</b>	<b>100%</b>

Source: Florida Department of Transportation (FDOT) Freight and Cargo Study

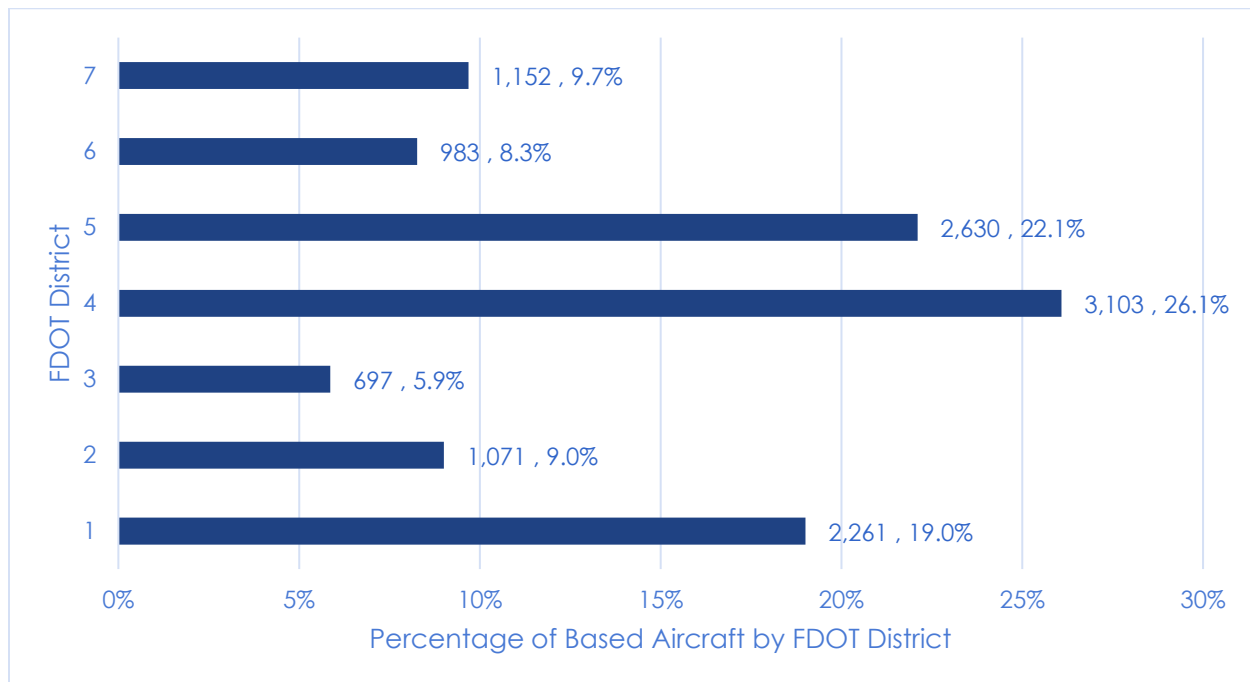
#### 7.2.3.1.8 PI 3.1.8 – THE NUMBER OF BASED AIRCRAFT IN FLORIDA

According to the FAA, a based aircraft is “an aircraft that is operational and air worthy, which is typically based at your facility for a majority of the year.” Accurate based aircraft information is important to both the FAA and FDOT to assist in “planning and forecasting the growth in the GA community and approaches and other system-wide improvements. Based aircraft counts are one of the criteria used to determine eligibility for inclusion in the National Plan of Integrated Airport Systems (NPIAS), which is a requirement to receive Federal funds. Inaccurate counts can negatively impact the proper planning and may cause improper sizing of key capital improvement projects at airports.”

Using data accessed in October 2016, 11,897 based aircraft were reported at Florida airports per BasedAircraft.com and the Airport IQ Airport Master Records.

**Figure 7-20** provides a summary of based aircraft by District. As shown, FDOT District 4 has the largest percentage of based aircraft in the state, followed by FDOT Districts 1 and 5. Together, these three Districts account for almost 70 percent of total based aircraft in Florida. FDOT Districts 2, 6, and 7 all reported around 10 percent of total statewide based aircraft while District 3 accounted for just six percent.

**Figure 7-20: The Number (and Percentage of State Total) of Based Aircraft in Florida**



Source: Basedaircraft.com

#### 7.2.4 Goal 4: Protect airspace and promote compatible land uses around airports

Protecting the land use and airspace around an airport is critical to the long-term viability of aviation activity. Incompatible land uses near airports may lead to reductions in operational efficiency and may require a reduction in airport services. Protecting airspace is equally important. The presence of obstructions that limit airspace can drastically affect the operational viability of an airport. A summary of the objectives and PMs that are associated with this goal are shown in **Table 7-13**. There are no PIs associated with this goal.

**Table 7-13: Goal 4 Objectives and Performance Measures**

Objectives		Performance Measures	
<b>4.1</b>	Encourage FASP airports to work with communities to enact airport zoning ordinances compatible with F.S. Chapter 333 and FDOT's <i>Florida Airport Compatible Land Use Guidebook</i> .	4.1.1	The number of FASP airports reporting that surrounding municipalities have enacted airport zoning ordinances compatible with F.S. Chapter 333
<b>4.2</b>	Encourage mapping at FASP airports that is compatible with FAA's electronic airport layout plan (eALP) standards.	4.2.1	The number of FASP airports reporting that they have mapping compatible with FAA eALP standards.

Source: Florida Aviation System Plan (FASP) 2035

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#### **7.2.4.1 Objective 4.1: Encourage FASP airports to work with communities to enact airport zoning ordinances compatible with F.S. Chapter 333 and FDOT's *Florida Airport Compatible Land Use Guidebook***

Florida has long promoted compatible land use planning and has continued to support this effort through implementation of F.S. Chapter 333. F.S. Chapter 333 was recently updated and many airports are continuing to evaluate their ability to meet the latest requirements. The following PM was developed to support this objective:

- PM 4.1.1 – The number of FASP airports reporting that surrounding municipalities have enacted airport zoning ordinances compatible with F.S. Chapter 333

##### **7.2.4.1.1 PM 4.1.1 – THE NUMBER OF FASP AIRPORTS REPORTING THAT SURROUNDING MUNICIPALITIES HAVE ENACTED AIRPORT ZONING ORDINANCES COMPATIBLE WITH F.S. CHAPTER 333**

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On July 1, 2016, the Florida legislature updated the requirements of F.S. Chapter 333. Per this update, all municipalities and counties in the state were required to enact local zoning ordinances that are compatible with F.S. Chapter 333. In general terms, F.S. Chapter 333 deals with ensuring that zoning around airports does not allow for any incompatible land uses as well as requirements for handling federal height and airspace obstructions. This PM is intended to document how many airports have enacted zoning ordinances compatible with F.S. Chapter 333. Currently, no municipalities or counties have enacted airport zoning ordinances that are compatible with the requirements of the updated F.S. Chapter 333 language. Even though none have been enacted, the requirement is new and most are still evaluating the differences between what ordinances they may currently have in place and the new requirement.

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#### **7.2.4.2 Objective 4.2: Encourage mapping at FASP airports that is compatible with FAA's eALP standards**

As technology continues to change, the FAA has transitioned to new mapping standards to maintain data on airports. This includes developing eALPs that typically utilize base mapping from aerial imagery that is collected and integrated into a geographic information system (GIS) platform. The following PM was developed to support this objective:

- PM 4.2.1 – The number of FASP airports reporting that they have mapping compatible with FAA eALP standards.

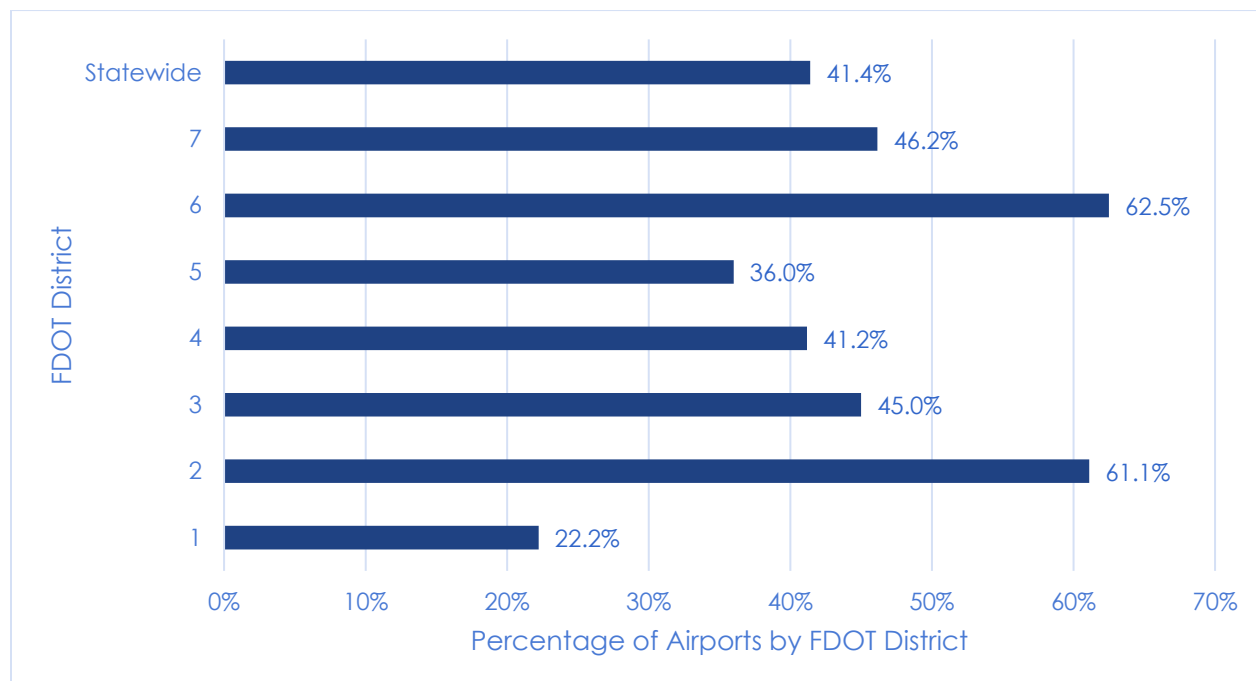
##### **7.2.4.2.1 PM 4.2.1 – THE NUMBER OF FASP AIRPORTS REPORTING THAT THEY HAVE MAPPING COMPATIBLE WITH FAA EALP STANDARDS**

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To support the FAA's efforts in implementing NextGen, standards for developing ALPs are shifting towards developing eALPs. The purpose of this shift is to develop and store ALPs and all associated data about the ALP in an electronic format instead of a static map format. To assess this PM, airports were asked (through a statewide survey) if they have mapping that is compatible with eALP standards. As shown in **Figure 7-21**, over 41 percent of airports statewide have mapping compatible with eALP standards. Of note, FDOT Districts 2 and 6 have over 60

percent of airports reporting that their mapping is compatible with eALP standards, while FDOT District 1 reported only 22 percent.

**Figure 7-21: The Percentage of FASP Airports Reporting That They Have Mapping Compatible with FAA eALP Standards**



Source: Statewide survey; Florida Aviation System Plan (FASP) Analysis

### 7.2.5 Goal 5: Foster technological innovation and support the implementation of new technologies

Technology across all industries is changing at a rapid pace, including the aviation industry. Keeping up with these advancements is critical to the future of aviation. This goal deals with promoting the development of improved approach procedures at airports to allow for a greater operational efficiency as well as compliance with the FAA's NextGen requirements. A summary of the objectives and PMs and Pls that are associated with this goal are shown in **Table 7-14**.

**Table 7-14: Goal 5 Objectives, Performance Measures, and Performance Indicators**

Objectives		Performance Measures		Performance Indicators
5.1	Encourage the development of global positioning system (GPS)-based instrument approaches.	5.1.1	The number of FASP airports with a GPS approach.	

Objectives		Performance Measures		Performance Indicators	
5.2	Encourage readiness of FASP airports to meet NextGen requirements.			5.2.1	The number of FASP airports that meet the FAA standards for an instrument approach procedure with visibility minima between 3/4 mile and less than one mile.
				5.2.2	The number of FASP airports that meet the FAA standards for an instrument approach procedure with visibility minima less than 3/4 mile.
5.3	Ensure unmanned aerial system (UAS) operations are considered in the state infrastructure and airway system in accordance with FAA directives.			5.3.1	The number of coordination events with various UAS stakeholders (e.g., institutions of higher learning, UAS manufacturers, etc.) in the development of UAS technologies.

Source: Florida Airport System Plan (FASP) 2035

#### 7.2.5.1 Objective 5.1: Encourage the development of GPS-based instrument approaches

The FAA has moved toward a satellite-based system in its efforts to implement NextGen, the future air traffic control system. The FAA continues to develop instrument approach procedures based on GPS satellites that provide more accurate guidance and require less ground equipment to facilitate. The following PM was developed to support this objective:

- PM 5.1.1 – The change in the number of FASP airports with a GPS approach.

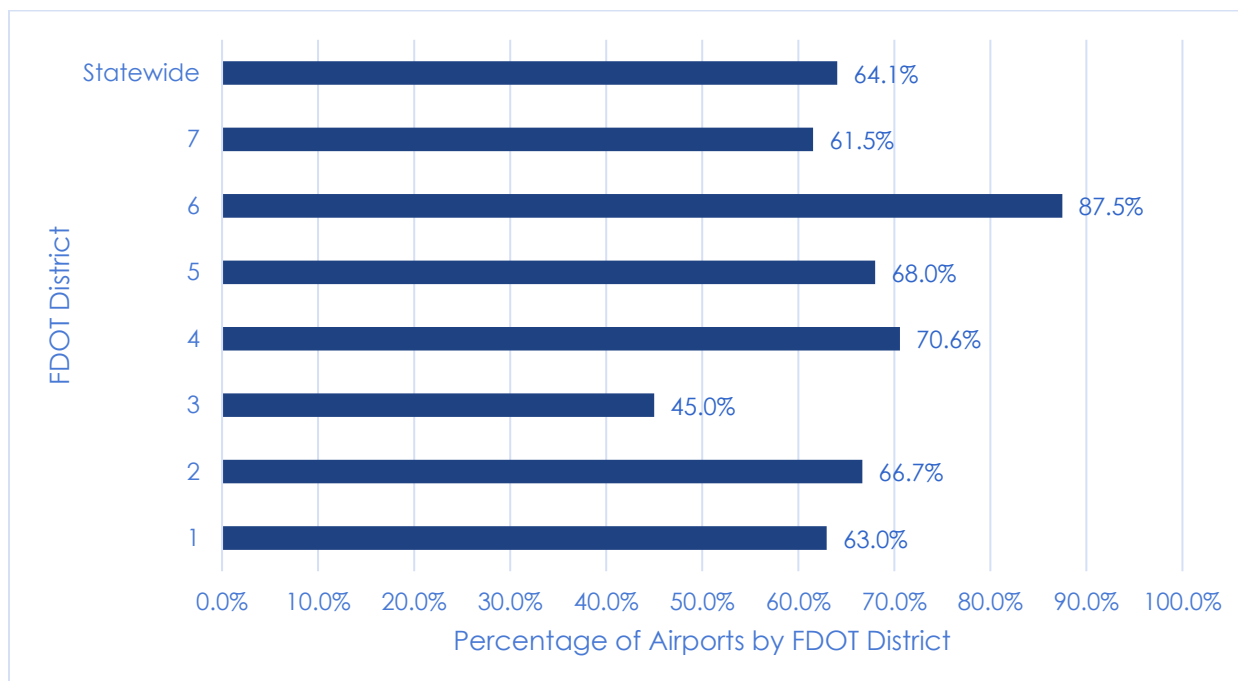
##### 7.2.5.1.1 PM 5.1.1 – THE NUMBER OF FASP AIRPORTS WITH A GPS APPROACH

Various types of GPS approaches have been in existence for many years. GPS-based approaches include several different approach types (ex: Localizer Performance with Vertical guidance [LPV], lateral navigation [LNAV], Localizer Performance [LP]) that each provide different levels of guidance to pilots. Data for GPS approaches at Florida's airports was obtained from the FAA's Satellite Navigation Database. Because FDOT is continually seeking to support innovation in technologies that support airports, this PM identifies the change in number of airports with GPS approaches since the last FASP Update. The latest data available for this comparison comes from the 2004 FASP, where it was reported that 54 percent of airports had GPS approaches. Based on current analysis, 64.1 percent of Florida's airports now have a GPS



approach, an increase of 10.1 percent. Further, as shown in **Figure 7-22**, all FDOT Districts except District 3 reported having over 60 percent of airports with GPS approaches.

**Figure 7-22: The Percentage of FASP Airports with GPS Approaches**



Source: Federal Aviation Administration (FAA) Satellite Navigation – GPS/WAAS Approach Database, effective 4/27/17

#### **7.2.5.2 Objective 5.2: Encourage readiness of FASP airports to meet NextGen requirements**

Instrument approaches allow for a greater number of aircraft to utilize the airport as well as allow aircraft to access an airport in less than ideal visibility conditions. Visibility minima are established for each runway end. For this objective, the following two PIs were developed to assess how the state is performing:

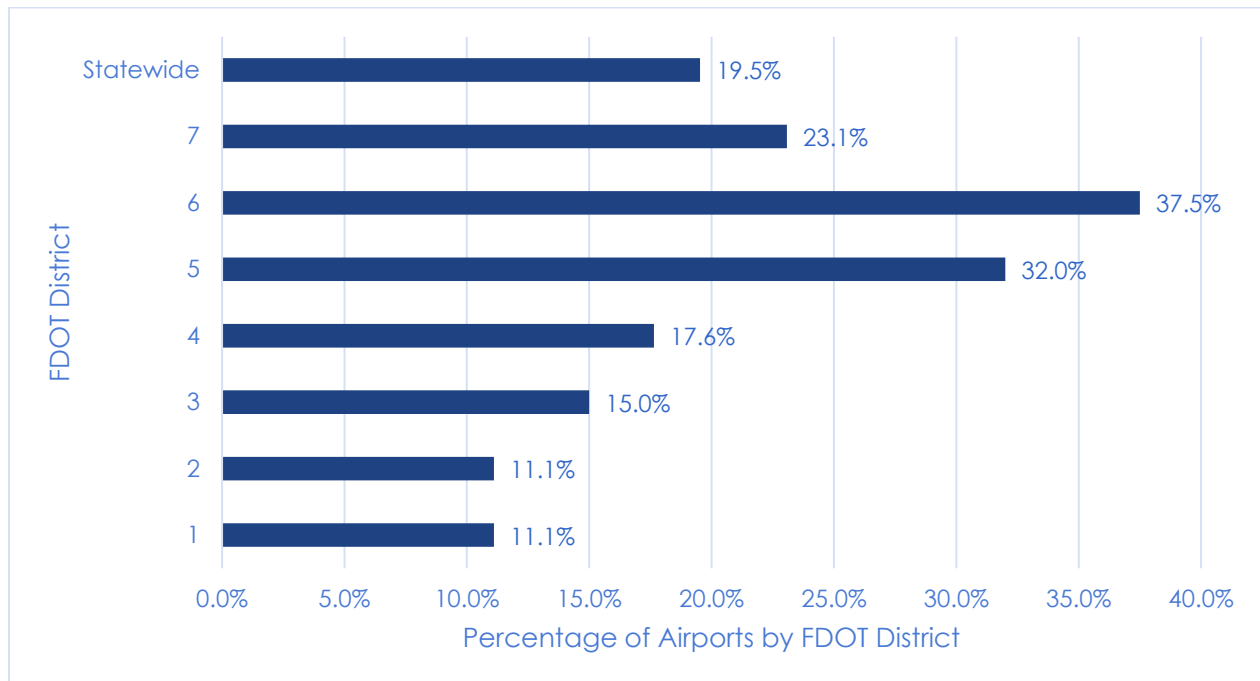
- PI 5.2.1 – The number of FASP airports that meet the FAA standards for an instrument approach procedure with visibility minima between 3/4 mile and less than one mile
- PI 5.2.2 – The number of FASP airports that meet the FAA standards for an instrument approach procedure with visibility minima less than 3/4 mile

For these PIs, data on airport-specific instrument approach procedures was obtained from FAA's Satellite Navigation Database and the procedures were categorized according to those with visibility minima between 3/4 mile and less than one mile as well as visibility minima less than 3/4 mile. For this analysis, visibility minima were obtained from the FAA. For this analysis, it was assumed that all privately owned, public-use airports in the state had only visual approach procedures.

7.2.5.2.1 **PI 5.2.1** – THE NUMBER OF FASP AIRPORTS THAT MEET THE FAA STANDARDS FOR AN INSTRUMENT APPROACH PROCEDURE WITH VISIBILITY MINIMA BETWEEN 3/4 MILE AND LESS THAN ONE MILE

As shown in **Figure 7-23**, just over 19 percent of Florida's airports have an instrument approach procedure with visibility minima between 3/4 mile and less than one mile. FDOT Districts 5, 6, and 7 all reported over 20 percent of their airports as meeting this threshold.

**Figure 7-23: The Percentage of FASP Airports That Meet the FAA Standards for an Instrument Approach Procedure with Visibility Minima Between 3/4 Mile and Less Than One Mile**

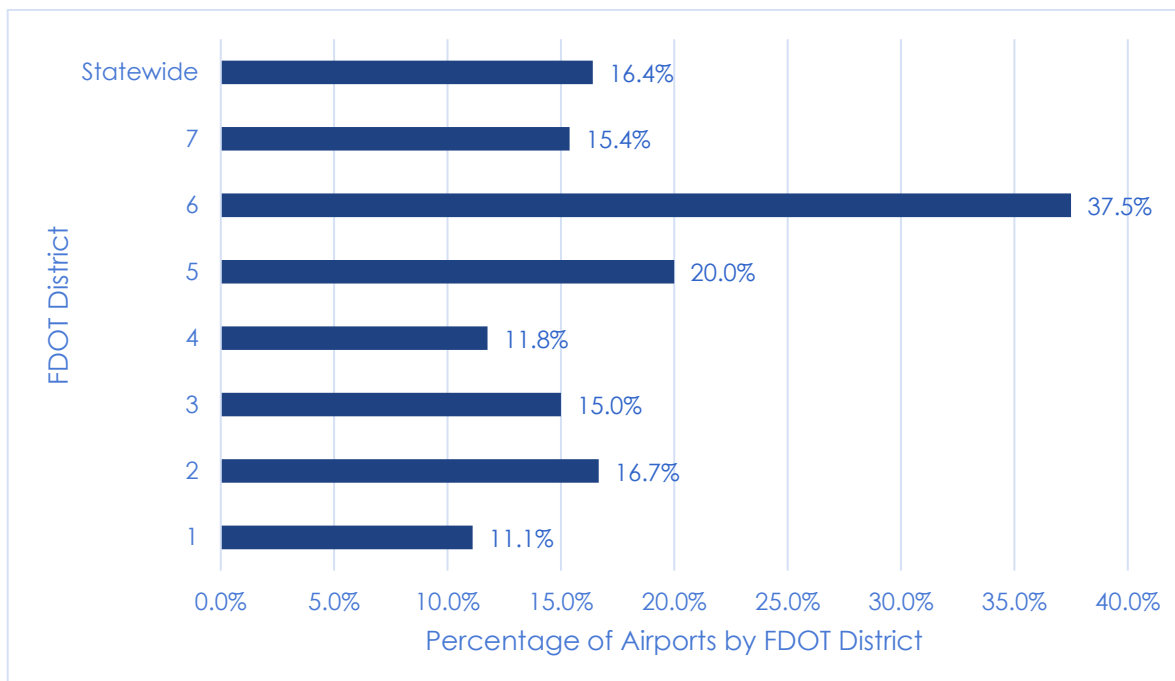


Source: Federal Aviation Administration (FAA) Satellite Navigation – GPS/WAAS Approach Database, effective 4/27/17

7.2.5.2.2 **PI 5.2.2** – THE NUMBER OF FASP AIRPORTS THAT MEET THE FAA STANDARDS FOR AN INSTRUMENT APPROACH PROCEDURE WITH VISIBILITY MINIMA LESS THAN 3/4 MILE

As shown in **Figure 7-24**, over 16 percent of airports were found to have an instrument approach procedure with visibility minima less than 3/4 mile. Common among these were the state's commercial service airports. As identified, over 37 percent of airports in FDOT District 6 meet this standard while all other Districts report 20 percent or under meeting this threshold.

**Figure 7-24: The Percentage of FASP Airports That Meet the FAA Standards for An Instrument Approach Procedure with Visibility Minima Less Than 3/4 Mile**



Source: Federal Aviation Administration (FAA) Satellite Navigation – GPS/WAAS Approach Database, effective 4/27/17

#### **7.2.5.3 Objective 5.3: Ensure UAS operations are considered in the state infrastructure and airway system in accordance with FAA directives**

UAS operations have skyrocketed over the past five years and the technology is now being widely used for many purposes. The FAA continues to evolve its policies on UAS and Florida is monitoring the policies and the growth in the systems. The following PI was developed to support this objective:

- PI 5.3.1 – The number of coordination events with various UAS stakeholders (e.g., institutions of higher learning, UAS manufacturers, etc.) in the development of UAS technologies.

##### **7.2.5.3.1 PI 5.3.1 – THE NUMBER OF COORDINATION EVENTS WITH VARIOUS UAS STAKEHOLDERS (E.G., INSTITUTIONS OF HIGHER LEARNING, UAS MANUFACTURERS, ETC.) IN THE DEVELOPMENT OF UAS TECHNOLOGIES**

As UAS become more pervasive in the national airspace, it will be critical for FDOT to be involved in coordination efforts with various UAS stakeholders. As such, this PI is recommended as a new element for future FDOT tracking and reporting. While FDOT has participated in numerous events with UAS stakeholders, data on the events has not yet been maintained.

## 7.2.6 Goal 6: Promote support for aviation from business, government, and the public

Florida's aviation system is a significant economic engine that supports numerous industries throughout the state. From the manufacturing of aircraft, to training the world's pilots, bringing visitors from domestic and international locations, and providing support during emergencies, airports provide a tremendous range of qualitative and quantitative impacts that many businesses, governments, and the public may or may not understand. To continue promoting the need for support for airports to these groups, this goal was developed to indicate the level of support provided. A summary of the objectives and PIs that are associated with this goal are shown in **Table 7-15**. There are no PMs associated with this goal.

**Table 7-15: Goal 6 Objectives and Performance Indicators**

Objectives		Performance Indicators	
6.1	Quantify and communicate the economic impact of FASP airports.	6.1.1	The change in the economic impact of FASP airports.
6.2	Coordinate with Enterprise Florida, Inc (EFI) to advertise the availability of resources and developable land at FASP airports to aviation-minded businesses around the country.	6.2.1	The number of coordination meetings with EFI representatives to communicate economic impact and business development opportunities of FASP airports.
6.3	Encourage airports to maintain pavement in an above-average level of condition.	6.3.1	The number of airport pavement condition index (PCI) inspections per year.

Source: Florida Aviation System Plan (FASP) 2035

### 7.2.6.1 Objective 6.1: Quantify and communicate the economic impact of FASP airports

Airports are significant generators of economic impact. This fact is not always easily recognized by the public and FDOT has conducted several statewide studies to calculate the impacts and provide tools to airports for use in communicating the benefits. The following PI was developed to support this objective:

- PI 6.1.1 – The change in the economic impact of FASP airports.

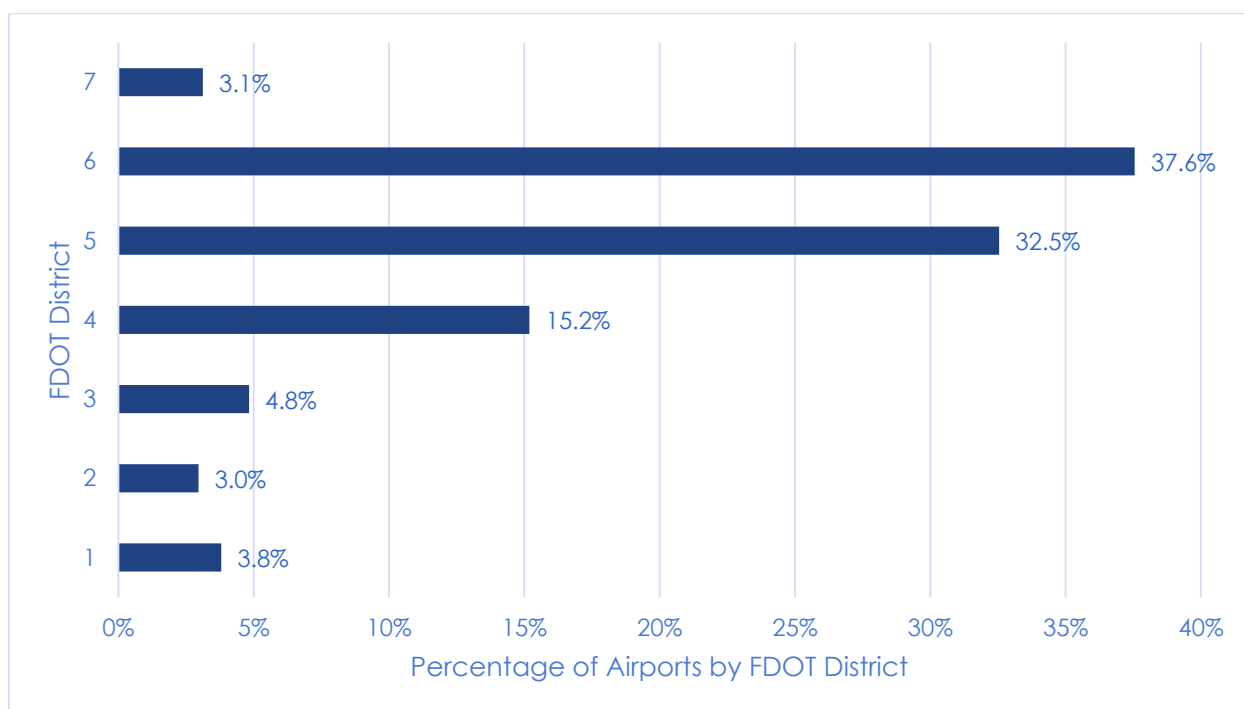
#### 7.2.6.1.1 PI 6.1.1 – THE CHANGE IN THE ECONOMIC IMPACT OF FASP AIRPORTS

The economic impact of Florida's airports has a profound impact on the state's economy as a whole. Earlier in this analysis, a comparison of Florida's economic impact of airports to other states' impacts was conducted. This comparison utilized a study completed by the FAA that contained data on all 50 states. While this data is adequate for a national comparison, Florida conducts its own economic impact studies that are better able to quantify aviation's impact in the state. The overall impact calculated by the Florida study is significantly higher than the FAA's study estimate; however, different methodologies were utilized. Florida's economic impact study is much more precise due to a comprehensive data collection effort and the proactive participation of the state's airports. For this PI, the changes in economic output between the

previous two studies completed in 2010 and 2014 were identified. (Note: A new economic impact study is underway as of June 2017, with an anticipated completion date in the Fall of 2018). For this analysis, the difference in economic impact by airport was summarized by FDOT District. The growth rates shown in **Figure 7-25** include any negative growth that may have occurred.

In total, the state's aviation economic impact attributable to airports grew by over \$19 billion between 2010 and 2014, increasing from \$97.0 billion to \$116.3 billion. As shown in Figure 7-25, FDOT Districts 5 and 6 accounted for the highest percentage of the growth, with 32.5 and 37.6 percent of total growth, respectively. FDOT District 4 contributed 15 percent of the growth while FDOT Districts 1, 2, 3, and 7 all had under five percent of the total growth.

**Figure 7-25: The Change in the Economic Impact of FASP Airports from 2010 to 2014**



Source: Florida Department of Transportation (FDOT) Economic Impact Study 2010 and 2014; Florida Airport System Plan (FASP) Analysis

#### **7.2.6.2 Objective 6.2: Coordinate with EFI to advertise the availability of resources and developable land at FASP airports to aviation-minded businesses around the country**

EFI is a public-private partnership in the state between business and government and serves as the primary economic development organization in the state. As such, coordination with EFI can help to further compatible development at and near Florida's airports. It is critical that EFI knows the value of airports and aviation in the state and how this can be leveraged for the benefit of all Floridians. The following PI was developed to support this objective:

- PI 6.2.1 – The number of coordination meetings with EFI representatives to communicate the economic impact and business development opportunities of FASP airports.

#### 7.2.6.2.1 **PI 6.2.1 – THE NUMBER OF COORDINATION MEETINGS WITH EFI REPRESENTATIVES TO COMMUNICATE THE ECONOMIC IMPACT AND BUSINESS DEVELOPMENT OPPORTUNITIES OF FASP AIRPORTS**

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Airports represent a unique opportunity to market Florida as a place where businesses can develop and thrive. Airports can have lease holders that function both for aeronautical and non-aeronautical purposes. Understanding the land that is available for lease, the types of leases, as well as what types of businesses can be served in an airport's land envelope are all significant marketing opportunities for airports to engage to diversify their income and remain financially self-sufficient. As such, this PI was developed to track the number of coordination meetings held with EFI staff to promote airports as an economic driver. EFI is the primary marketing department for the state as a whole. While FDOT has participated in numerous meetings with EFI, data on the meetings has not yet been maintained.

#### 7.2.6.3 **Objective 6.3: Encourage airports to maintain pavement in an above average level of condition**

One of the most critical infrastructure elements at an airport is pavement. FDOT has long supported the maintenance of airport pavement by implementing a study of the conditions and providing information to airports, as well as significant funding, to address pavement needs. The following PI was developed to support this objective:

- PI 6.3.1 – The number of airport PCI inspections per year.

#### 7.2.6.3.1 **PI 6.3.1 – THE NUMBER OF AIRPORT PCI INSPECTIONS PER YEAR**

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Airfield pavements represents one of the largest capital investments on an airport. As such, FDOT developed the Statewide Airfield Pavement Management Program (SAPMP) to “identify pavement conditions and the associated maintenance and rehabilitation needs and costs to provide the tools to allow programming of improvements in a cost-effective manner.” Ensuring that pavement conditions are evaluated and monitored on a frequent basis so that minor issues can be identified and mitigated against before they become major issues is a critical part of maintaining the viability of the statewide aviation system. As such, tracking the number of pavement inspections that are completed each year is important. In total, 95 Florida airports participate in the pavement inspection program. To date there have been two cycles of inspections (2010 – 2012 and 2013 – 2015), with each cycle being completed in two phases. For each phase, approximately 45 to 50 airports are inspected each year. (Note: FDOT is currently in the middle of the 2016 – 2018 pavement inspection cycle).

### 7.2.7 Goal 7: Foster Florida's reputation as a military- and aerospace-friendly state

Military activity is critical to the state of Florida. Not only does this activity provide jobs and economic impact, it also has direct and significant impacts on the state's airports and airspace. As such, coordination with the military as well as promoting its benefit to the state's aviation system is critical to long-term success. This goal was developed to foster Florida's reputation as a military-friendly state. A summary of the objectives and PIs that are associated with this goal are shown in **Table 7-16**. There are no PMs associated with this goal.

**Table 7-16: Goal 7 Objectives and Performance Indicators**

Objectives		Performance Indicators	
<b>7.1</b>	Coordinate with military aviation representatives as it relates to the Florida aviation system.	7.1.1	The number of military officials participating in the CFASPP.
		7.1.2	The number of task force meetings held with military officials.
<b>7.2</b>	Coordinate with military on emergency response coordination efforts.	7.2.1	The number of coordination meetings held with emergency response officials, including the military.
<b>7.3</b>	Measure the economic impact of military aviation in Florida.	7.3.1	The amount of Florida's aviation economic impact with military aviation units and airports included.

Source: Florida Aviation System Plan (FASP) 2035

#### 7.2.7.1 Objective 7.1: Coordinate with military aviation representatives as it relates to the Florida aviation system

Military airports play a critical role in the overall state aviation system. Currently, no data is collected or monitored to understand how frequently or effectively Florida's military aviation officials are being coordinated with as part of the CFASPP meetings or other meetings. As such, the two PIs seek to establish a process to track the coordination efforts. It is suggested that both the number of military officials who participate in the CFASPP process and the number of task force meetings held with military officials be tracked on a regular basis to ensure that this data is available for future updates to the FASP.

##### 7.2.7.1.1 PI 7.1.1 – THE NUMBER OF MILITARY OFFICIALS PARTICIPATING IN CFASPP PROCESS

See objective above.

##### 7.2.7.1.2 PI 7.1.2 – THE NUMBER OF TASK FORCE MEETINGS HELD WITH MILITARY OFFICIALS

See objective above.

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### 7.2.7.2 Objective 7.2: Coordinate with military on emergency response coordination efforts

Florida plays a prominent role in supporting the military with bases throughout the state. The state has also experienced more than its fair share of emergency situations, including hurricanes and wildfires, that require emergency response and coordination with military personnel. The following PI was developed to support this objective:

- PM 7.2.1 – The number of coordination meetings held with emergency response officials, including the military.

#### 7.2.7.2.1 PI 7.2.1 – THE NUMBER OF COORDINATION MEETINGS HELD WITH EMERGENCY RESPONSE OFFICIALS, INCLUDING THE MILITARY

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Similar to the previous PIs associated with this goal, there is currently no process in place to track or monitor the interaction with emergency response officials, including the military. As such, it is recommended that this data element be monitored and tracked to be included in future FASP updates.

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### 7.2.7.3 Objective 7.3: Measure the economic impact of military aviation in Florida

Similar to civilian aviation, military aviation generates a high level of economic impact, especially in Florida. From standalone bases to military activities at civilian airports, it is important to quantify the economic impact of this activity on the state. The following PI was developed to support this objective:

- PI 7.3.1 – The amount of Florida's aviation economic impact with military aviation units and airports included.

#### 7.2.7.3.1 PI 7.3.1 – THE AMOUNT OF FLORIDA'S AVIATION ECONOMIC IMPACT WITH MILITARY AVIATION UNITS AND AIRPORTS INCLUDED

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In the *2014 FDOT Statewide Aviation Economic Impact Study Update*, the overall economic impact of military aviation was evaluated and included in the report. Per the report, "analysis was aimed at measuring the statewide impact of military facilities that are aviation related or that have a strong aviation component. The underlying objective of the analysis was to quantify the economic impacts of Florida's military airfields using a methodology consistent with the methodology used to quantify the economic impacts for other aviation groups considered in this statewide study update."

**Table 7-17** summarizes the findings of this report. As shown, the total economic impact of military aviation in Florida was nearly \$12.8 billion in 2014.



**Table 7-17: The Amount of Florida's Aviation Economic Impact with Military Aviation Units and Airports Included**

	Employment	Annual Payroll	Annual Economic Activity
Military Aviation	137,482	\$6,409,021,000	\$12,786,113,000

Source: 2014 Florida Department of Transportation (FDOT) Economic Impact Study

## 7.3 Mapping Analyses

In addition to analyzing system performance in meeting goals, objectives, PMs, and Pls, evaluating system accessibility from the ground and the air is also an important exercise in reviewing system success. Airports should be accessible both from the ground as people travel to and from airports and from the air by pilots looking for certain airport characteristics. To evaluate the accessibility of Florida's airport system, drive-time analyses were conducted. These drive times focus on the accessibility of the system by people on the ground, including determining the percent of Florida's population that can access airports. The results of these analyses are used to evaluate how well Florida's population is served by the state's airport system, how well certain aviation activities are supported, and help identify any locational gaps that may exist for certain facilities. Further, the evaluation of where facilities are located throughout the system helps to identify where potential redundancies, gaps, and opportunities for new facilities or services may exist.

### 7.3.1 Drive Time and Population Calculations

The FAA uses 30 minutes as a criterion in determining airports that are eligible for inclusion in the NPIAS, which denotes those airports that are important to the national system and are eligible for FAA funding. The 30-minute distance from an airport criterion has also been noted by businesses that operate GA aircraft as a decision-making factor when they are seeking locations to build or relocate their business. As such, the FASP 2035 utilizes a 30-minute drive time for many of the analyses included in this section. The drive times were prepared using Esri Community Analyst. The Esri Community Analyst software develops the drive time areas using the posted speed limits on the applicable roadway segments. (Note: This analysis does not consider peak traffic periods or differing levels of vehicle congestion throughout the day.)

The 2016 population within each drive time area was calculated with the Esri Community Analyst software. Several of Florida's airports are in close proximity to each other, leading to a significant overlap when looking at the drive times for multiple airports. Populations were determined within each drive time area; however, the analysis was performed at a category wide level, to remove overlaps between the drive time areas of individual airports. By removing the overlapping drive time areas, the report is able to depict the total population within the drive time of each airport category without including the same populations multiple times. The population figures generated throughout this report represent the total population within the selected drive time area of each airport category.

In addition to the 2016 population analysis for 30-minute drive times, the 2035 population was projected to determine the future coverage of Florida's public-use airports. These updated population projections are used to evaluate how future demand may be accommodated within the airport system and how the projected growth will affect the system. Statewide, the projected population is expected to increase by 27.5 percent between 2016 and 2035. Using this percentage, the population in Florida is expected to grow from 20,108,440 in 2016 to 25,638,551 by 2035.<sup>2</sup>

Throughout this section, each drive time map displays a 2035 future population coverage projection that reflects the estimated population that would be served by the corresponding airports within a 30-minute drive time. This future population analysis was conducted using the Esri Community Analyst tool which accounts for varying growth rates across the state. It is important to note the distinction between the percentage of the population within the drive time areas and the overall growth of the state's population. Between 2016 and 2035, the state's population is expected to grow, but in some cases the percentage of the overall population within the drive time areas will be reduced. This decrease in the percentage of the population being served within the drive times is due to the increase in growth across the state in areas outside of the selected drive time areas.

Additionally, assumptions regarding the current airport network have been made in regards to the identification of future population figures. Current airport configurations and categories have been assumed to remain the same through 2035. For example, it is assumed that the number, location, and category of the NPIAS airports will remain the same in 2035 as they are in 2016. This analysis has been conducted to determine the percentage of the projected Florida population within the selected drive times or boundaries of the current airport network. Changes to the network, such as the closing or the creation of airport facilities, have not been considered as part of this analysis.

Results of the drive time analyses presented in this section are organized by FDOT District. **Figure 7-26** illustrates the FASP airports by FDOT District. While there is a wide range in the number of airports by District, it is important to recognize that the Districts are unique in terms of the metropolitan and/or rural areas served, the amount of coastline, and the geographic size of the District.

**Table 7-18** summarizes the number of airports and the percentage of the state's population residing in each district. The percent of the total population is decreasing in five of the seven FDOT Districts. District 1 (0.7 percent growth) and District 5 (0.9 percent growth) are projected to contain slightly larger percentages of Florida's population by the year 2035.<sup>3</sup> This information shows growth is expected within the southwest and east central areas of Florida. This population growth may present changes to air service demands in the future, causing the existing airports to adapt to the needs of the increasing populations.

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<sup>2</sup> Esri Community Analyst: Population Projection

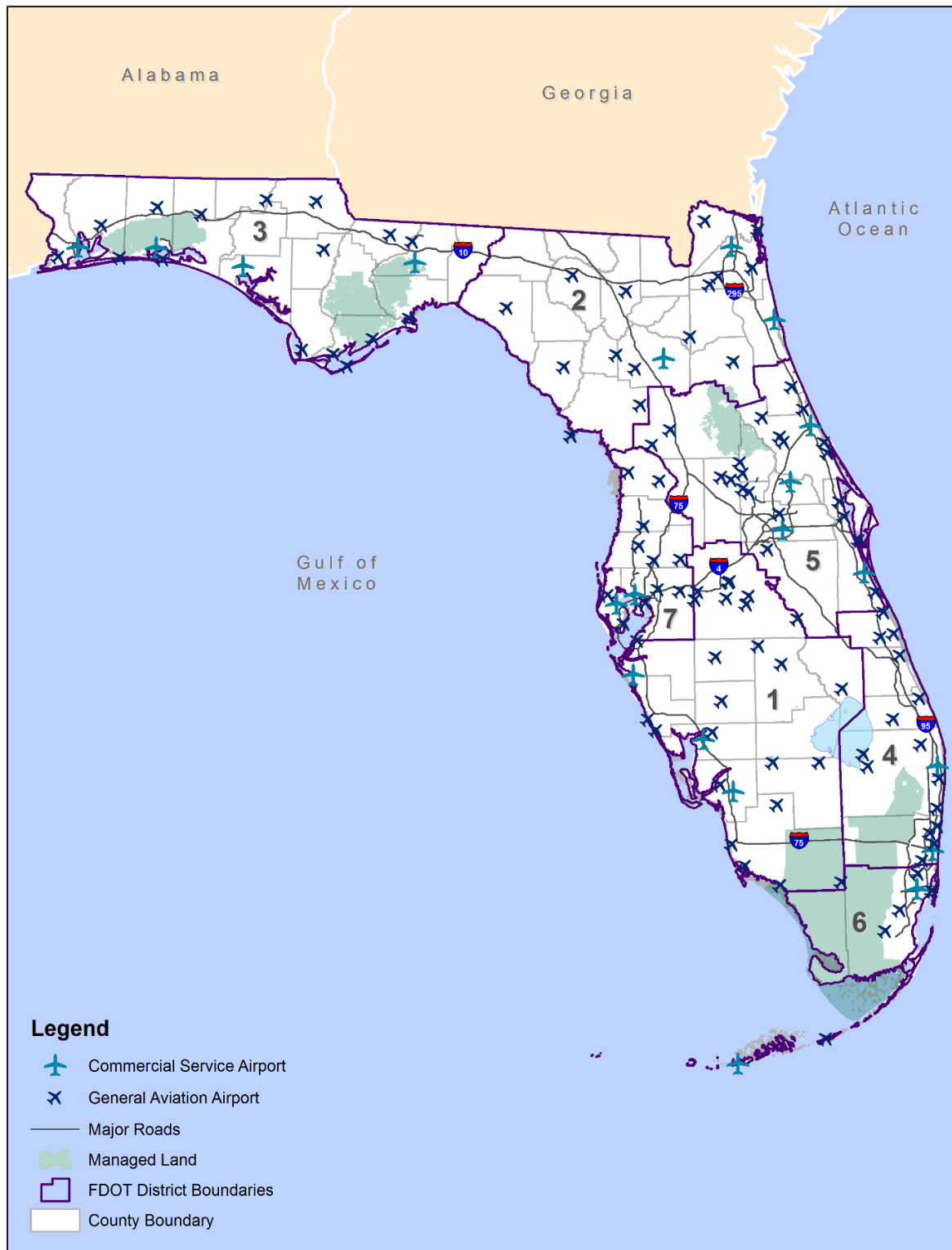
<sup>3</sup> Esri Community Analyst: Population Projection

**Table 7-18: Number of Airports by FDOT District**

FDOT District	Percentage of Florida's Population in 2016	Percentage of Florida's Population in 2035	Airports	Commercial Service	General Aviation
1	14.3%	15.0%	27	3	24
2	10.3%	10.0%	18	3	15
3	7.2%	6.7%	20	4	16
4	19.2%	19.1%	17	2	15
5	20.1%	21.2%	25	4	21
6	13.4%	12.9%	8	2	6
7	15.3%	15.0%	13	2	11
<b>Statewide</b>	<b>~100%</b>	<b>~100%</b>	<b>128</b>	<b>20</b>	<b>108</b>

Source: Florida Department of Transportation (FDOT); Kimley-Horn Analysis

**Figure 7-26: Airports by FDOT District**



Source: Florida Department of Transportation (FDOT); Kimley-Horn Analysis

### 7.3.2 Data Sources

Several data sources were used to evaluate Florida's 128 public-use airports for their ability to serve the state based on numerous perspectives, including analysis of accessibility. **Table 7-19** below indicates the source of the data and the date the information was obtained.

**Table 7-19: Data Sources**

Drive Time Analysis Data Sources	
Data Source	Date Accessed
Esri Community Analyst	March 2017
Florida Aviation Database	January – March 2017
National Flight Data Center	October 2016
National Plan of Integrated Airport Systems	October 2016
Strategic Intermodal Systems	February 2017

Source: Florida Aviation System Plan (FASP) Analysis

#### 7.3.2.1 Airport Categories

The specific drive-time analyses were selected through coordination with the FDOT Aviation and Spaceports Office (ASO) to evaluate the Florida aviation system. For this study, drive-time analyses were completed for the following:

- Airports with air traffic control towers (ATCTs)
- Airports with Jet A fuel
- Airports with 100 Low Lead (100LL) fuel (avgas)
- Airports by NPIAS and ASSET categorization
  - Commercial Service
    - Large hub
    - Medium hub
    - Small hub
    - Non-hub
  - GA
    - National
    - Regional
    - Local
    - Basic
- SIS airports
- Airports with flight training activity
- Airports with surface weather observation stations (based on a 30-nautical mile buffer)
- Airports with runways of various lengths
  - 3,200 feet
  - 4,200 feet
  - 5,000 feet
  - 6,500 feet
- Airports with at least one instrument approach (based on visibility minimums)

- Airports with at least one precision approach (based on visibility minimums)
- Airports that have features to accommodate business users
  - 5,000-foot long runway
  - Automated Weather Observing Stations (AWOS)
  - Instrument approach
  - Jet A fuel

The results of these drive time analyses are provided in the following sections.

### 7.3.3 Airports with ATCT

#### 7.3.3.1 Existing Population Analysis

Across all FDOT Districts, 46 airports have an ATCT, representing 35.9 percent of all Florida airports. For this analysis, both FAA, private, and contract towers were included. ATCT locations were obtained from the NFDC. As shown in **Figure 7-27**, across all Districts, 89.7 percent of Florida's 2016 population was located within a 30-minute drive of an airport with an ATCT. This level of population access is high; however, the distribution of these facilities shows that the ATCTs are primarily located near the major metropolitan areas. Based on the analysis, FDOT District 6 has the highest percentage of airports with ATCTs, while District 3 has the lowest percentage of airports with ATCTs. **Table 7-20** provides a summary of airports with ATCTs by District in both total number and percentage.

**Table 7-20: Airports with ATCTs by FDOT District**

Florida Public-Use Airports with Air Traffic Control Tower		
FDOT District	Number of Airports with an ATCT	Percentage within District
1	7	25.0%
2	6	33.3%
3	4	20.0%
4	9	52.9%
5	12	48.0%
6	4	57.1%
7	4	30.8%
<b>Total</b>	<b>46</b>	<b>35.9%</b>

Source: National Flight Data Center (NFDC); Kimley-Horn Analysis

The analysis shows that Florida's population is well supported by airports with ATCTs even if the distribution does not provide access for many areas of the state. The majority of ATCTs are located at the airports that meet the FAA's criteria for levels of activity and benefit/cost ratios that are used to support the FAA's determination of need and are not established due to location criteria. There are three Florida airports which privately pay for an ATCT (Bartow

Municipal Airport, Destin-Ft. Walton Beach Airport, and Lake City Gateway Airport). These towers are referred to as private since they are not evaluated by the FAA and are separate from the FAA and contract tower; however, they are included in this analysis.

As shown, there are substantial geographical gaps in coverage in the south-central portions of the state, spanning large areas of FDOT Districts 1, 4, 5, 6 and 7. FDOT District 2 and 3 also have large areas that do not have access to ATCTs. Though overall land coverage is limited, a large majority of the state's population has access to an airport with an ATCT within a 30-minute drive.

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### **7.3.3.2 Contract and FAA ATCT Comparison**

As mentioned above, there are 46 ATCTs which provide support for Florida's airport network. Of these 46 ATCTs, 21 are either privately owned or managed by the FAA. The remaining 25 ATCTs are contract towers. The privately owned and FAA ATCTs serve 73.1 percent of Florida's population, while the contract towers serve 61.5 percent of the population within a 30-minute drive time. Separately, each category of ATCT serves a significant portion of the state's population within a 30-minute drive time. As described above, all of the ATCTs accommodate 89.7 percent of Florida's 2016 population, with the contract towers serving an additional 16.6 percent of the state's population over the 30-minute drive time of the private and FAA towers.

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### **7.3.3.3 Future Population Analysis**

The population within the 30-minute drive time around FAA and private towers is expected to experience a 27.2 percent population growth between 2016 and 2035. Over this time period, the population is expected to grow from 14,690,498 in 2016 to 18,689,590 in 2035. This will account for 72.9 percent of Florida's projected population in 2035 within a 30-minute drive time. This figure represents a slight decrease (0.2 percent) in the population being served by private and FAA towers according to 2016 population data. The population within a 30-minute drive time of a contract tower is expected to grow to serve approximately 0.2 percent more of the state's 2035 population. The population within the 30-minute drive time is expected to grow by 23.4 percent from 12,829,362 in 2016 to 15,829,362 in 2035. This represents 61.7 percent of the state's 2035 projected population.

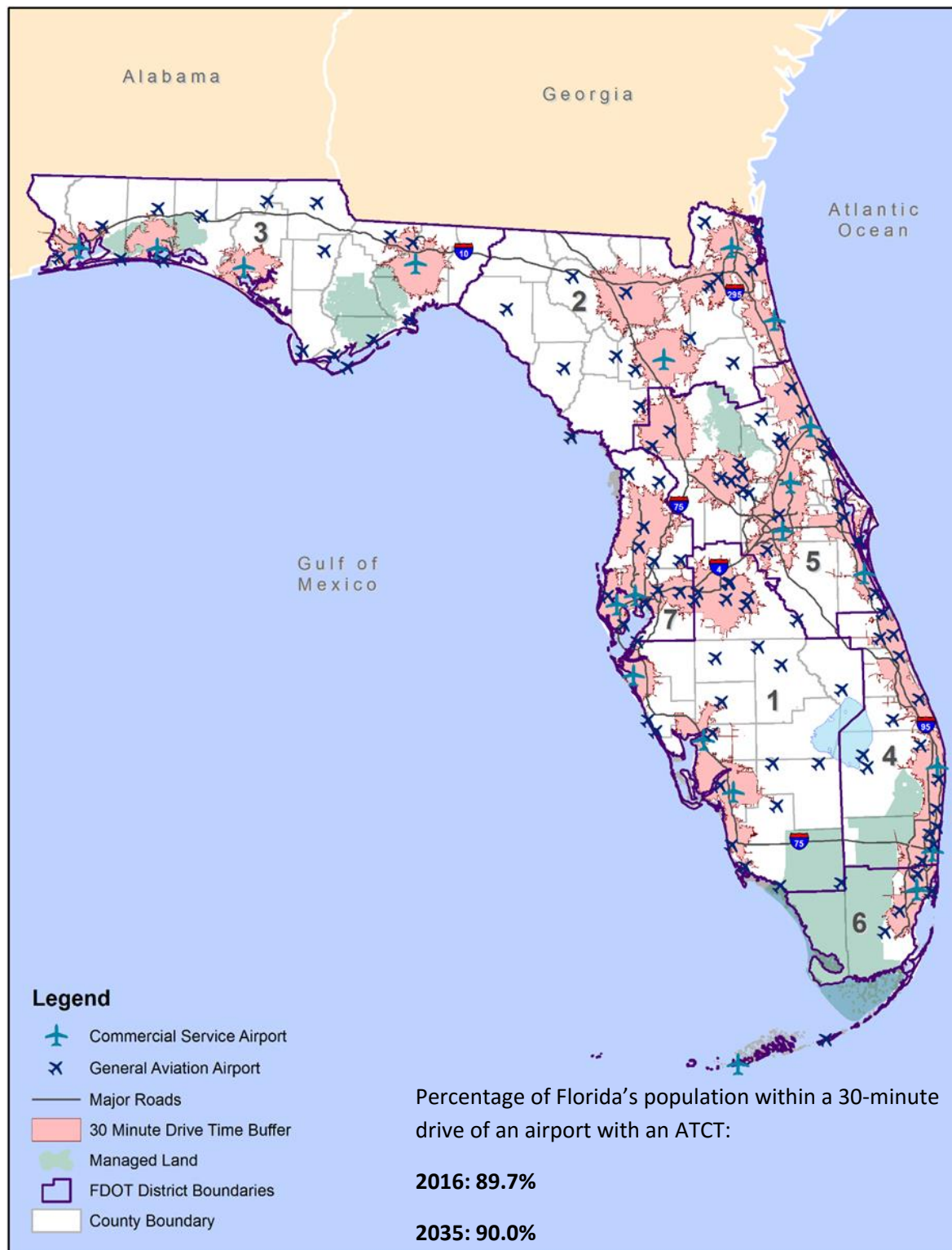
Looking to the future, updated population projections were used to determine the population being served in the year 2035. The population within a 30-minute drive time of airports with ATCTs is expected to increase by 27.9 percent, leading to a projected population of 23,070,121<sup>4</sup> by the year 2035. This represents approximately 90 percent of Florida's projected population in 2035 within a 30-minute drive time of an airport with an ATCT. Figure 7-27 shows this increase in population accommodated by these airports. Based on this information, the airports with ATCTs will accommodate an additional 0.3 percent of Florida's population and will continue to support a large majority of Florida's residents.

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<sup>4</sup> Esri Community Analyst: Population Projection



**Figure 7-27: Airports with ATCTs by FDOT District**



Source: National Flight Data Center (NFDC); Kimley-Horn Analysis



### 7.3.4 Airports with Jet A Fuel

#### 7.3.4.1 Existing Population Analysis

Across all FDOT Districts, 92 airports report providing Jet A fuel for customers, representing 71.9 percent of Florida's airports. Jet A fuel is used in turbine engines primarily operated by commercial service airlines and many business-class aircraft. Data for the availability of Jet A fuel was obtained from the NFDC. **Figure 7-28** shows that across all Districts, 92.3 percent of Florida's 2016 population is located within a 30-minute drive time of an airport with Jet A fuel. This high level of accessibility is logical considering the facilities that provide Jet A fuel. All commercial service airports provide this service and they are usually located in large, densely populated urban areas. Additionally, GA airports that accommodate jet aircraft that require Jet A fuel are likely to be located in more urbanized areas of the state. Based on the analysis, FDOT District 7 has the highest percentage of airports with Jet A fuel, while District 3 has the lowest percentage of airports. **Table 7-21** provides a summary of airports with Jet A fuel by District in both total number and percentage.

**Table 7-21: Airports with Jet A Fuel by FDOT District**

Florida Public-Use Airports with Jet A Fuel		
FDOT District	Number of Airports with Jet A	Percentage within District
1	18	64.3%
2	13	72.2%
3	12	60.0%
4	12	70.6%
5	19	76.0%
6	6	85.7%
7	12	92.3%
<b>Total</b>	<b>92</b>	<b>71.9%</b>

Source: National Flight Data Center (NFDC); Kimley-Horn Analysis

The analysis reveals that Florida residents are well served by airports with Jet A fuel. Having such a high percentage of Florida's population being located within a 30-minute drive indicates that Florida is well served by airports with Jet A fuel.

#### 7.3.4.2 Future Population Analysis

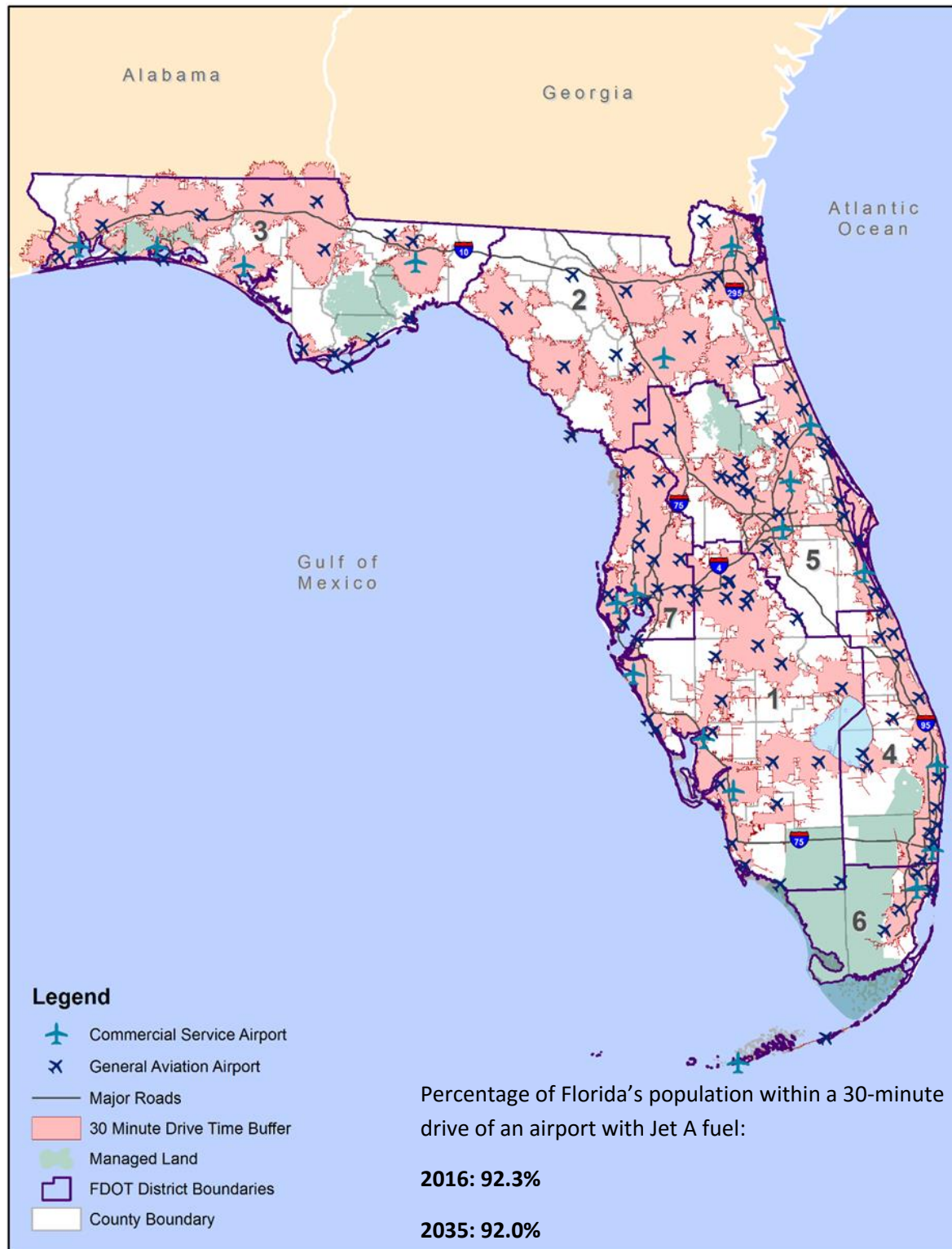
For the future population analysis, it is assumed that the same airports with Jet A fuel service will also have this service in 2035. It is possible additional airports will secure this fuel between 2016 and 2035, but no definitive information is available to identify which airports will secure this service.

The 2035 population within a 30-minute drive from airports providing Jet A fuel as of 2016 is expected to increase by 27.1 percent. This predicted growth will increase the population from 18,558,298 in 2016 to 23,583,381 in 2035.<sup>5</sup> The 2035 population projection represents coverage to approximately 92.0 percent of the state's overall population within 30-minutes of an airport providing Jet A fuel, as opposed to the 92.3 percent represented by the 2016 population. Though a slight decrease in the percent of the population within a 30-minute drive time is expected, the vast majority of Florida's population will still have access to airports with Jet A fuel in 2035. Figure 7-28 shows the percentage of the population within 30-minutes of an airport with Jet A fuel for both 2016 and 2035.

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<sup>5</sup> Esri Community Analyst: Population Projection

Figure 7-28: Airports with Jet A Fuel by FDOT District



Source: National Flight Data Center (NFDC); Kimley-Horn Analysis

### 7.3.5 100LL Fuel (avgas)

#### 7.3.5.1 Existing Population Analysis

Review of data from the NFDC reveals that 107 airports in Florida have 100LL gas available for customers, or 83.6 percent of all Florida airports. 100LL gas, also commonly referred to as avgas, is the most common form of gas used by GA aircraft in Florida and the U.S. Across all FDOT Districts, 93.5 percent of Florida's population lives within a 30-minute drive of an airport that currently has avgas. This high percentage is likely because avgas is a very common amenity found at Florida's airports. A summary of these facilities is provided in **Figure 7-29**. Based on the analysis, it was found that the FDOT District with the highest percentage of airports with avgas available was District 7. Conversely, District 3 had the lowest percentage of airports with avgas gas available. **Table 7-22** provides a summary of airports with avgas fuel by District in both total number and percentage.

**Table 7-22: Airports with Avgas by FDOT District**

Florida Public-Use Airports with Fuel Type Avgas		
FDOT District	Number of Airports with Avgas	Percentage within District
1	23	82.1%
2	15	83.3%
3	15	75.0%
4	14	82.4%
5	21	84.0%
6	6	85.7%
7	13	100.0%
<b>Total</b>	<b>107</b>	<b>83.6%</b>

Source: National Flight Data Center (NFDC); Kimley-Horn Analysis

Based on this analysis, Florida appears well served by airports with avgas, with no notable gaps in this service.

#### 7.3.5.2 Future Population Analysis

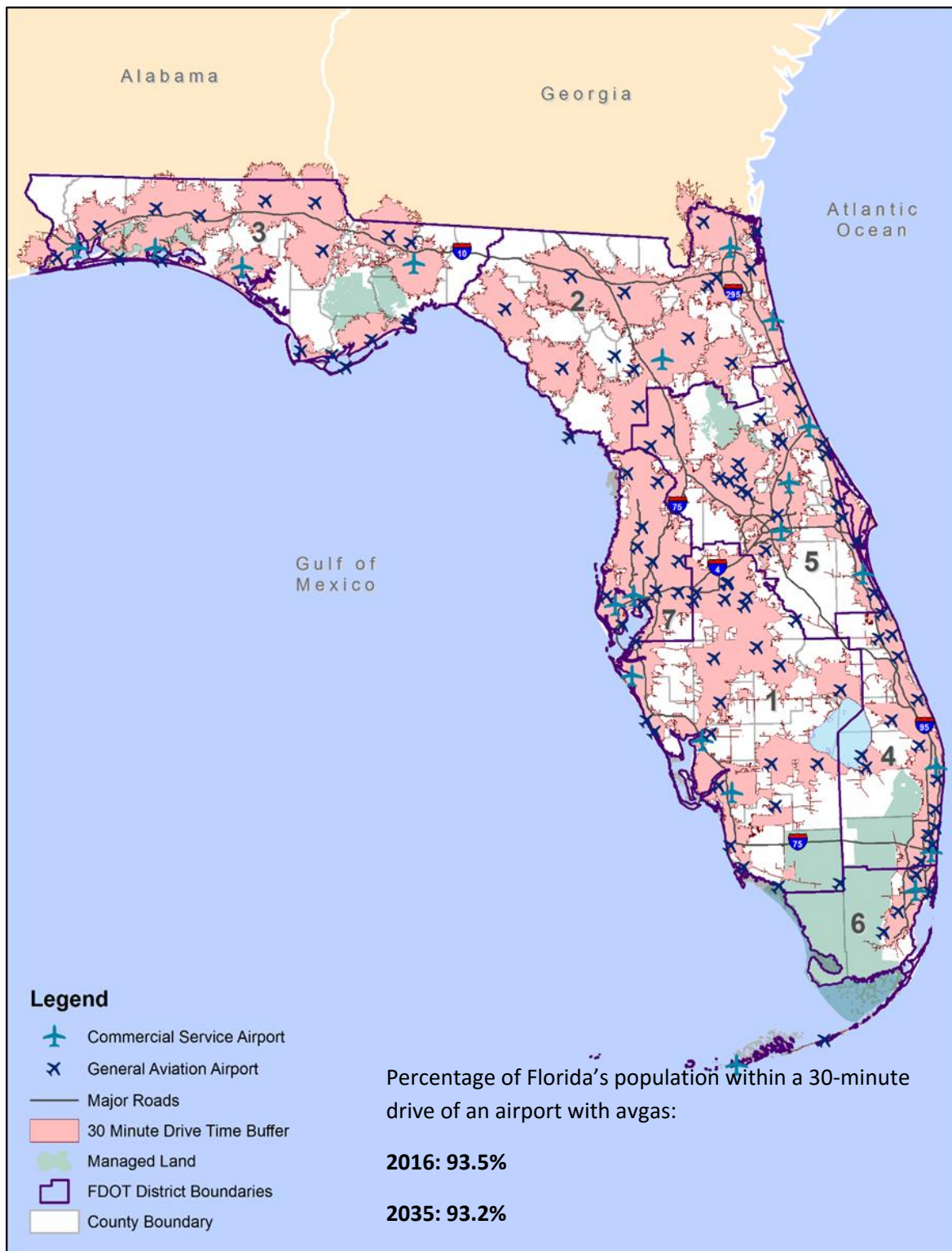
Similar to the Jet A fuel analysis, for the future avgas population analysis, it is assumed that the same airports with avgas service will also have this service in 2035. It is possible additional airports will secure this fuel between 2016 and 2035, but no definitive information is available to identify which airports will secure this service. The 2035 population within a 30-minute drive time of airports providing avgas is expected grow by 27.1 percent. This growth will increase the population being accommodated by airports with avgas from 18,807,107 in 2016 to 23,895,045 in

2035.<sup>6</sup> The increased population in 2035 represents 93.2 percent of the state's projected population, a decrease of 0.3 percent when compared to 2016 population percentage. Though the total population percentage is decreased slightly, the majority of the state's population will remain within a 30-minute drive of an airport with avgas in the year 2035. Figure 7-29 displays the percentage of the population within 30-minutes of an airport with avgas for both 2016 and 2035.

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<sup>6</sup> Esri Community Analyst: Population Projection

**Figure 7-29: Airports with Avgas by FDOT District**



Source: National Flight Data Center (NFDC); Kimley-Horn Analysis



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### 7.3.6 NPIAS Airports

The NPIAS is the FAA's primary planning document that categorizes and groups airports that are eligible for AIP funding. The NPIAS categorizes commercial service airports by their hub size and GA airports by ASSET category. Hub sizes include large, medium, small, and non-hub airports, while ASSET categories include national, regional, local, and basic. In total, Florida is home to 100 NPIAS airports, including four large hub commercial service airports and 10 national ASSET classifications, both of which are the most in the U.S. (2017 – 2021 NPIAS Study). (Note: The 2017 – 2021 NPIAS identifies one airport [Everglades Airpark, X01] as unclassified. Everglades Airpark is not included in this analysis; therefore, 99 airports are identified in the evaluation.)

For this analysis, the accessibility to commercial service and GA airports was evaluated by individual NPIAS and ASSET categories and then combined to show the population with access to the airports when the categories are added together to form a more complete network. The combined or cumulative analysis reflects the capacity of larger airports to serve the overlapping needs of the smaller airports, especially for small GA aircraft that can land at any size airport (even if they do not wish to land at large commercial airports). This cumulative analysis reflects the additional population accessibility that is provided by adding airport categories together, and provides the information on coverage for each individual layer or category of airport.

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#### 7.3.6.1 Commercial Service Airports

##### 7.3.6.1.1 EXISTING POPULATION ANALYSIS

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In total, there are 20 commercial service airports in Florida listed in the 2017 – 2021 NPIAS. Of these, there are four large hubs, three medium hubs, six small hubs, and seven non-hubs. For the purposes of this analysis, small and non-hub airports are grouped together. As shown in **Table 7-23**, Florida's residents are well served by commercial service airports, especially the large hubs. The large hub airports are in the Miami, Fort Lauderdale, Orlando, and Tampa metropolitan areas, providing access for many of the state's residents and visitors. The medium hub airports provide service to the Jacksonville, Ft. Myers, and West Palm Beach areas of the state, while the small and non-hub airports primarily provide service in the northeast, southwest, and panhandle regions of Florida. The commercial service airport 30-minute drive times have slight overlap in the Tampa, South Florida, and the Orlando metropolitan areas. In total, Florida's NPIAS commercial service airports provide access to 56.5% of Florida's population within a 30-minute drive time. Additionally, **Table 7-23**, **Figure 7-30**, **Figure 7-31**, and **Figure 7-32** show the total 2016 population within the 30-minute drive times as the airport hub sizes are combined to create a more complete network. As identified in **Figure 7-30**, 28.4 percent of Florida's population can reach a large hub airport within a 30-minute drive. Further, as **Figure 7-31** identifies, 39.6 percent of the population can reach either a large or medium hub airport within 30 minutes, while 56.5 percent of the population can access one of the 20 commercial service airports in the state within 30 minutes (**Figure 7-32**). These calculations remove the overlapping populations, ensuring no double counting in the population analysis.

**Table 7-23: NPIAS Airports by Commercial Service Hub Size**

Commercial Service					
Hub Size	Percentage of Commercial Service Airports	2016: Percentage of Population Within a 30-Minute Drive	2016: Percentage of Cumulative Population Within a 30-Minute Drive	2035: Percentage of Population Within a 30-Minute Drive	2035: Percentage of Cumulative Population Within a 30-Minute Drive
Large	20% (4 of 20)	28.4%	N/A	28.3%	N/A
Medium	15% (3 of 20)	11.2%	39.6% (Large + Medium)	11.3%	39.6% (Large + Medium)
Small and Non	65% (13 of 20)	23.1%	56.5% (Large + Medium + Small + Non)	22.2%	56.5% (Large + Medium + Small + Non)

Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

The analysis shows that Florida's population appears adequately served by its NPIAS commercial service airports, with service gaps present within Districts 1, 2, 6, and 7. These gap areas are primarily in areas with relatively low populations or large areas of conservation land, indicating a reduced need for a commercial service airport.

#### 7.3.6.1.2 FUTURE POPULATION ANALYSIS

For the future population coverage evaluation, it was assumed that the current NPIAS commercial service airport classifications would be maintained in 2035. While commercial airline service continues to change, it is unknown which airports may gain or lose this service in the future.

The cumulative population within a 30-minute drive time of the NPIAS commercial service airport network in 2035 is expected to grow by 27.6 percent. Table 7-23 depicts how this growth will change the percentage of the population being accommodated in 2035. This projected growth will increase the 2016 population from 11,354,004 to 14,484,846 in 2035.<sup>7</sup> Individually, each of the NPIAS commercial hub categories have experienced slight changes to the percentage of the population being served. The most significant population change can be seen within the small/non-hub categories which will be serving approximately 0.9 percent less of the projected population in 2035.

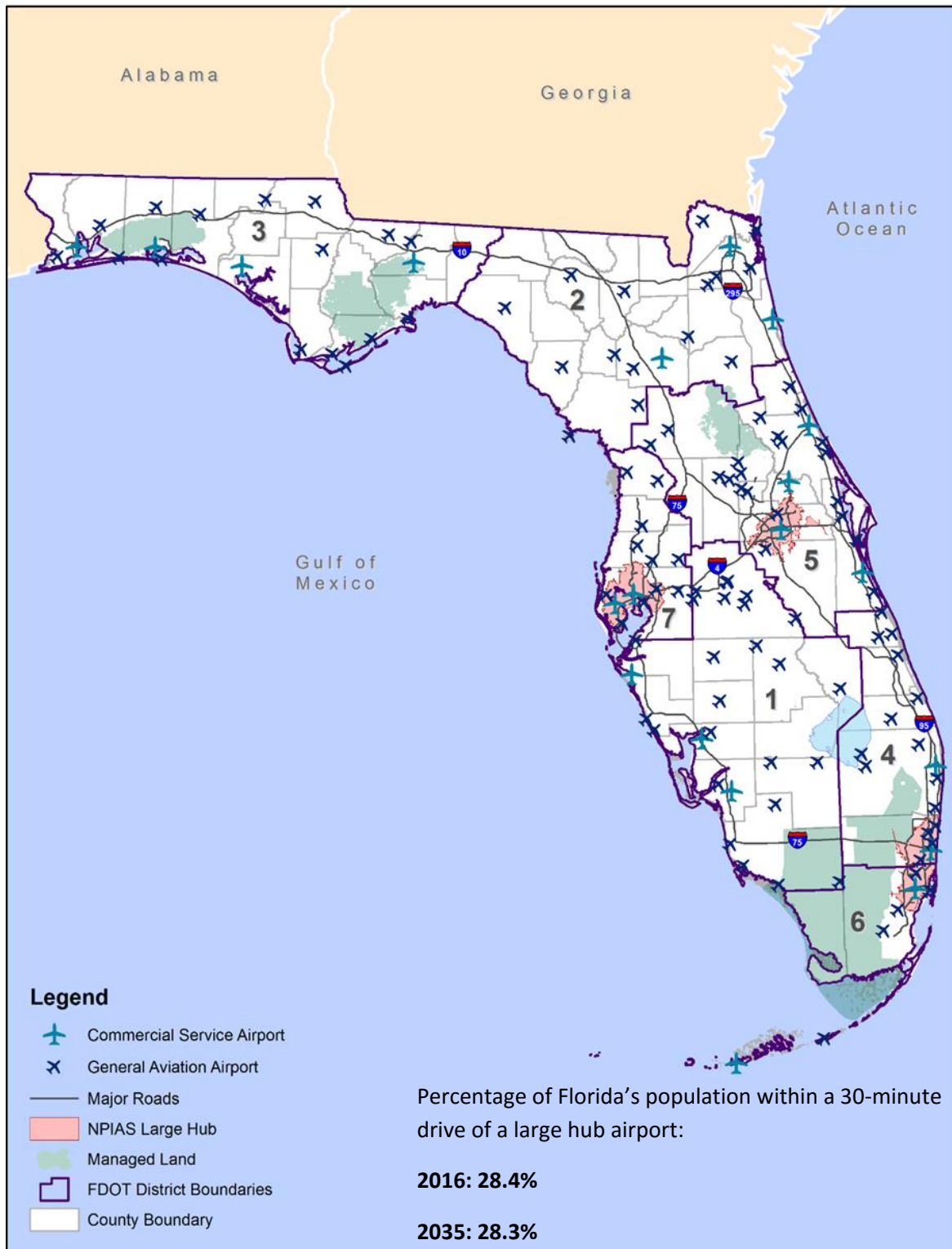
When looking at the cumulative 30-minute drive times of the NPIAS airports in 2035, the overall population percentage is identical to the coverage provided within 2016. These numbers indicate that the previously mentioned reduction in coverage from the small/non-hub airports will be made up for, or overlapped by the drive times from the other NPIAS categories. Overall, it

<sup>7</sup> Esri Community Analyst: Population Projection



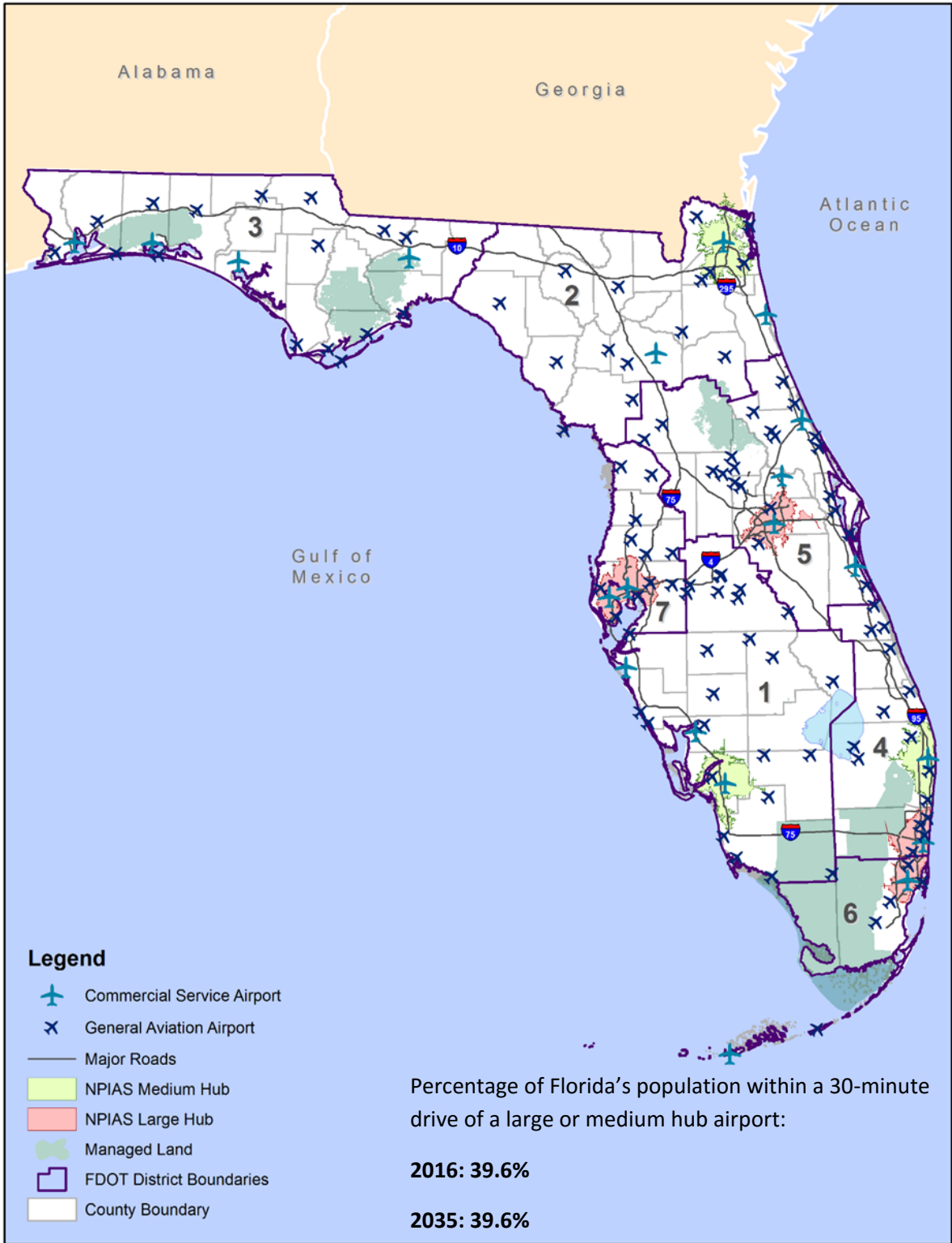
appears that the coverage of NPIAS commercial service airports will remain at similar levels to present day. Figure 7-30, Figure 7-31, and Figure 7-32 show the percentage of Florida's population being served by the NPIAS commercial service airports for 2016 and 2035.

**Figure 7-30: NPIAS Large Hub Airport 30-Minute Drive Times**



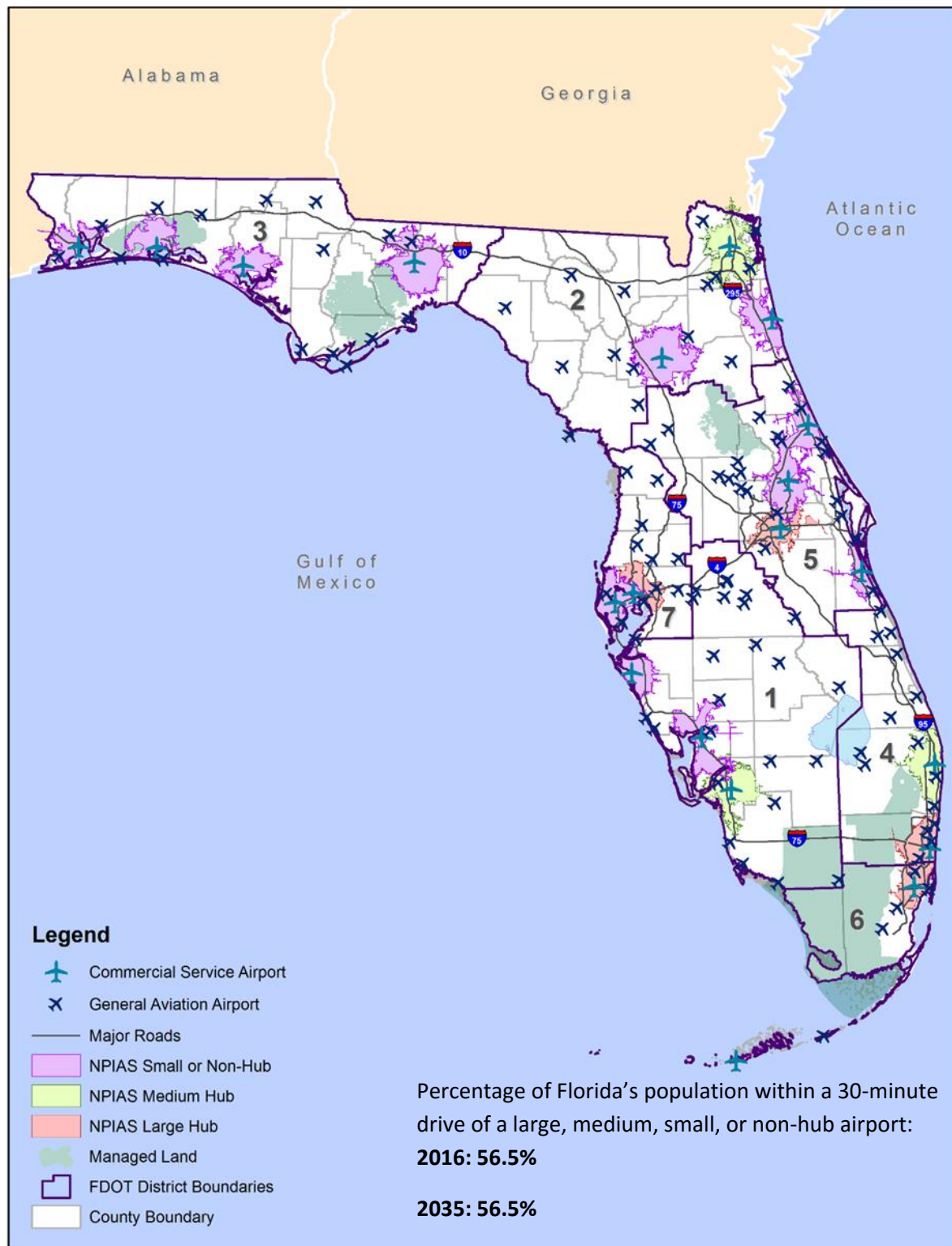
Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

Figure 7-31: NPIAS Large and Medium Hub Airport 30-Minute Drive Times



Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

**Figure 7-32: NPIAS Large, Medium, Small, and Non-Hub Airport 30-Minute Drive Times**



Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

## 7.3.6.2 Commercial Service Airports: Expanded Drive Times

### 7.3.6.2.1 EXISTING POPULATION ANALYSIS

In addition to the 30-minute drive time analysis outlined previously, the 20 NPIAS commercial service airports were analyzed with longer drive times. Large hub airports were expanded to encompass a 90-minute drive time; the medium hub airport drive time was extended to 60 minutes; and the small hub/non-hub airport drive time was expanded to 45-minutes. The increased drive times for each hub size greatly increased the amount of population who could utilize these airports. For example: over 70 percent of Florida's 2016 population is within 90 minutes of a large hub commercial service airport (**Figure 7-33**) and 84.4 percent of the population is within a 90-minute drive of a large hub or a 60-minute drive of a medium hub airport (**Figure 7-34**). Based on the increased drive times, 93.4 percent of Florida's population (**Figure 7-35**) are served by NPIAS commercial service airports based on the expanded drive times, representing an additional 37 percent Florida's population when compared to the 30-minute drive times. The expanded drive times also greatly increased the overlap of drive-time coverage, leading to increased options for users to choose between airport facilities. It is possible that passengers would be willing to drive farther to specific airports based on various factors such as destination, cost, airline, and flight accessibility. These additional factors indicate that the total population being served by commercial service airports is likely larger than the population located within the drive times. **Table 7-24** shows the total population within the expanded drive times as the hubs are combined to create a more complete network. As previously noted, these calculations remove the overlapping populations, ensuring no double counting in the population analysis.

**Table 7-24: NPIAS Airports by Commercial Service Hub Size: With Expanded Drive Time Limits**

Commercial Service					
Hub Size	Drive Time Area	2016: Percentage of Population Within Drive Time	2016: Percentage of Cumulative Population Within Drive Time	2035: Percentage of Population Within Drive Time	2035: Percentage of Cumulative Population Within Drive Time
Large	90 Minutes	70.5%	N/A	70.9%	N/A
Medium	60 Minutes	27.9%	84.4% (Large + Medium)	28.6%	85.5% (Large + Medium)
Small and Non	45 Minutes	45.5%	93.4% (Large + Medium + Small + Non)	46.1%	94.2% (Large + Medium + Small + Non)

Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

As depicted, the expanded drive times encompass most of Florida's population. Service gap areas are present in the western portion of District 2 and the eastern portion of District 1, but

these gap areas are sparsely populated and lightly developed, reducing the need for a commercial service airport in these areas.

#### 7.3.6.2.2 FUTURE POPULATION ANALYSIS

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The cumulative 2016 population within the expanded drive times of the NPIAS commercial service airports is expected grow by 28.6 percent between 2016 and 2035. This growth will lead to an increase in population being accommodated from 18,784,864 in 2016 to 24,153,197 in 2035.<sup>8</sup> Table 7-24 depicts the changes to the percentage of the projected population being served in 2035. Each of the NPIAS commercial service airport categories is expected to increase the total percentage of the population being served by the year 2035. The most significant growth in the percentage of the population will be from the medium hub airports which will accommodate an additional 0.7 percent of the state's population.

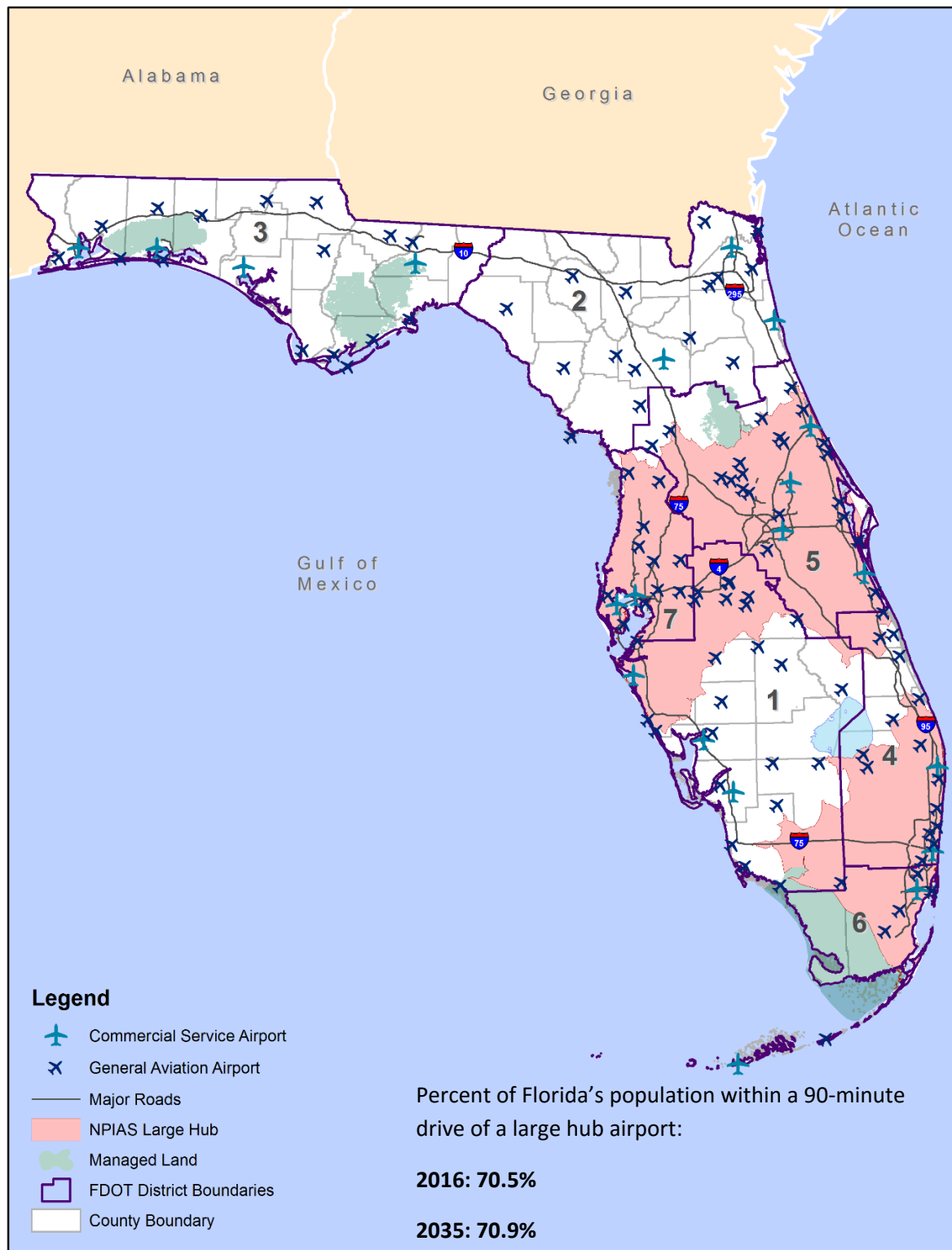
Overall, the cumulative percentage of the projected population being accommodated in 2035 will be 94.2 percent. This represents a 0.8 percent increase in the percentage of the population being served, which indicates that the current airport network should provide sufficient coverage for the projected population growth. Figure 7-33, Figure 7-34, and Figure 7-35 depict the percentage of the projected population being accommodated in 2016 and 2035.

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<sup>8</sup> Esri Community Analyst: Population Projection

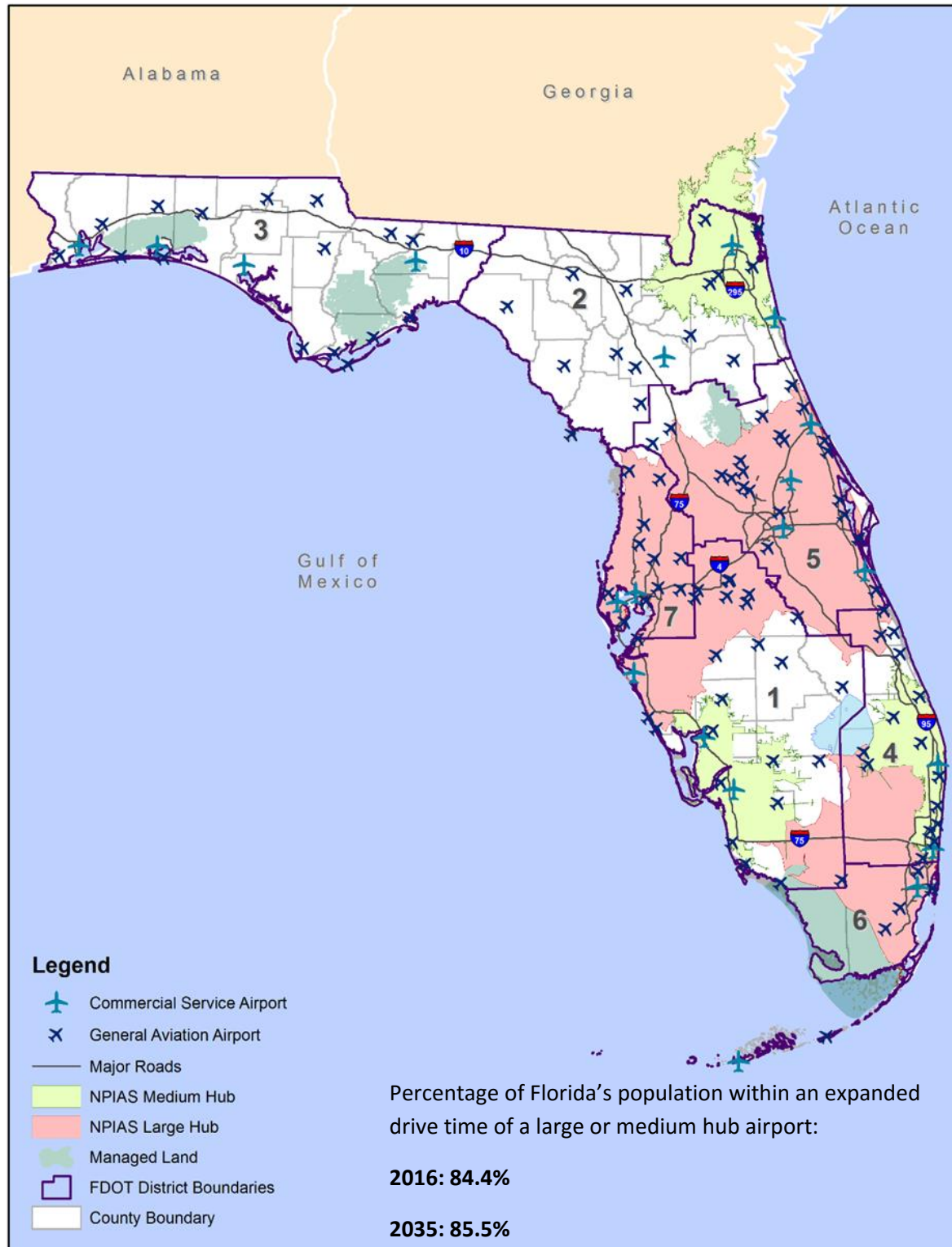


**Figure 7-33: NPIAS Large Hub Airport 90-Minute Drive Times**



Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

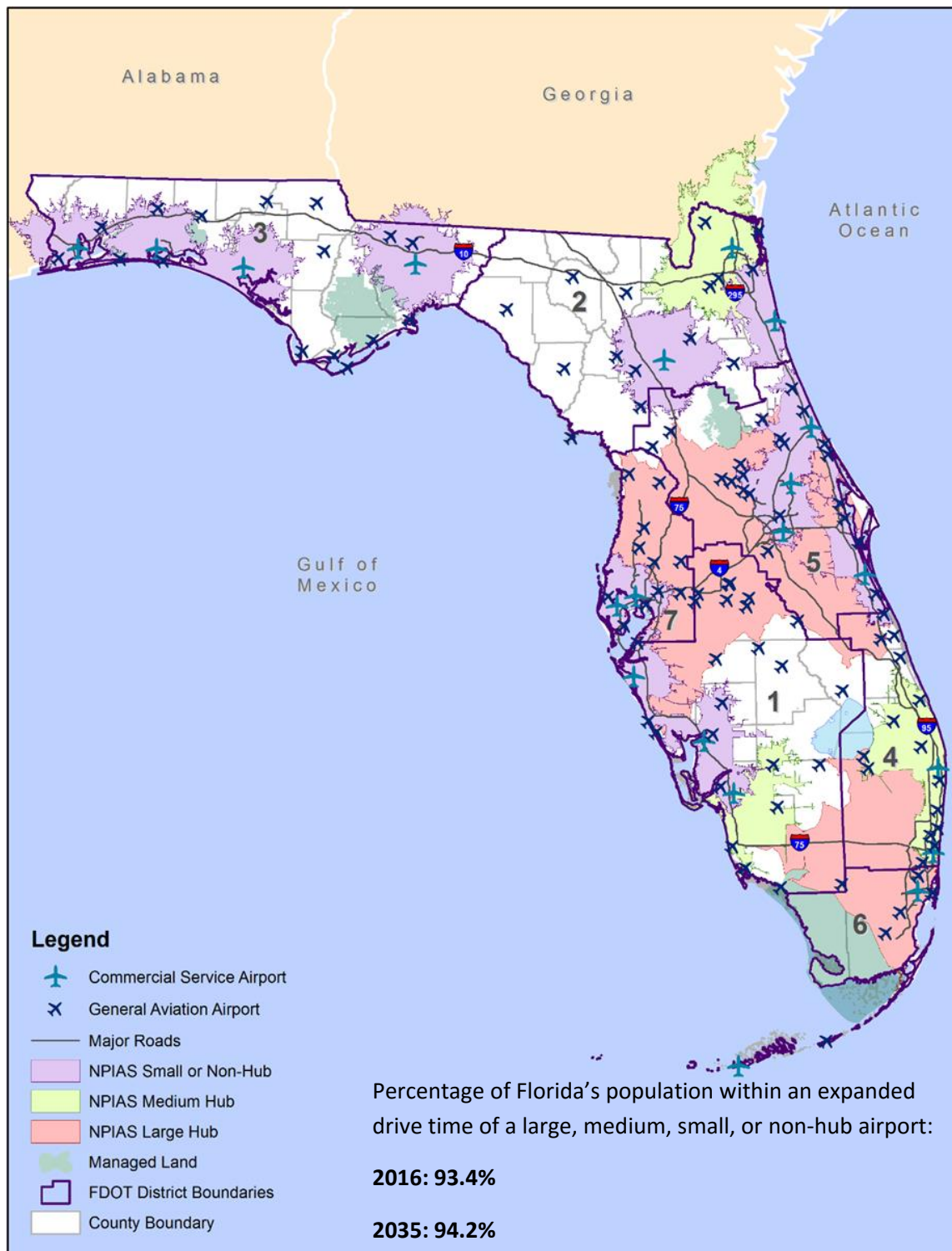
**Figure 7-34: NPIAS Large Hub Airport 90-Minute Drive Times and Medium Hub 60-Minute Drive Times**



Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis



**Figure 7-35: NPIAS Large Hub Airport 90-Minute Drive Times, Medium Hub 60-Minute Drive Times, and the Small/Non-Hub 45-Minute Drive Times**



Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

### 7.3.6.3 GA Airports

#### 7.3.6.3.1 EXISTING POPULATION ANALYSIS

Florida is home to 108 public-use GA airports, 80 of which are in the NPIAS. Of these, 10 are categorized as national, 31 are categorized as regional, 30 are categorized as local, and eight are categorized as basic. As previously noted, Everglades Airpark is in the NPIAS but is unclassified and is not included in this analysis. **Table 7-25** provides a summary of the population in Florida that can access these airports within a 30-minute drive time. As shown in Table 7-25 and the figures that follow, 41.5 percent of the 2016 population can reach a national airport (**Figure 7-36**), 54.4 percent can reach a regional airport (**Figure 7-37**), and 23.4 percent can reach a local airport (**Figure 7-38**) within a 30-minute drive time. When drive times are combined for all NPIAS GA airports, removing the overlaps, 85.5 percent of Florida's population is within a 30-minute drive time. The cumulative drive times show that the addition of regional to national adds 38.6 percent additional coverage (15.8 percent is overlapping population coverage). The additional population coverage provided by adding local airports is 5.1 percent, while adding basic to the other three classifications only provides access to an additional 0.3 percent of the population.

**Table 7-25: NPIAS Airports by ASSET Classification**

General Aviation					
ASSET Category	Percentage of GA Airports	2016: Percentage of Population Within a 30-Minute Drive	2016: Percentage of Cumulative Population within a 30-Minute Drive	2035: Percentage of Population Within a 30-Minute Drive	2035: Percentage of Cumulative Population within a 30-Minute Drive
National	13% (10 of 80)	41.5%	N/A	41.3%	N/A
Regional	39% (31 of 80)	54.4%	80.1% (National + Regional)	54.1%	80.1% (National + Regional)
Local	38% (30 of 80)	23.4%	85.2% (National + Regional + Local)	22.8%	84.7% (National + Regional + Local)
Basic	10% (8 of 80)	11.1%	85.5% (National + Regional + Local + Basic)	10.4%	85.0% (National + Regional + Local + Basic)

Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

Based on this information, the majority of Florida's population is within a 30-minute drive time of the NPIAS GA airports. No major GA service gaps were identified as part of this analysis.

#### 7.3.6.3.2 FUTURE POPULATION ANALYSIS

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For the future population coverage evaluation, it was assumed that the current ASSET airport classifications would be maintained in 2035. It is unknown which airports (if any) may gain commercial service or change classification in the future.

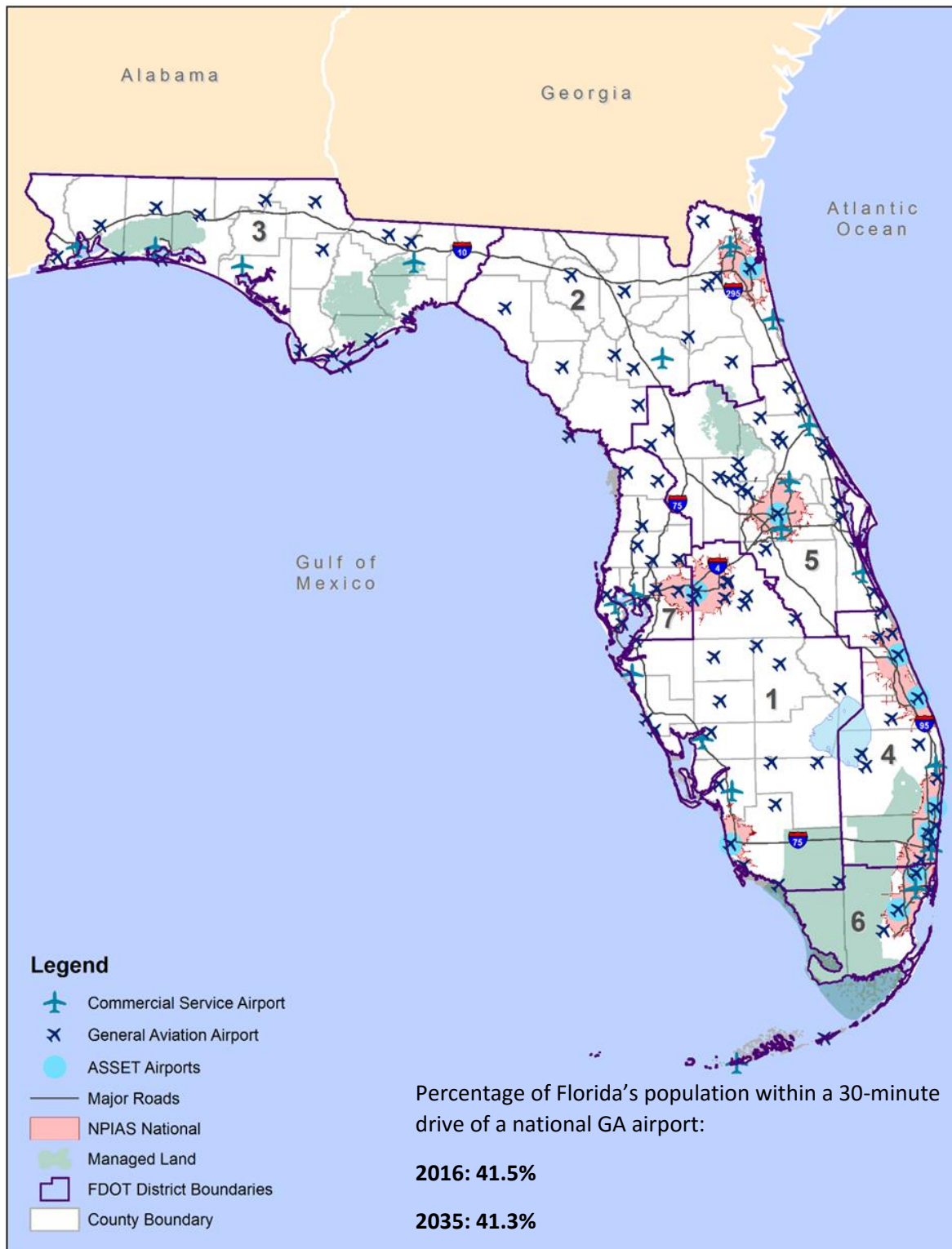
The cumulative population within the 30-minute drive time of ASSET classification airports is expected to grow by 26.6 percent between 2016 and 2035. Table 7-25 displays the change in percentage of the projected population being accommodated in 2035. This growth will lead to an increase in population within the 30-minute drive time from 17,202,220 in 2016 to 21,786,730 in 2035.<sup>9</sup> The largest change is a decrease of 0.7 percent of the population within 30 minutes of a basic classification airport, followed by a 0.6 percent decrease in the coverage from local classification airports. Decreases in population coverage under a one percent change are within such a small margin of error from the population projections that they will not necessarily indicate the need for additional airports to serve the future population.

Overall, the cumulative population within a 30-minute drive time of the ASSET classification airports will be 85 percent of the projected 2035 population of Florida. This represents a 0.5 percent decrease in the percentage of the state's projected population being accommodated by the ASSET classification airports. This minimal decrease in coverage will not likely require the construction of additional airports within the system. Additionally, new airports would not likely be included within the NPIAS initially, meaning the applicable NPIAS population would not be affected by the additional airport(s). Figure 7-36, Figure 7-37, and Figure 7-38 depict the percentage of the projected population being accommodated in 2035.

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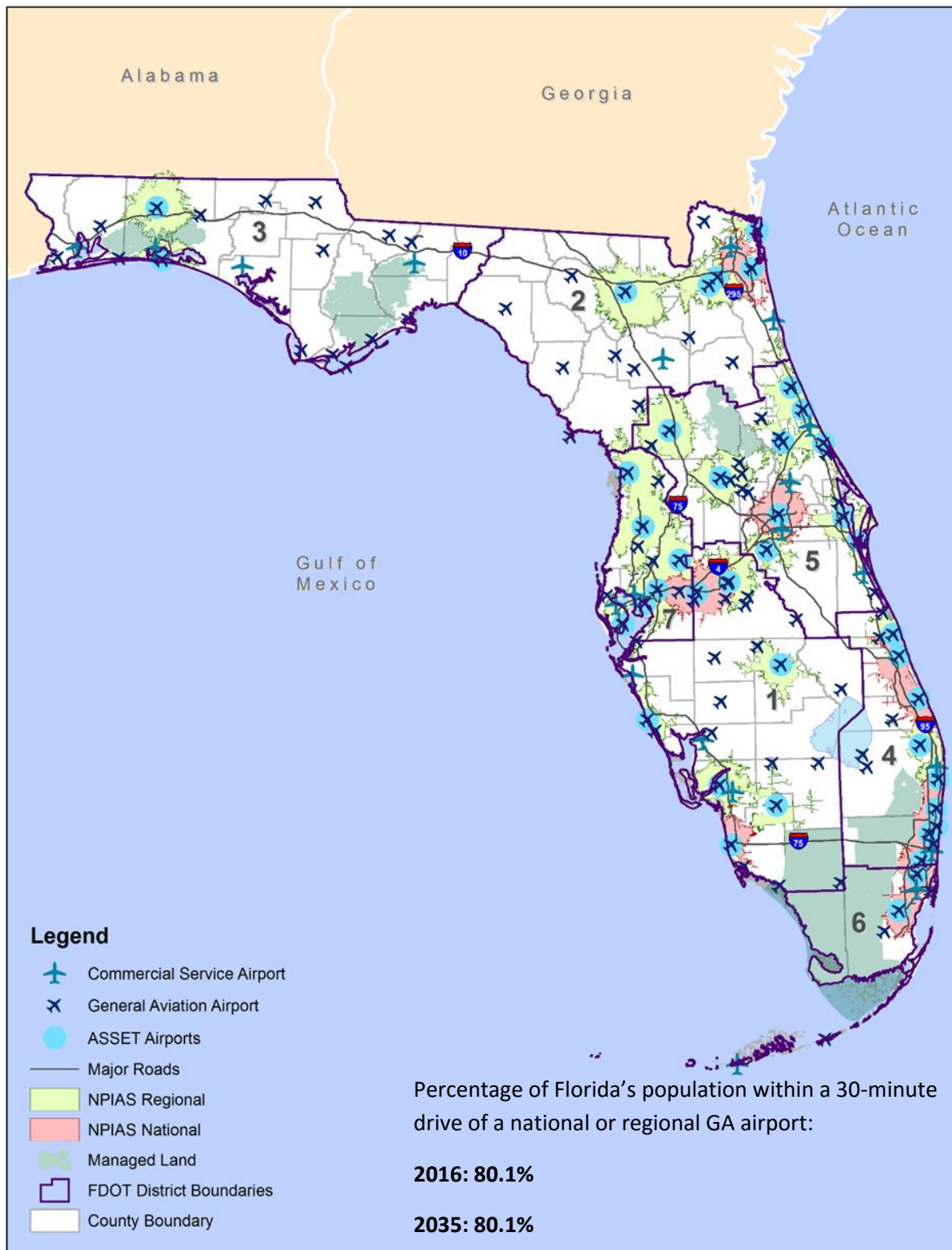
<sup>9</sup> Esri Community Analyst: Population Projection

**Figure 7-36: National ASSET Classification Airports 30-Minute Drive Times**



Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

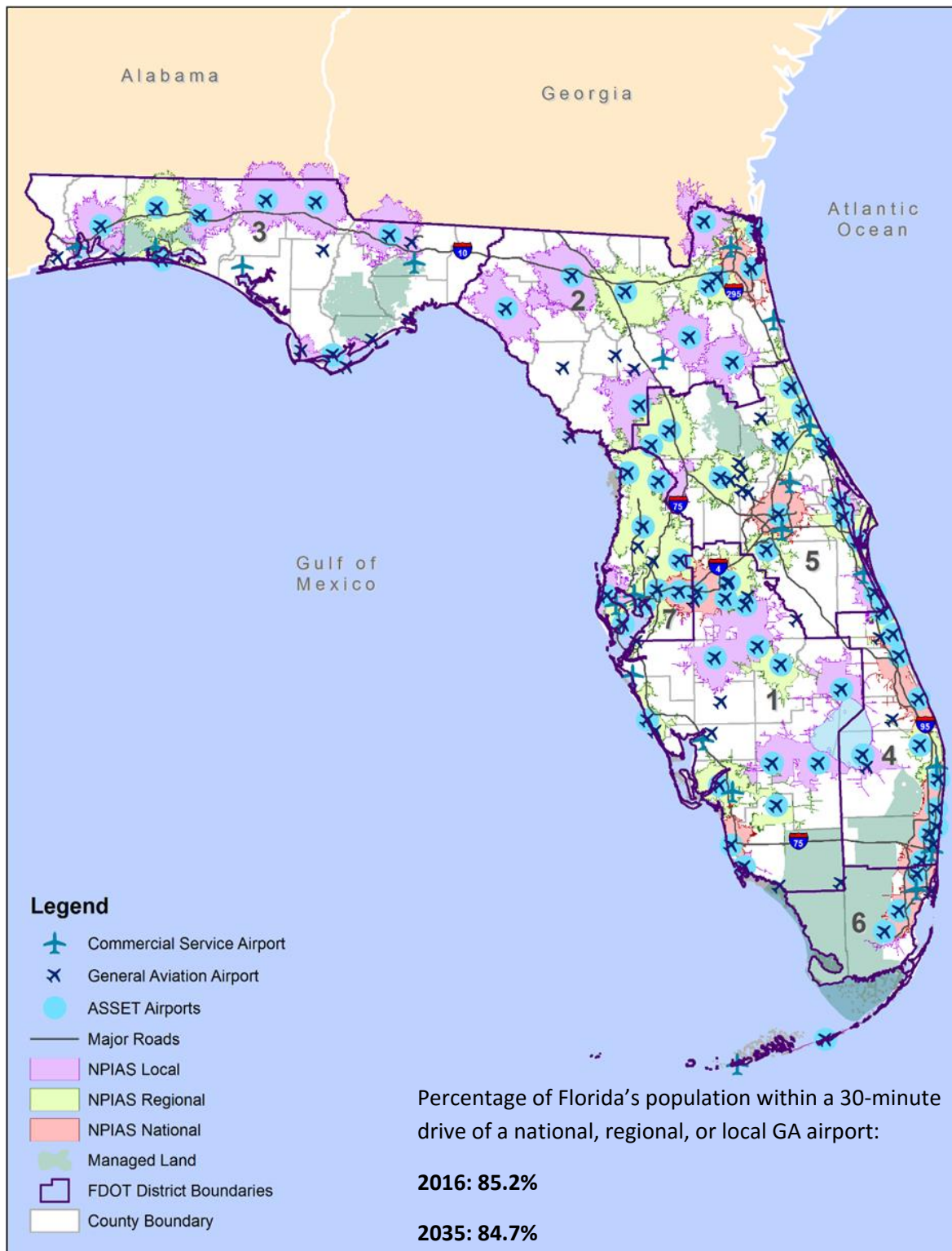
**Figure 7-37: National and Regional ASSET Classification Airports 30-Minute Drive Times**



Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis



**Figure 7-38: National, Regional, and Local ASSET Classification Airports 30-Minute Drive Times**



Source: National Plan of Integrated Airport Systems (NPIAS); Kimley-Horn Analysis

### 7.3.7 Strategic Intermodal System (SIS)

In Florida, there are 20 airports that are included in the SIS. The SIS was designed to appropriate special funding for Florida's largest and most strategic transportation infrastructure. Of the 20 SIS airports, 18 are commercial service and two are GA airports. Commercial service SIS airports are categorized as either SIS or Emerging SIS facilities, while the GA airports are categorized as GA relievers. For the purposes of this analysis, all SIS airports were analyzed as a group. SIS facilities are required to meet or exceed a stringent list of eligibility requirements to be designated as SIS facilities. As such, adding airports to the SIS must be evaluated on an airport-by-airport basis.

**Table 7-26** provides a summary of SIS airports by District in both total number and percentage.

**Table 7-26: SIS Airports by FDOT District**

Florida Public-Use SIS Airports		
FDOT District	Total Number of Airports	Percentage within District
1	3	10.7%
2	2	11.1%
3	4	20.0%
4	2	11.8%
5	5	20.0%
6	2	28.6%
7	2	15.4%
<b>Total</b>	<b>20</b>	<b>15.6%</b>

Source: Florida Department of Transportation (FDOT) Strategic Intermodal System (SIS); Kimley-Horn Analysis

#### 7.3.7.1 Existing Population Analysis

The 30-minute drive time analysis depicted in **Figure 7-39** shows that 72.4 percent of Florida's population can access an SIS airport, indicating substantial coverage by these facilities. SIS airports have very good coverage of the population and metropolitan areas around Florida. Based on the analysis, it was noted that the FDOT District with the highest percentage of SIS airports was District 6. Conversely, District 1 had the lowest percentage of SIS airports.

As shown in Figure 7-39, SIS facilities are primarily located in the major metropolitan areas of the state. Though there are gaps in the locations of these facilities, they do provide service to a large percentage of the population.

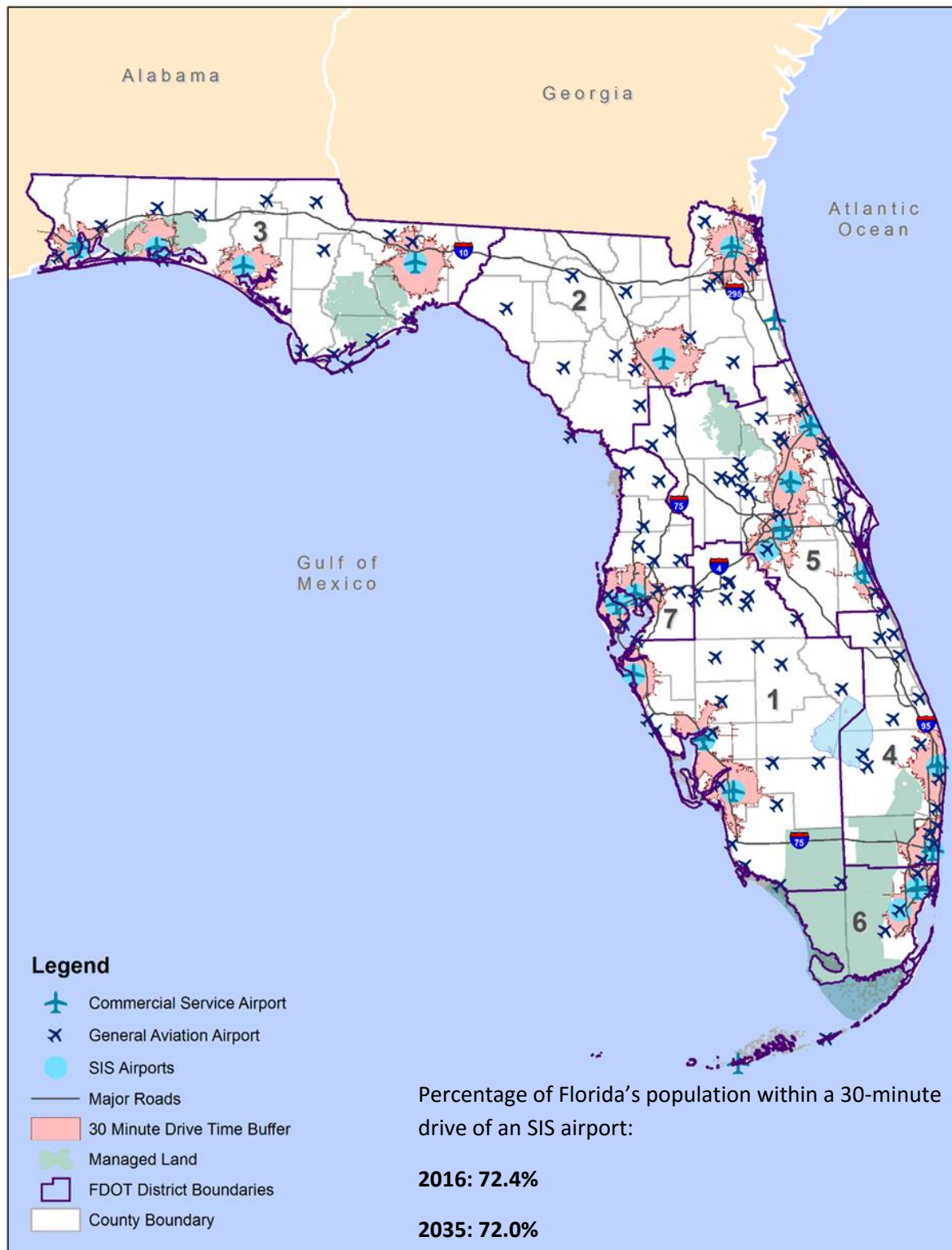
#### 7.3.7.2 Future Population Analysis

For this analysis, the current number and location of SIS airports is assumed to be the same in 2035 as in 2016. Florida's transportation network is ever changing, leading to the potential inclusion of additional airports into the SIS network. During the creation of this report, no changes to the SIS airport network occurred.

Florida's population within a 30-minute drive time of SIS airports is expected to experience 26.9 percent growth from 2016 to 2035. This growth will lead to an increase in population from 14,555,355 in 2016 to 18,465,070 in 2035. In 2035, 72 percent of the state's projected population will be within a 30-minute drive of an SIS airport. This indicates a 0.4 percent reduction in the percentage of the population being accommodated in the future. By 2035, additional airports may need to be considered for inclusion in the SIS to ensure similar levels of the populations are within 30-minutes of an SIS airport when compared with 2016. Figure 7-39 depicts the percentage of the predicted population being accommodated by SIS airports in 2016 and 2035.



**Figure 7-39: SIS Airports by FDOT District**



Source: Florida Department of Transportation (FDOT) Strategic Intermodal System (SIS); Kimley-Horn Analysis

## 7.3.8 Flight Training

### 7.3.8.1 Existing Population Analysis

Flight training is an extremely important facet of the aviation industry in Florida. In fact, Florida trains more pilots than any other state in the U.S. Providing close, convenient access to airports with flight training is critical to the overall success of the industry, as well as an essential component of the future of aviation both in Florida and around the world. According to data from the FAD, 83 airports in Florida were identified as providing flight training services. Together, these airports provide access within 30 minutes to 92 percent of Florida's 2016 population. Distribution of the activity is also fairly even across all FDOT Districts, as shown in **Figure 7-40** and **Table 7-27**. Based on the analysis, District 2 had the highest percentage of airports reporting flight training activity, while District 3 reported the lowest percentage.

**Table 7-27: Airports with Flight Training Activity by FDOT District**

Florida Public-Use Airports with Based Flight Training Operations		
FDOT District	Total Number of Airports	Percentage within District
1	15	53.6%
2	15	83.3%
3	8	40.0%
4	11	64.7%
5	20	80.0%
6	5	71.4%
7	9	69.2%
<b>Total</b>	<b>83</b>	<b>64.8%</b>

Source: National Flight Data Center (NFDC); Kimley-Horn Analysis

Based on the drive time analysis, Districts 1, 4, and 6 appear to have the largest land area coverage gaps. However, the areas without coverage contain relatively low populations and have large areas of undeveloped land.

### 7.3.8.2 Future Population Analysis

It is assumed that the same airports offering flight training in 2016 will be providing this service in 2035. Flight training and other business uses are subject to market demands which may allow additional airports to provide flight training or may force some of the current providers to cease. This analysis does not take into account market fluctuation and therefore assumes that the number and location of the airports providing flight training will remain the same.

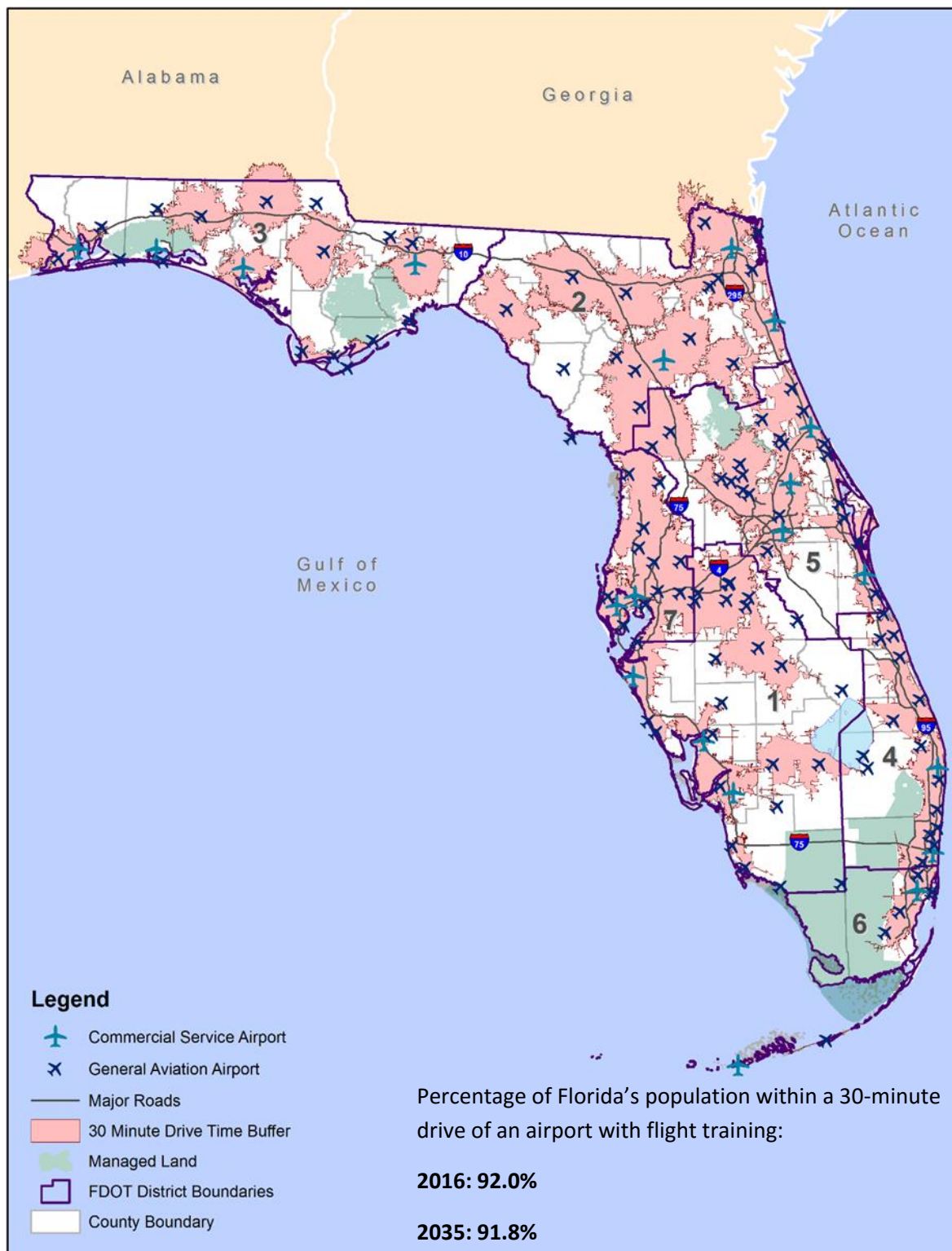
The population within a 30-minute drive time of an airport with flight training is expected to experience 27.2 percent growth between 2016 and 2035. This growth will increase the

population within a 30-minute drive time from 18,504,705 in 2016 to 23,537,338 in 2035.<sup>10</sup> This projected population increase will lead to 91.8 percent of Florida's projected population being accommodated by an airport within flight training. 91.8 percent is a 0.2 percent decrease in the percentage of the population being served when compared to 2016. The 0.2 percent reduction shows that the number of airports providing flight training services may need to increase, but it is clear that the majority of the state's population will continue to be served into the future. Figure 7-40 displays the percentage of the projected population being accommodated by airports with flight training in 2016 and 2035.

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<sup>10</sup> Esri Community Analyst: Population Projection

**Figure 7-40: Airports with Flight Training Activity by FDOT District**



Source: National Flight Data Center (NFDC); Kimley-Horn Analysis

### 7.3.9 Surface Weather Observation Stations

Weather information is collected and reported using surface weather observation stations located at airports. There are two commonly used systems that are used, AWOS and Automated Surface Observing Stations (ASOS). For the purposes of this analysis AWOS and ASOS are evaluated together. Data for the presence of surface weather observation stations was obtained from the NFDC.

#### 7.3.9.1 Existing Population Analysis with 30-Nautical Mile Buffers<sup>11</sup>

Surface weather stations provide weather forecasts and climate information to pilots as well as the public. Data provided includes wind speed and direction, visibility, cloud coverage, and many other outputs. Though both systems were designed to provide weather data, there are differences between the two. AWOSs are generally owned by an airport at the local level, while ASOSs are owned by the National Weather Service and serve non-aviation roles as well. Another major difference is the fact that AWOS reports wind direction in true north, while ASOS reports winds based on the magnetic direction. Across all FDOT Districts, it was found that 83 airports have weather observation systems, providing access to 99.9 percent of Florida's 2016 population and 98.4 percent of Florida's land area. Weather data and operation stations provide coverage for almost the entirety of the state increasing the overall safety of the airport system. Distribution of the activity is also fairly even across all FDOT Districts, as shown in **Figure 7-41** and **Table 7-28**. Based on the analysis, District 6 had the highest percentage of airports with weather systems, while District 3 reported the lowest percentage.

**Table 7-28: Airports with Surface Weather Observation Stations by FDOT District**

Florida Public-Use Airports with Surface Weather Observation Stations			
FDOT District	Total Number of Airports	Percentage within District	Percentage of Land Coverage
1	16	63.0%	100%
2	13	72.2%	94.8%
3	10	50.0%	98.0%
4	11	64.7%	100%
5	15	60.0%	100%
6	7	87.5%	98.4%
7	11	84.6%	100%
<b>Total</b>	<b>83</b>	<b>64.8%</b>	<b>98.4%</b>

Source: Federal Aviation Administration (FAA)'s AWOS/ASOS Database ([www.faa.gov/air\\_traffic/weather/asos/?state=FL](http://www.faa.gov/air_traffic/weather/asos/?state=FL)); Florida Aviation Database (FAD); National Flight Data Center (NFDC); Kimley-Horn Analysis

<sup>11</sup> 30-nautical mile analysis uses 2017 population estimates

Based on the results, almost the entirety of Florida is within 30-nautical miles of airports with AWOS or ASOS. Located within the southwestern portion of FDOT District 2, Dixie County represents the largest area outside of the 30-nautical mile buffer. The small areas throughout the state without coverage contain relatively low populations consisting of less than one percent of Florida's total population.

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### **7.3.9.2 Future Population Analysis**

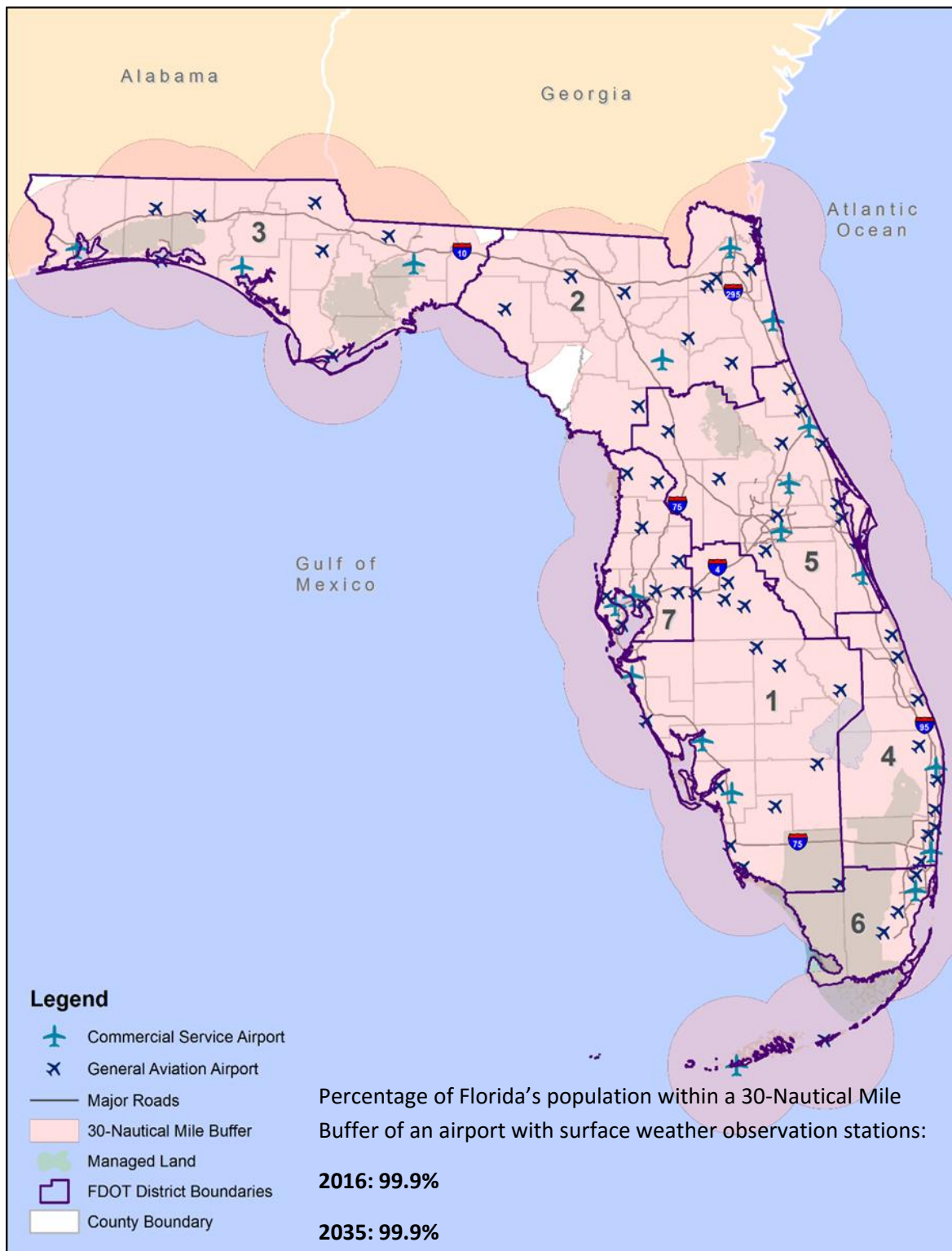
For this analysis, the number and location of airports with an AWOS or ASOS is assumed to remain the same in 2035 as in 2016. Looking to the future, Florida's population within 30-nautical miles of and airport with an AWOS or ASOS is expected to grow by 27.5 percent from 2016 to 2035. The population being served by airports with AWOS or ASOS is expected to grow from 20,091,508 in 2016 to 25,622,485 in 2035.<sup>12</sup> This increase in population will amount to 99.9 percent of Florida's projected population in 2035. With the most significant coverage gap being located within District 2, the installation of an AWOS or ASOS may be desired at the Cross-City Airport located within the gap. Construction of AWOS or ASOS in this location would close the largest gap in coverage within the state. The population and land coverage percentages show airports with AWOS and ASOS will continue to accommodate the projected future needs. The percentage of the population and land area being accommodated by the airports with AWOS and ASOS can be seen in Figure 7-41.

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<sup>12</sup> Esri Community Analyst: Population Projection



**Figure 7-41: Airports with Surface Weather Observation Stations by FDOT District**



Source: Federal Aviation Administration (FAA) AWOS/ASOS Database ([www.faa.gov/air\\_traffic/weather/asos/?state=FL](http://www.faa.gov/air_traffic/weather/asos/?state=FL)); Florida Aviation Database (FAD); National Flight Data Center (NFDC); Kimley-Horn Analysis

### 7.3.10 Runways of Various Lengths

Runway lengths have a direct impact on the size and capabilities of the aircraft that can use them and the access provided to communities throughout the state and nation. Intuitively, longer runways can accommodate traffic from larger and faster aircraft. There are certain thresholds for activity that are triggered based on certain runway lengths; therefore, for this analysis, the number of airports and the population that is able to reach those airports within a 30-minute drive were analyzed across four different runway lengths:

- 6,500 feet
- 5,000 feet
- 4,200 feet
- 3,200 feet

For the purposes of this study, airports were only counted once based on the longest runway length present at the airport. For example, an airport with one 4,700-foot runway and one 6,000-foot runway would be recorded in the 5,000-foot runway category. The runway length data was obtained from the FAD. A summary of these findings is provided in **Table 7-29**.

**Table 7-29: Percentage of Population by Airport Runway Length**

Airport Runway Length				
Runway Length (ft.)	2016: Percentage of Population Within a 30-Minute Drive	2016: Percentage of Cumulative Population Within a 30-Minute Drive	2035: Percentage of Population Within a 30-Minute Drive	2035: Percentage of Cumulative Population Within a 30-Minute Drive
6,500 +	84.9%	N/A	84.7%	N/A
5,000-6,499	57.1%	92.6% (5,000 ft. +)	58.1%	92.3% (5,000 ft. +)
4,200-4,999	14.1%	93.0% (4,200 ft. +)	13.7%	92.6% (4,200 ft. +)
3,200-4,199	53.4%	93.6% (3,200 ft. +)	53.5%	93.3% (3,200 ft. +)

Source: Florida Aviation Database (FAD); Kimley-Horn Analysis

#### 7.3.10.1 Existing Population Analysis

As shown in Table 7-29 and **Figure 7-42**, 84.9 percent of Florida's population can reach an airport with a 6,500-foot runway in 30 minutes. **Figure 7-43** identifies that 92.6 percent of the 2016 population can reach an airport with at least a 5,000-foot runway within a 30-minute drive. Including airports that have at least a 4,200-foot or 3,000-foot runway increases population coverage marginally to 93 percent and 93.6 percent, respectively (**Figure 7-44** and **Figure 7-45**). In total, 93.6 percent of Florida's population is within 30 minutes of a runway with a length of at least 3,200 feet.

Based on the results, District 6 has the only notable drive time gap between airports with runways of at least 3,200 feet in length. District 6 is home to very large areas of conservation space such



as the Everglades National Park which leads to reduced development and low populations within the area. It is likely that this service gap effects a relatively small portion of Florida's population.

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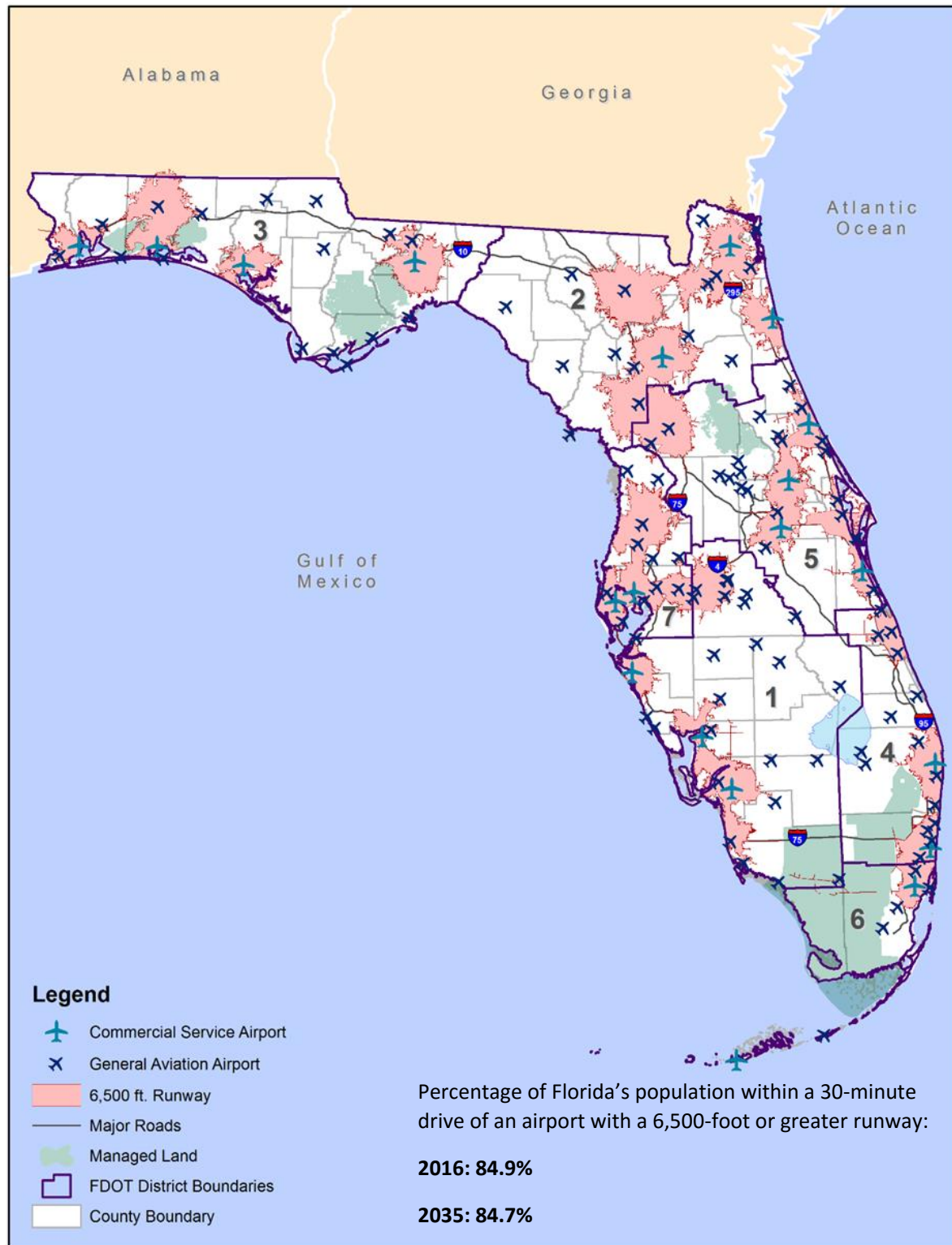
### **7.3.10.2 Future Population Analysis**

It is assumed that the runway length of Florida's airports will remain the same in 2035 as they are in 2016. Over the planning horizon, it is possible that runways may be expanded or in some cases close, but for the purpose of this report runway statistics will remain the same. The population within a 30-minute drive of an airport with a runway of at least 3,200 feet is expected to increase by 27 percent by 2035. With this growth, the population within a 30-minute drive time is expected to increase from 18,824,377 in 2016 to 23,913,079 in 2035.<sup>13</sup> The most significant change in percentage can be seen within the 5,000- to 6,499-foot runway category which is expected to accommodate an additional one percent of the state's projected population. Table 7-29 displays how the percentage of the population being accommodated by airports with various lengths and the percentage of the population being served as these airports are combined into a cumulative network. The projected 2035 population of 23,913,079 represents 93.3 percent of Florida's total population, which is 0.3 percent lower when compared to the 2016 percentage of the population within 30 minutes of the applicable runway lengths. This reduction in the percentage of the population being accommodated may indicate a need for additional airports with runways greater than 3,200 feet in length, but it should be noted that most of Florida's projected population will remain within the drive time. Figure 7-42, Figure 7-43, Figure 7-44, and Figure 7-45 depict the total percentage of the projected population within 30-minutes of the airport network with runways greater than 3,200 feet for 2016 and 2035.

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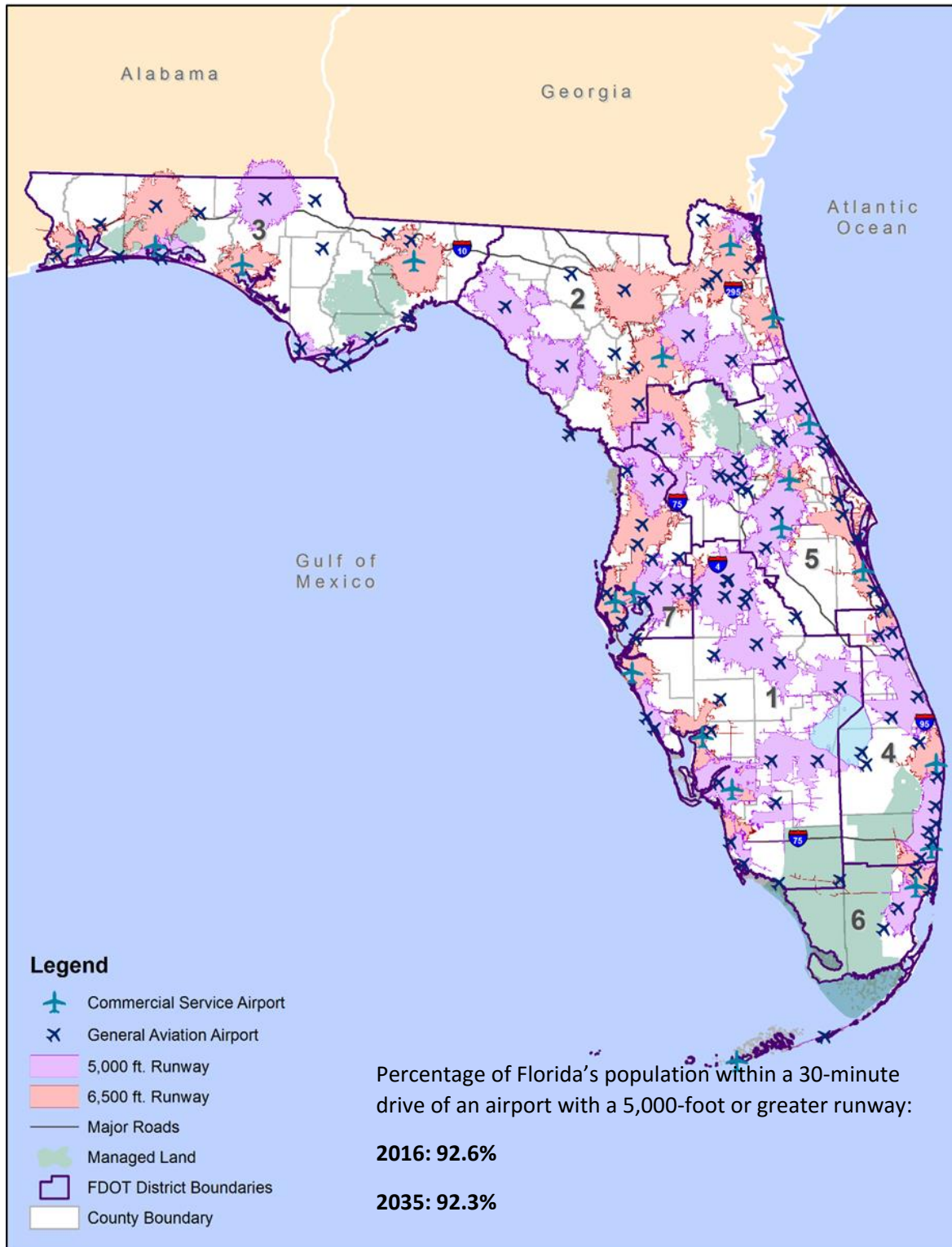
<sup>13</sup> Esri Community Analyst: Population Projection

**Figure 7-42: Runways Over 6,500 Feet 30-minute Drive Times**



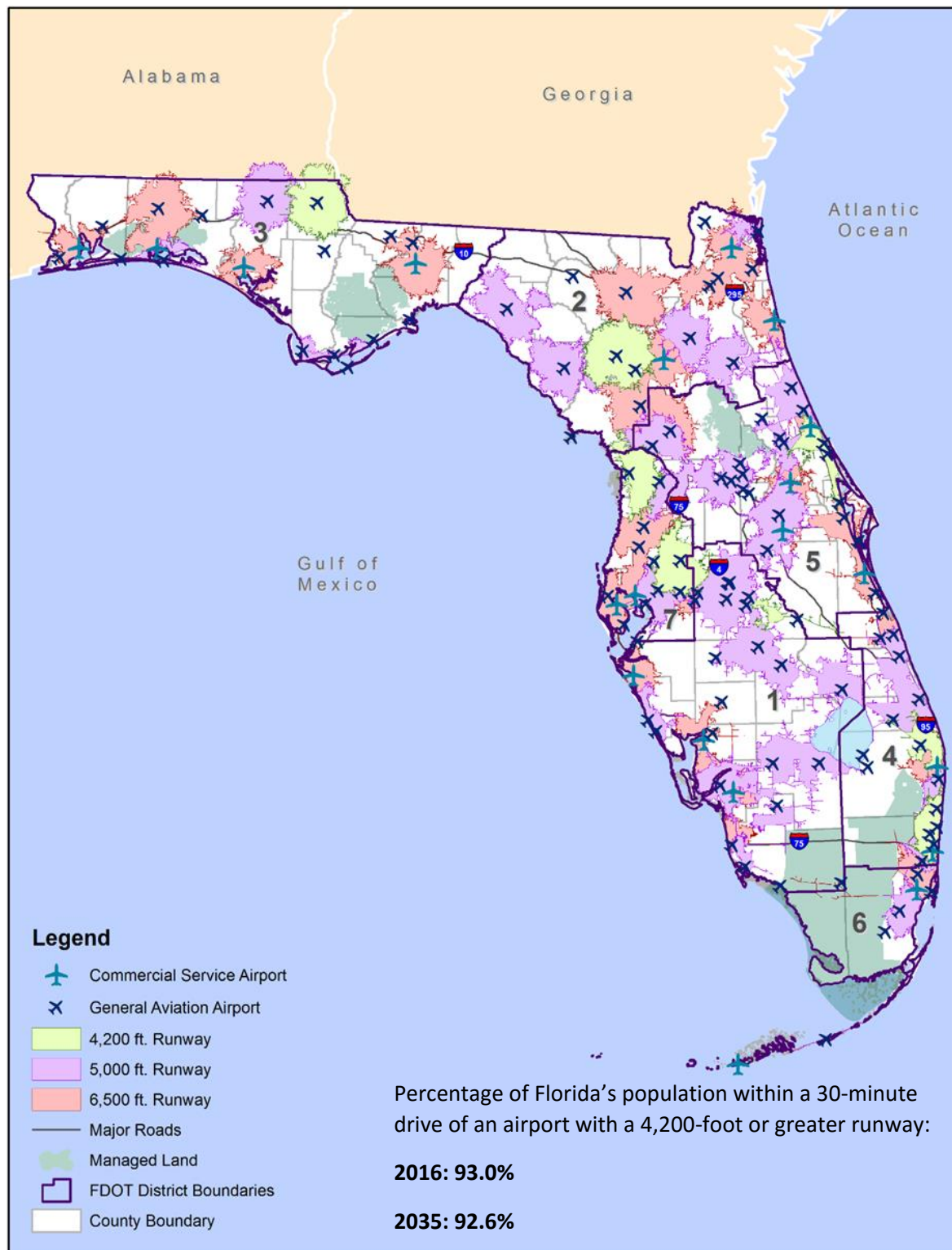
Source: Florida Aviation Database (FAD); Kimley-Horn Analysis

**Figure 7-43: Runways Over 5,000 Feet 30-Minute Drive Times**



Source: Florida Aviation Database (FAD); Kimley-Horn Analysis

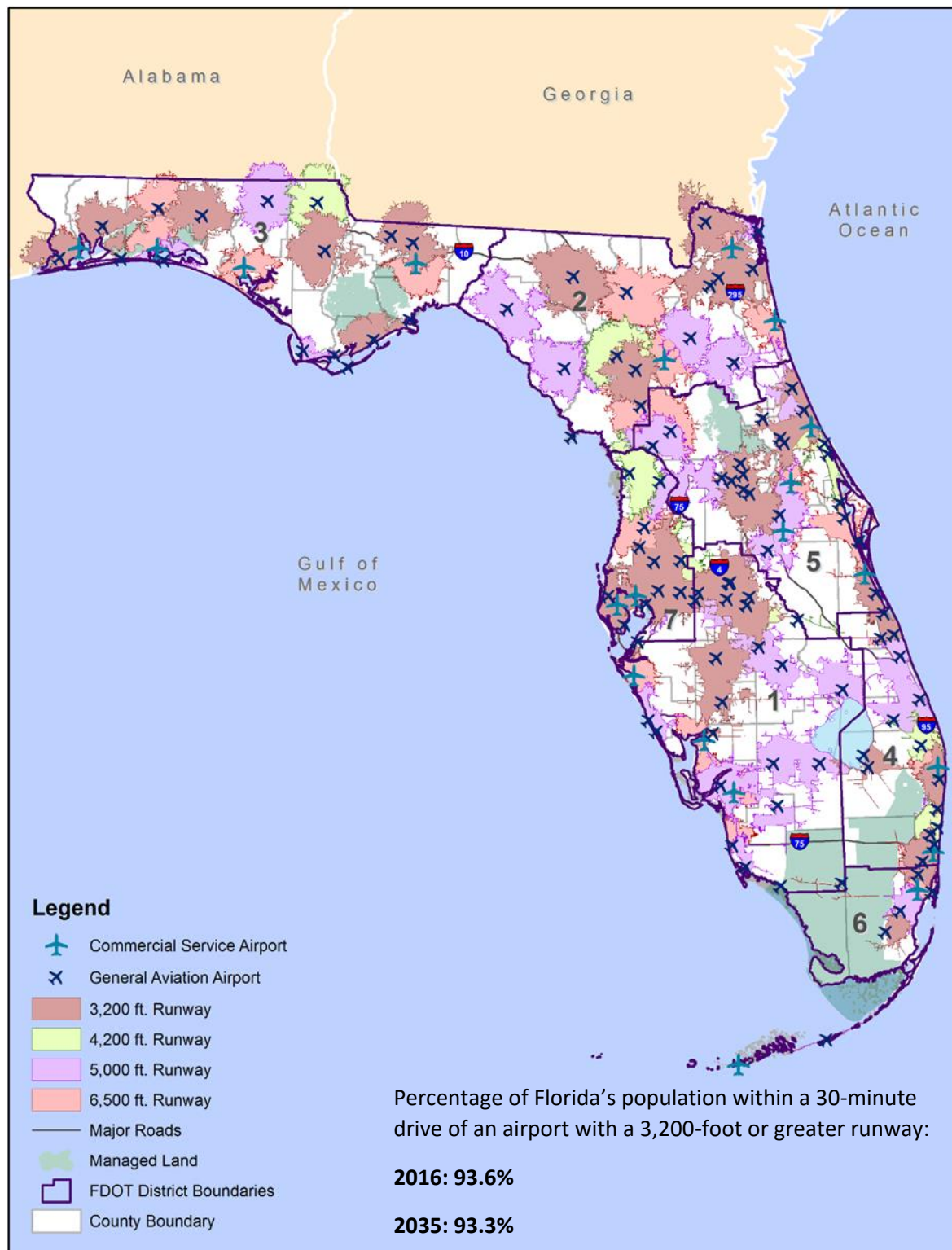
**Figure 7-44: Runways Over 4,200 Feet 30-Minute Drive Times**



Source: Florida Aviation Database (FAD); Kimley-Horn Analysis



**Figure 7-45: Runways Over 3,200 Feet 30-Minute Drive Times**



Source: Florida Aviation Database (FAD); Kimley-Horn Analysis

## 7.3.11 Instrument Approaches

### 7.3.11.1 Existing Population Analysis

An instrument approach procedure (IAP) is an established set of maneuvers that protect an aircraft from obstacles from their initial approach to safety landing. IAPs can be non-precision, an approach procedure with vertical guidance, or precision. All approaches that do not have an IAP are considered visual. IAPs allow for access in inclement weather conditions. Across all FDOT Districts, 90 airports have some type of an IAP. This equates to 93.1 percent of Florida's 2016 population being located within 30 minutes of an airport with some form of an IAP. As shown in **Figure 7-46**, the distribution of IAPs is fairly even across the state, though there are slight concentrations in central and southeast Florida. As shown, District 7 has the highest percentage of airports with instrument approaches, while District 3 has the lowest. **Table 7-30** provides a summary of airports with IAPs by FDOT District in both total number and percentage.

**Table 7-30: Airports with Instrument Approaches by FDOT District**

Florida Public-Use Airports with an Instrument Approach			
FDOT District	Total Number of Airports	Percentage within District	Percentage of Land Coverage (30 Nautical Miles [NM])
1	19	67.9%	100%
2	14	77.8%	99.7%
3	11	55.0%	97.5%
4	12	70.6%	100%
5	17	68.0%	100%
6	7	100.0%	98.4%
7	10	76.9%	100%
<b>Total</b>	<b>90</b>	<b>70.3%</b>	<b>99.4%</b>

Source: Individual Airport Layout Plans (ALPs); AirNav.com; Kimley-Horn Analysis

Based on the results of the analysis, the majority of Florida's population is within a 30-minute drive time of an airport with an IAP. The largest drive time gap is within District 6, in a sparsely populated area which primarily consists of conservation land such as the Everglades National Park.

### 7.3.11.2 Land Coverage within 30-Nautical Mile Buffers

Using a 30-nautical mile buffer around each of the 90 instrument approach airports, nearly the entire state's land area (99.4%) is covered. Although mostly covered, District 7 has the lowest percentage of its land area covered at 97.5 percent. Using this information, it is clear that not only will the majority of the state be covered within 30-nautical miles of instrument approach

airports, but the majority of the population will also be able to access these facilities into the future.

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#### 7.3.11.3 Existing Population with 30-Nautical Mile Buffers<sup>14</sup>

Additional analysis of the population within a 30-nautical mile buffer was conducted for the airports with instrument approaches. This analysis indicated that 100% of Florida's 2017 population is located within a 30-nautical mile distance from precision approach airports. With the entire population having access to an instrument approach airport, it is not likely that additional airports will be necessary.

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#### 7.3.11.4 Future Population Analysis

For this analysis, it has been assumed that the number of airports with instrument approaches will remain that same in 2035 as in 2016. Though it is possible that additional airports will develop instrument approaches, this analysis has been conducted under the assumption that the approaches will remain the same.

Looking to the future, Florida's population within 30-minutes of an airport with an instrument approach is expected to grow by 26.9 percent from 2016 to 2035. By applying this percentage, the population being served by airports with instrument approaches will grow from 18,729,511 in 2016 to 23,776,175 in 2035.<sup>15</sup> This increase in will amount to 92.7 percent of Florida's projected population in 2035. 92.7 percent represents a 0.4 percent decrease in the overall population being served by these airports which doesn't likely indicate a need for additional airports with instrument approaches in the future. Even with the reduction in the percentage of population being served, the majority of Florida's population will still be within a 30-minute drive of an airport with an instrument approach in 2035.

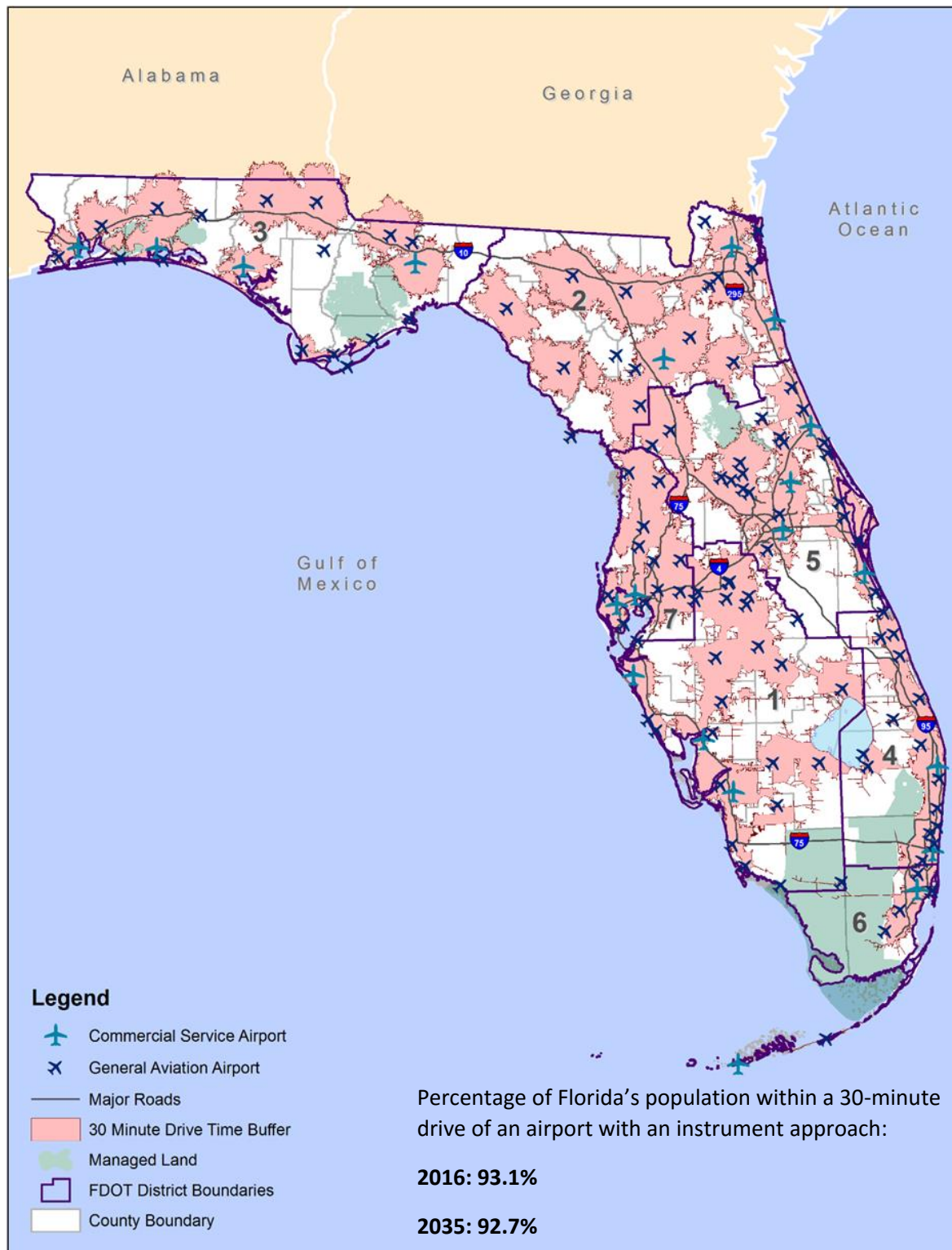
When a 30-nautical mile buffer is applied around the 90 instrument approach airports, over 99 percent of the state covered. 100 percent of the population is located within 30-nautical miles of an instrument approach airport in 2017 and in 2035. The population within the 30-nautical mile buffer is expected to grow from 20,619,313 in 2017 to 26,304,767 in 2035. Based on the analysis, the areas outside of the buffer are not currently populated, meaning that any additions to the network would have negligible impact on overall population accessibility. Figure 7-46 depicts the percentage of the projected population which will be accommodated by a 30-minute drive time for instrument approach airports for 2016 and 2035. **Figure 7-47** depicts population coverage when using a 30-nautical mile buffer.

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<sup>14</sup> 30-nautical mile analysis uses 2017 population estimates

<sup>15</sup> Esri Community Analyst: Population Projection

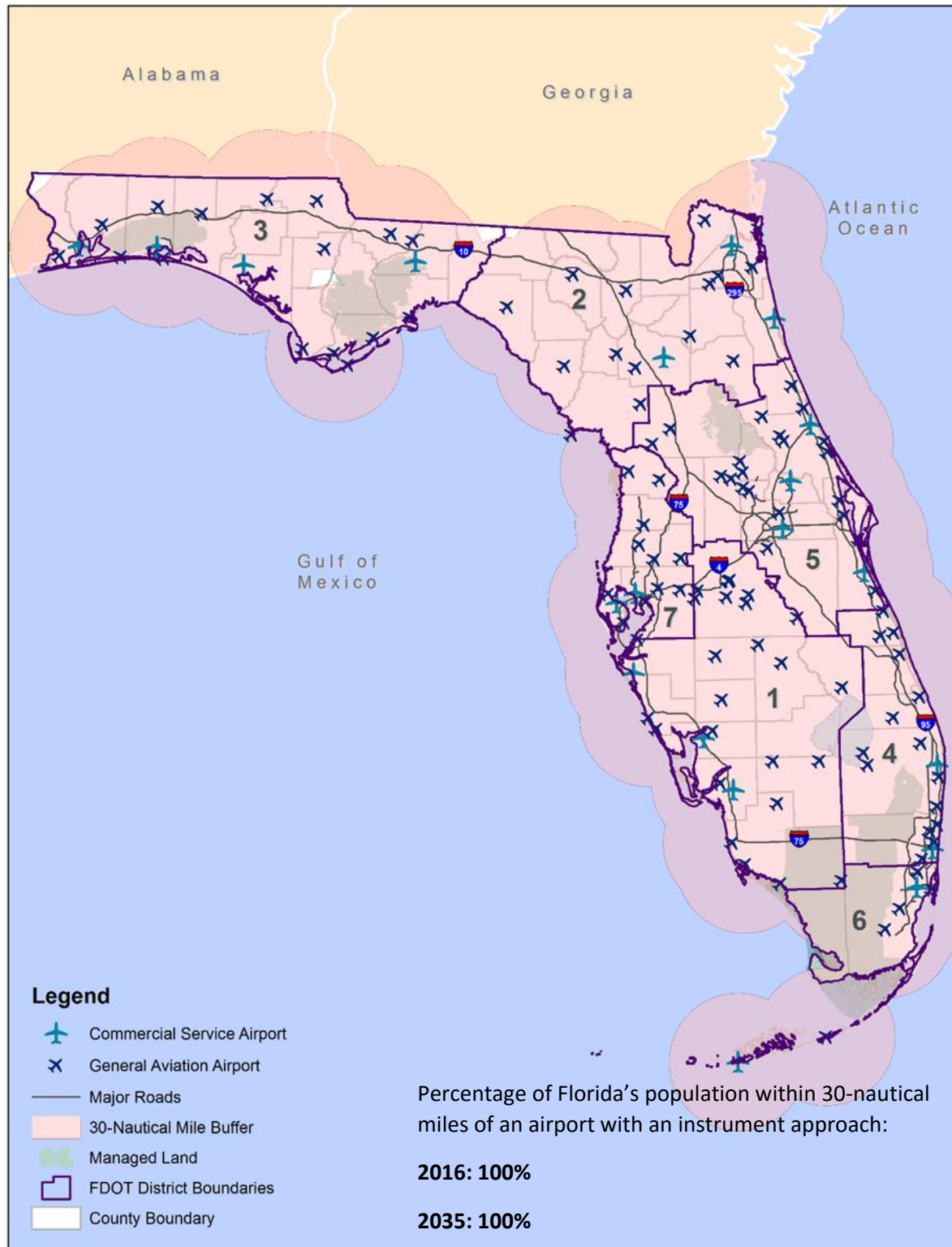
**Figure 7-46: Airports with Instrument Approaches by FDOT District**



Source: Individual Airport Layout Plans (ALPs); AirNav.com; Kimley-Horn Analysis



**Figure 7-47: Airports with Instrument Approaches by FDOT District: 30-Nautical Mile Buffer**



Source: Individual Airport Layout Plans (ALPs); AirNav.com; Kimley-Horn Analysis

## 7.3.12 Precision Approaches

### 7.3.12.1 Existing Population Analysis

Precision approaches are IAPs that provide lateral and vertical guidance. Precision approaches allow airports to accommodate arriving aircraft during inclement weather and their availability is important to both commercial carriers and corporate aircraft for reliability purposes. This reliability is provided through the ability to remain operational in all weather conditions. Across all FDOT Districts, 33 airports have precision approaches. This equates to 83.9 percent of Florida's 2016 population being located within 30 minutes of an airport with this type of approach. As shown in **Figure 7-48**, the distribution of airports with precision approaches is fairly even across the state, though there are slight concentrations in central and southeast Florida. As shown, District 6 has the highest percentage of airports with precision approaches, while District 1 has the lowest. **Table 7-31** provides a summary of airports with precision approaches by FDOT District in both total number and percentage. Data for precision approaches was obtained from individual ALPs and verified using FAA's digital Terminal Procedures Publication (d-TPP).

**Table 7-31: Airports with Precision Approaches by FDOT District**

Florida Public-Use Airports with Precision Approach			
FDOT District	Total Number of Airports	Percentage within District	Percentage of Land Coverage (30 NM)
1	5	17.9%	69.7%
2	5	27.2%	44.0%
3	5	25.0%	72.6%
4	4	23.5%	85.8%
5	7	28.0%	97.6%
6	4	57.1%	87.1%
7	4	30.8%	100%
<b>Total</b>	<b>33</b>	<b>25.8%</b>	<b>73.3%</b>

Source: Individual Airport Layout Plans (ALPs); AirNav.com; Kimley-Horn Analysis

Based on the results, large portions of the state are lacking airports with precision approaches. The airports with precision approaches are located primarily in the developed and metropolitan areas. Service gap areas are present within Districts 1, 2, and 6 in areas which have generally lower populations.

### 7.3.12.2 Land Coverage with 30-Nautical Mile Buffers

Using a 30-nautical mile buffer the 33 airports with precision approaches cover 73.3 percent of Florida's overall land area. When looking at FDOT Districts, the least amount of coverage is

located within District 2 which only has 44.0 percent of its land area within 30-nautical miles of a precision approach airport.

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### 7.3.12.3 Existing Population with 30-Nautical Mile Buffers<sup>16</sup>

Additional analysis of the population within a 30-nautical mile buffer was conducted for the airports with precision approaches. Though only 73.3 percent of Florida is covered by the 30-nautical mile buffer, the population within this area consists of 96.5 percent of the state's 2017 population. With such a significant portion of the population being within the coverage area it is not likely that additional airports will need precision approaches to meet the current population needs.

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### 7.3.12.4 Future Population Analysis

This report assumes that the 33 airports with precision approaches will remain the same in 2035. Additional airports may develop precision approaches in the future, but for this analysis the number of precision approaches has been assumed to remain the same.

Florida's population within a 30-minute drive time of airports with precision approaches is expected to increase by 27.2 percent between 2016 and 2035. With this level of growth, the population within 30 minutes of the airports will increase from 16,630,204 in 2016 to 21,148,184 in 2035.<sup>17</sup> This projected population represents 82.5 percent of the state's projected 2035 population which is a 1.4 percent decrease when compared with 2016. This decrease in the percentage of the population being served indicates a potential need for additional airports with precision approaches to maintain or exceed the current levels of population being served when using a 30-minute drive time.

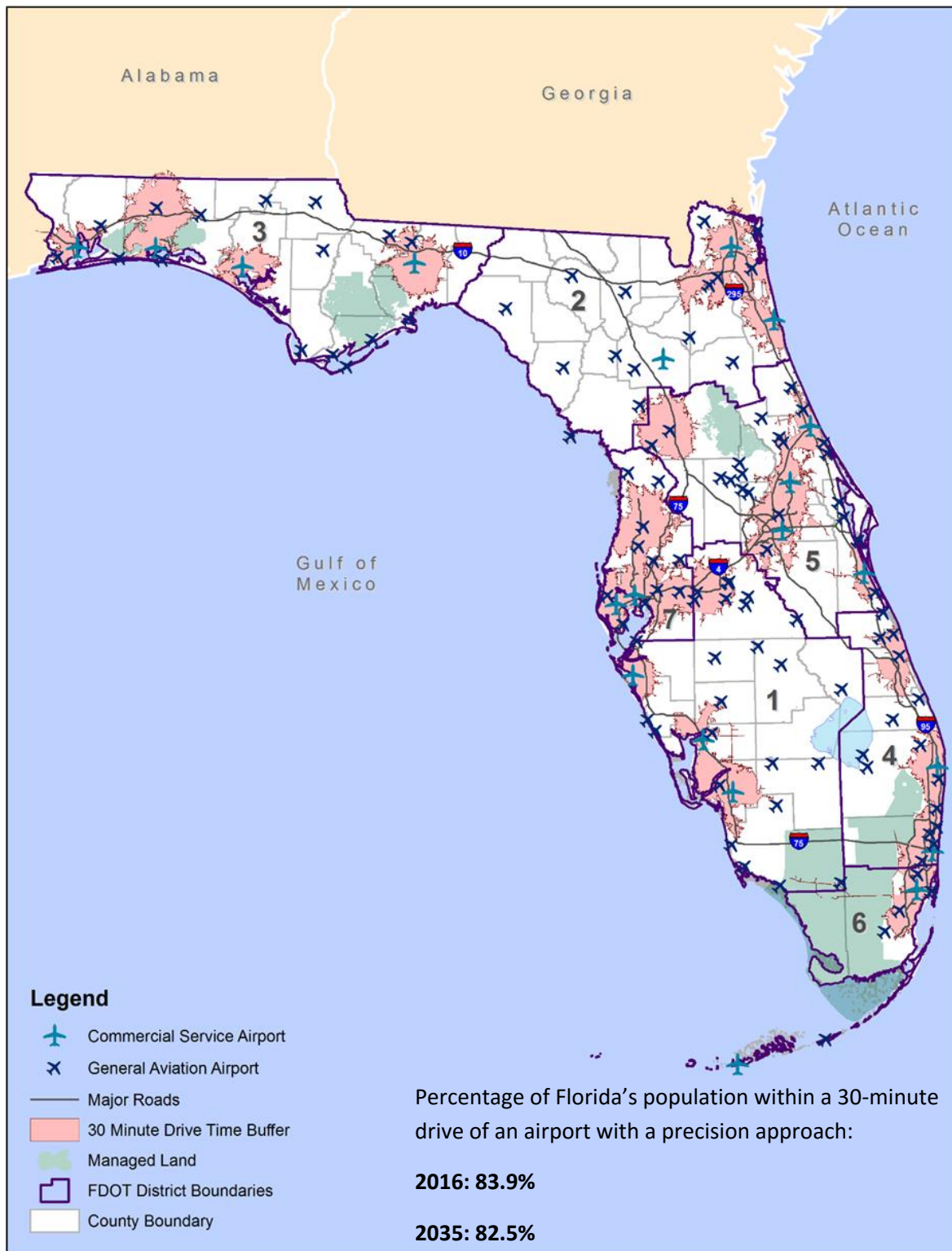
Florida's population within a 30-nautical mile buffer of the precision airports is expected to increase by 28.3 percent between 2017 and 2035. The expected growth will take the population from 20,537,365 in 2017 to 26,204,392 in 2035. This population amounts to 97.0 percent of Florida's predicted population in 2035. Approximately 0.5 percent additional population will be served by precision approach airports in the future. With the majority of the state's population located within the 30-nautical mile buffer, it is unlikely that additional airports with precision approaches will be necessary. If additions are considered, a precision approach airport in the central areas of District 1 and 2 would have the most significant impact on the state's land coverage when using the 30-nautical mile buffer. However, these areas of the state have relatively small populations which will reduce the overall effectiveness of adding additional airports. Figure 7-48 shows the percentage of the projected population within a 30-minute drive time of an airport with a precision approach for 2016 and 2035. **Figure 7-49** depicts the population with access to the precision airports within a 30-nautical mile buffer.

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<sup>16</sup> 30-nautical mile analysis uses 2017 population estimates

<sup>17</sup> Esri Community Analyst: Population Projection

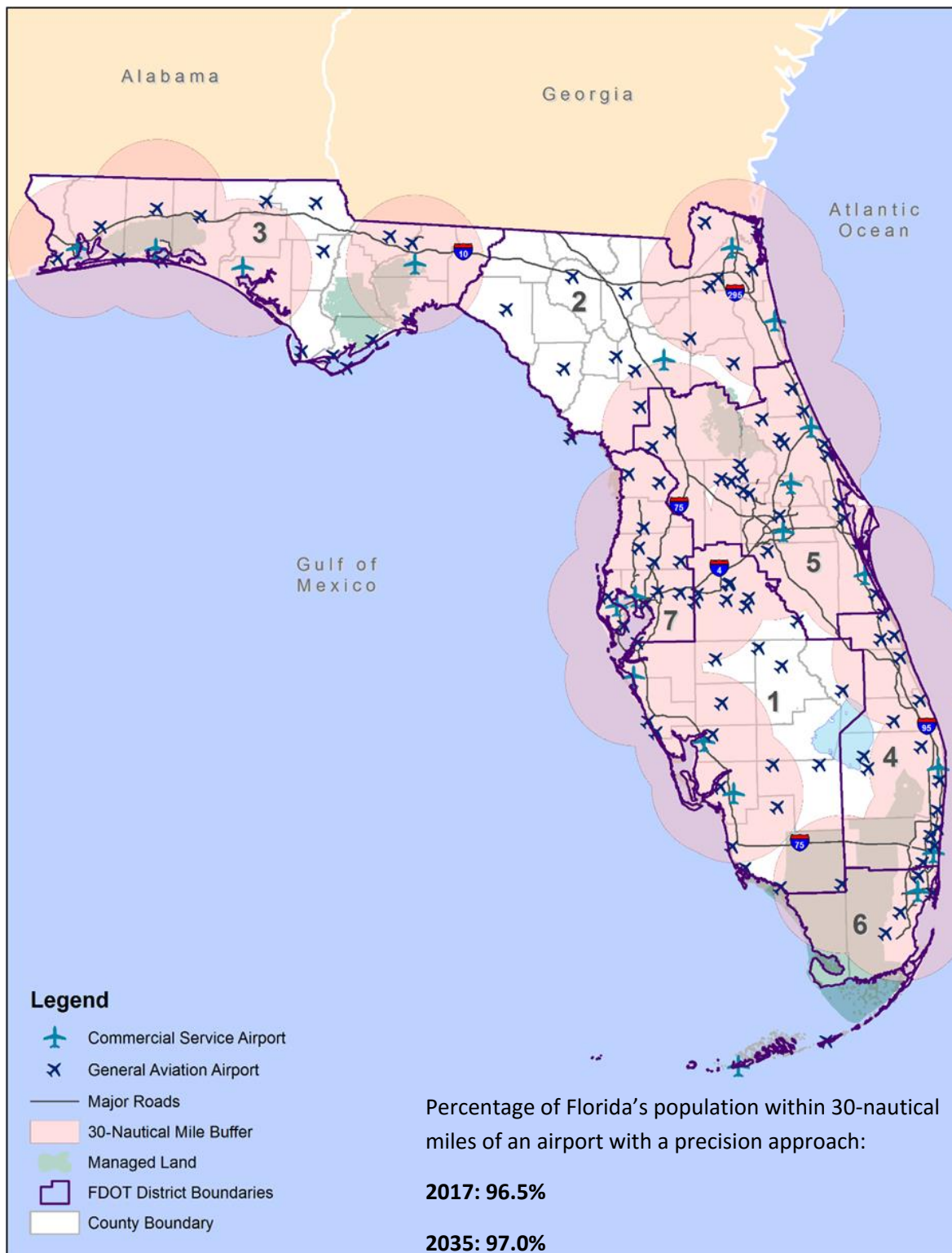
**Figure 7-48: Airports with Precision Approaches by FDOT District**



Source: Individual Airport Layout Plans (ALPs); AirNav.com; Kimley-Horn Analysis



**Figure 7-49: Airports with Precision Approaches by FDOT District: 30-Nautical Mile Buffer**



Source: Individual Airport Layout Plans (ALPs); AirNav.com; Kimley-Horn Analysis

### 7.3.13 Business User Accessibility

Previous analyses identified the airports with a variety of different resources available to users and their accessibility on the ground in terms of drive times. An evaluation of a combination of resources that are needed to generally support business/corporate aircraft in terms of having the attributes and infrastructure was also conducted. This analysis evaluated which airports had the typical attributes needed to support the average business user including:

- At least a 5,000-foot long runway
- Jet A fuel
- Instrument approach
- AWOS

#### 7.3.13.1 Existing Population Analysis

Across the state, there are 56 airports that have all four of these attributes. These 56 airports are comprised of both commercial and GA airports that are dispersed throughout the state. This equates to 84.9 percent of Florida's 2016 population having access to an airport that meets typical business users' needs within a 30-minute drive. While each FDOT District has at least three airports that have all four attributes, indicating they can support the average business user's needs, they are primarily located in Districts 1, 2, and 5. **Figure 7-50** displays the airports that that meet the four attributes of average business users. As depicted, these airports are located throughout the state, but there are many areas that do not have an airport in proximity that can accommodate an average business user's needs. **Table 7-32** depicts the number of business-use airports by FDOT District.

**Table 7-32: Business-Use Airports by FDOT District**

Florida Public-Use Airports with: at least 5,000 FT Runway, Jet A Fuel, Instrument Approach, and Automated Weather Reports		
FDOT District	Total Number of Airports	Percentage within District
1	15	55.6%
2	9	50.0%
3	6	30.0%
4	6	35.2%
5	12	48.0%
6	3	37.5%
7	5	38.5%
<b>Total</b>	<b>56</b>	<b>43.8%</b>

Source: National Flight Data Center (NFDC); Florida Aviation Database (FAD); Individual Airport Layout Plans (ALPs); AirNav.com; Kimley-Horn Analysis

Based on the results of the analysis, the largest service gaps can be found in Districts 2, 3, 4, and 6. These gaps represent the areas of the state with large conservation lands and generally low populations which may reduce the need for business-use airports in these areas. It should be noted that most the population centers across the state are being accommodated by airports with business user amenities.

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#### **7.3.13.2 Future Population Analysis**

It has been assumed that the number and location of business user airports will remain the same in 2035 as in 2016. As the population within Florida continues to grow, there is the potential that additional airports will begin providing the four services necessary to be included within the business-use category, but definite information regarding which airports is not available.

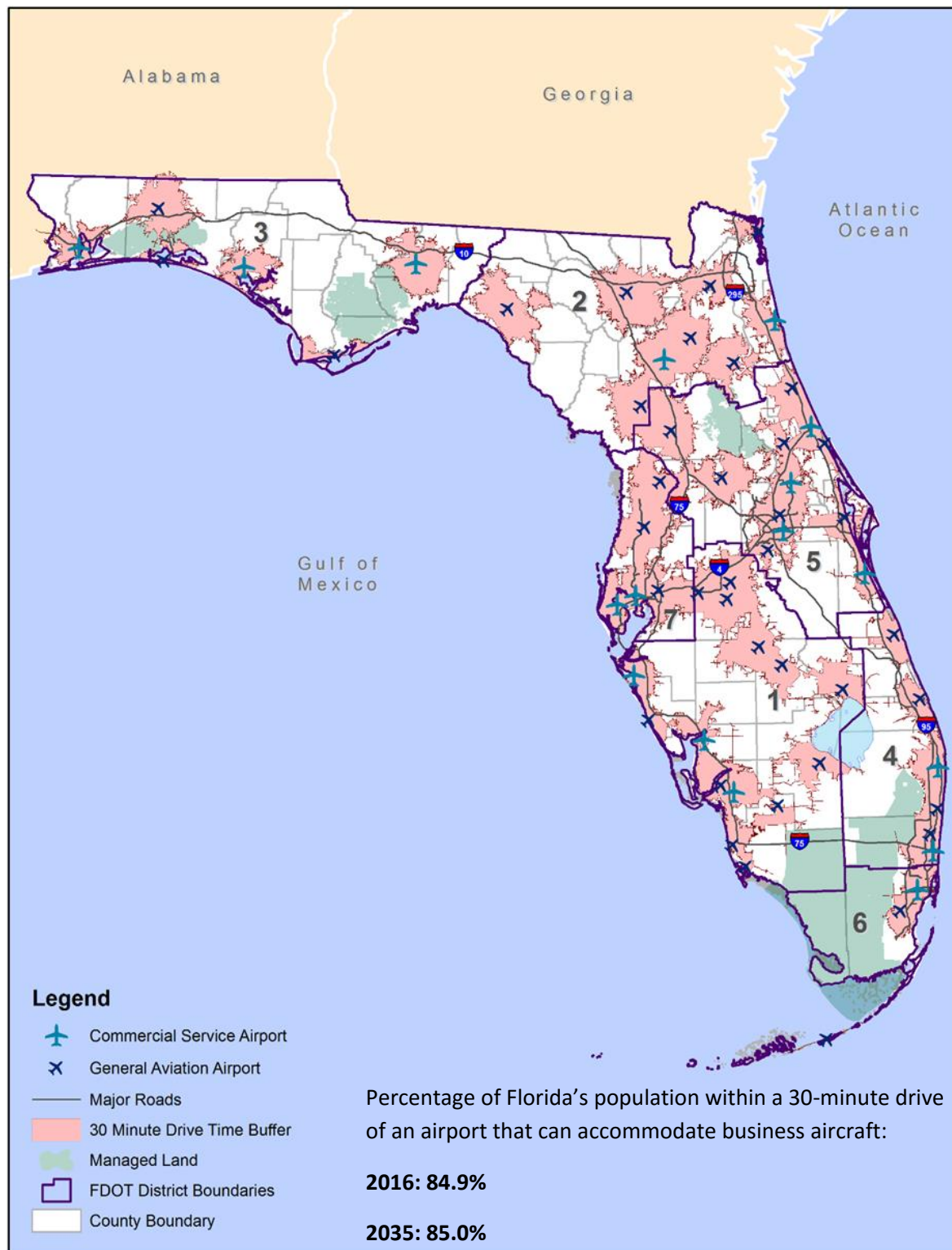
The population within a 30-minute drive time of a business-use airport is expected see an increase of 27.5 percent between 2016 and 2035. The projected population is expected to grow from 17,081,407 in 2016 to 21,785,790 in 2035.<sup>18</sup> The increased population in 2035 represents 85.0 percent of the state's projected population within 30 minutes of an airport with business user accommodations. 85.0 percent indicates a projected increase of 0.1 percent more of the state's population within reach of the services provided by the business airports. Nearly all of the state's projected population will be accommodated with only 15 percent of the population being outside of a 30-minute drive time of an airport with business user amenities. Figure 7-50 displays the projected percentage of the 2016 and 2035 population being accommodated by business-use airports.

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<sup>18</sup> Esri Community Analyst: Population Projection



**Figure 7-50: Business-Use Airports by FDOT District**



Source: National Flight Data Center (NFDC); Florida Aviation Database (FAD); Individual Airport Layout Plans (ALPs); AirNav.com; Kimley-Horn Analysis

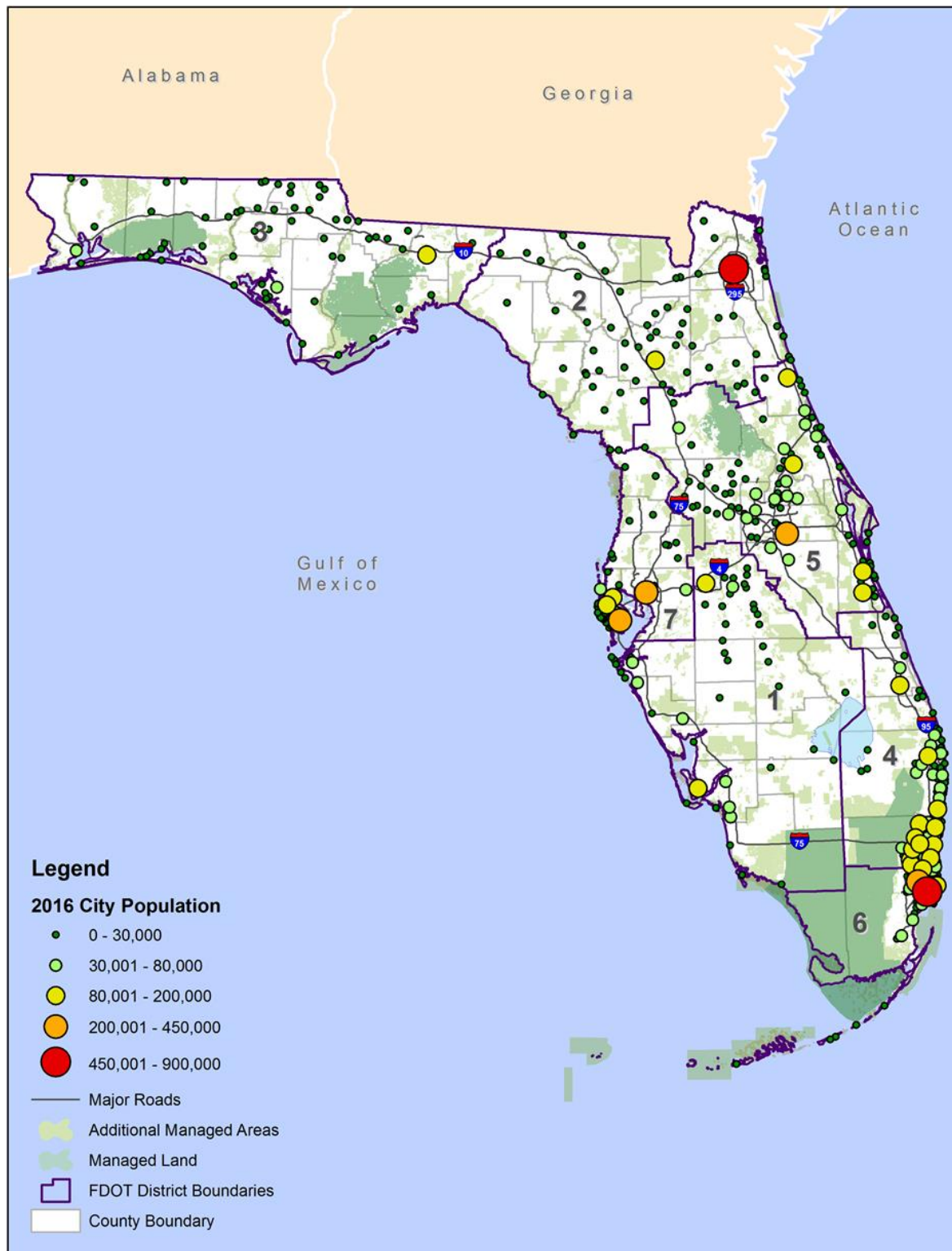
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### 7.3.14 Conservation Lands and Their Effect on Development

When looking at the existing population data and population projections into the year 2035, the aviation network will continue to accommodate much of the projected population of Florida. Many of the urbanized areas are expected to see additional growth, and in many cases this growth will be in the form of increasing density. Florida is home to many managed and conservation areas which limit the outward development potential in some areas of the state. Most notably, south Florida's development potential is limited by the Everglades National Park and the supporting state/local conservation areas. South Florida is also home to a large portion of the state's population and in many cases the existing development is adjacent to the managed areas. **Figure 7-51** depicts the location of cities and provides a visualization of the 2016 population size of the cities throughout Florida.

The presence of conservation or managed lands which cannot be developed will lead to increased densities in nearby cities as the population grows. This increasing density will likely increase the overall population within the 30-minute drive times of certain airports, leading to potential capacity concerns. As the population grows, the percentage of the population being accommodated by Florida's airports is not expected to vary significantly, but it should be noted that these figures will represent a higher overall population within the drive time area. These population changes may pose concerns for the ability of the existing airport network to meet the needs of this projected population into the future.

**Figure 7-51: City Population Size and Managed/Conservation Areas**



Source: U.S. Census and the Florida Department of Environmental Protection; Kimley-Horn Analysis

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### 7.3.15 Planned Roadway Improvements

Roadway improvements are planned throughout the state which may also have an impact on the aviation network. Planned improvements to SIS roadways have been identified for their regional impact and the potential for these corridors to benefit large populations. SIS roadway improvements can increase the accessibility to and the effectiveness of the aviation network and improve the population coverage of the airports on an individual level. For the purposes of this report, capacity adding projects such as the addition of auxiliary lanes, travel lanes, and managed lanes have been depicted in **Figure 7-52**. As shown, many of the SIS roadway projects are in three main areas of Florida. The southeast (Miami to West Palm Beach area), central (Tampa to Orlando area), and northeast (Jacksonville area) areas represent the location of the majority of the planned SIS improvements.

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#### 7.3.15.1 Major Roadways with Planned Improvements

##### 7.3.15.1.1 INTERSTATE 4 (I-4)

I-4 is a major east/west corridor which provides connections between the east and west coasts of central Florida. Orlando and Tampa are the major cities which benefit from this central Florida roadway. Capacity will be improved along this corridor through the implementation of managed lanes, primarily in the urban parts of Tampa and Orlando. Four nearby commercial service airports will indirectly benefit from increased capacity and regional accessibility:

- Orlando International Airport
- Orlando Sanford Airport
- St. Pete-Clearwater International Airport
- Tampa International Airport

##### 7.3.15.1.2 INTERSTATE 10 (I-10)

I-10 is the major east/west corridor serving north Florida. The implementation of managed lanes and the addition of travel lanes are planned primarily in the easternmost section of the corridor. The planned improvements will provide additional capacity to the area in and around the City of Jacksonville. The planned improvements will likely indirectly increase accessibility to the nearby Jacksonville International Airport.

##### 7.3.15.1.3 INTERSTATE 75 (I-75)

I-75 is a major north/south corridor which runs through north central Florida and along the southwest Florida coast. Throughout the I-75 corridor, additional lanes will be developed to increase capacity. In addition to the lane increases on I-75, managed lanes are planned on the I-275 corridor within the Tampa and St. Petersburg area. The following airports are likely to experience increased accessibility as a result of these planned roadway improvements:

- Punta Gorda Airport
- Southwest Florida International Airport
- St. Pete-Clearwater International Airport
- Tampa International Airport

#### 7.3.15.1.4 INTERSTATE 95 (I-95)

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I-95 is one of Florida's major north/south corridors and runs along the east coast. Managed lanes are planned for this roadway in north Florida along with the additional planned development of managed lanes on the I-295 beltway around the City of Jacksonville. The Jacksonville International Airport is likely to see accessibility benefits from the planned roadway improvements in this area. Additional lanes are planned in the southeast which will likely improve accessibility to three nearby airports:

- Fort Lauderdale-Hollywood International Airport
- Miami International Airport
- Palm Beach International Airport

#### 7.3.15.1.5 FLORIDA'S TURNPIKE

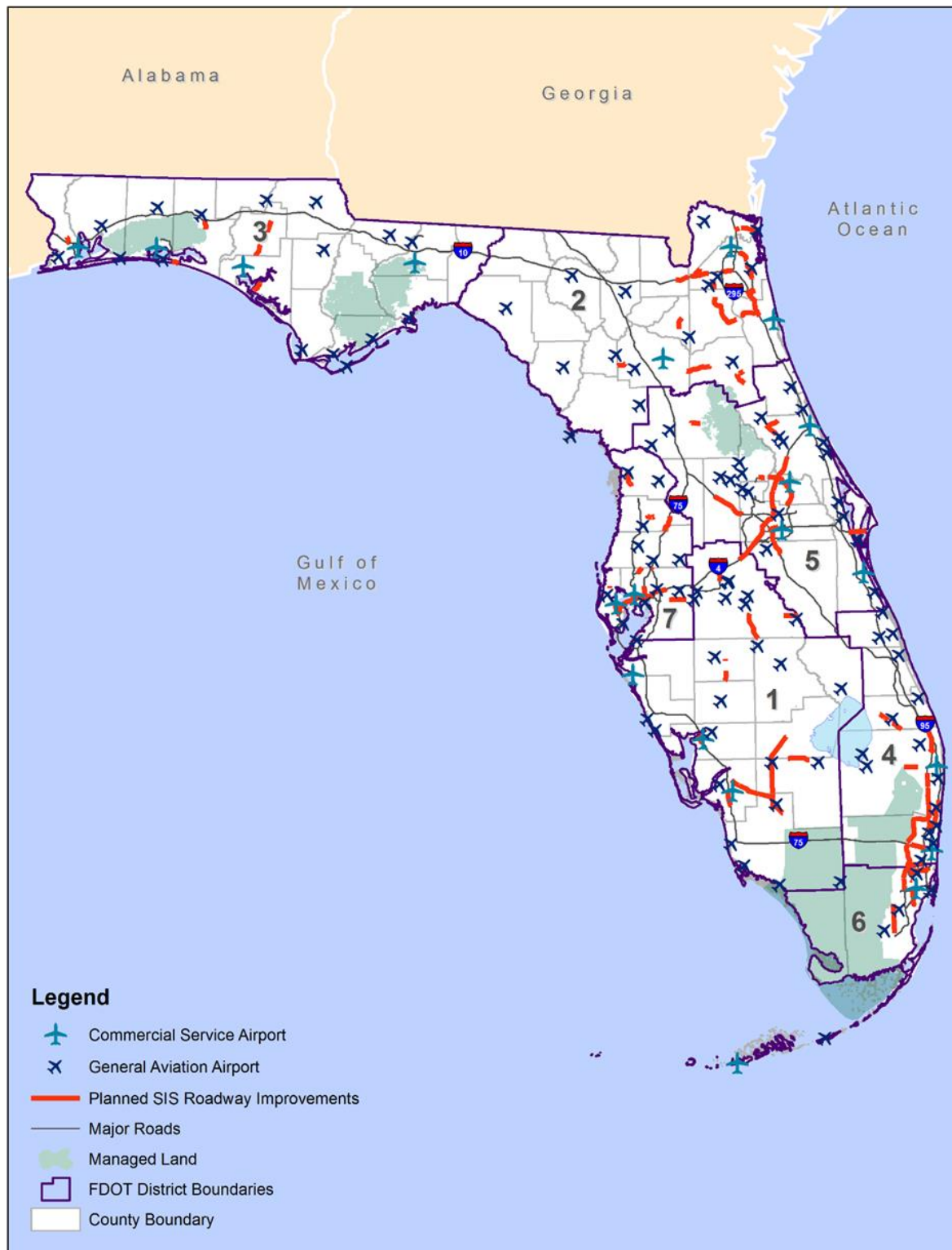
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Florida's Turnpike is a north/south toll route providing service from central to southeast Florida. The planned improvement consists of widening the turnpike through the addition of travel lanes. These planned improvements are primarily within the Orlando, Palm Beach, and Fort Lauderdale metropolitan areas, servicing a large portion of Florida's population. Four airports are likely to see accessibility improvements through the implementation of the additional roadway capacity. The four airports are as follows:

- Fort Lauderdale-Hollywood International Airport
- Miami International Airport
- Orlando International Airport
- Palm Beach International Airport



**Figure 7-52: Planned SIS Roadway Improvements**



Source: The Florida Department of Transportation (FDOT) Five Year Work Program; Kimley-Horn Analysis

### 7.3.16 Retirement and Seasonal Residents

In addition to the popularity of destination and vacation-style tourism, the state sees a great deal of extended stay tourism or seasonal residency lasting weeks or months from retirees. Individuals who stay for extended periods throughout the year generally visit for the winter months. These seasonal residents generally visit Florida in the winter months to avoid the more harsh or colder climates to our north. They help Florida's tourism industry by boosting visitation during the winter months.

Florida has become a major retirement destination and continues to see its elderly population rise. The increasing elderly and retirement population has led to the creation of large age restricted housing developments throughout the state. Large residential developments such as the Villages and On Top of the World cater to Florida's aging population by providing age-specific amenities and establishing age restrictions for residency. Age-restricted and retirement communities have been growing throughout the state to accommodate the increasing need as the population begins to lean toward older age groups. **Table 7-33** below depicts the population in Florida over 50 years old, and how that population is expected to grow into the future.

**Table 7-33: Florida's Aging Population**

Population Over 50 years old		
2016 Median Age in Florida	2016 Population Percentage Over 50 Years Old	2035 Projected Population Percentage Over 50 Years Old
41.9 Years Old	40.0%	45.4%

Source: Florida Aviation System Plan (FASP) Analysis; Esri Community Analyst: Population Projection

Based on the results of the analysis, the population over 50 years old is expected to increase from 8,010,403 in 2016 to 11,647,926 in 2035.<sup>19</sup> This figure represents 45.4 percent of Florida's projected population in the year 2035. This aging population is expected to grow through the influx of retirees from other states as well as the growth of individuals within Florida. As the population ages, additional planning concerns will be necessary to accommodate this age cohort, including the provision of increased accessibility to and within Florida's airports.

<sup>19</sup> Esri Community Analyst: Population Projection



## 7.4 Intermodal Requirements and Connectivity

Airports provide access to the national air transportation system, but also require links to other modes of transportation to transport people and goods to and from the airport. The connectivity of the modes is an essential aspect of the airport system's accessibility, and, as such, linkages between the airports and highway, passenger rail, transit, rental car, and other applicable modes was examined. The entire airport system was evaluated for connectivity, with additional emphasis on the connections at airports designated as SIS facilities (identified as beneficial to statewide mobility and economy). The 18 commercial service SIS airports require more connections to facilitate access to airline service, while the two GA reliever SIS airports typically serve a high level of demand and are in metropolitan areas. The following sections summarize the analysis of airport accessibility to other modes of transportation.

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### 7.4.1 Airport Accessibility Summary

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#### 7.4.1.1 Courtesy and Rental Car Connectivity

Many of the airports throughout Florida provide access to courtesy car and rental car services. A review of these services has been conducted for all 128 of Florida's public-use airports and the number of participating airports have been outlined by FDOT District. Of the 128 public-use airports, 93 currently have onsite rental car facilities. Rental car facilities allow airport users additional freedom when they land and help reduce their reliance on local pickups, courtesy cars, or on transit systems, if available. **Table 7-34** shows the number of airports within each FDOT district that provide rental car facilities and **Figure 7-53** depicts the airports which are currently providing access to onsite rental car facilities. District 6 has the highest percentage of airports with rental car facilities at 100 percent of airports while District 1 has the lowest percentage at 64 percent of the District's airports.

**Figure 7-53: Airports with Rental Car Facilities**



Source: Florida Aviation Database (FAD); Kimley-Horn Analysis

**Table 7-34: Number and Percentage of Airports with Rental Car Service**

FDOT District	Number of Airports with Rental Car Service	Percentage of Total Airports Within the District
1	18	64.3%
2	13	72.2%
3	14	70.0%
4	12	70.6%
5	17	68.0%
6	7	100.0%
7	12	92.3%
<b>Total</b>	<b>93</b>	<b>72.7%</b>

Source: Florida Aviation Database (FAD); Kimley-Horn Analysis

Currently, 30 of Florida's public-use airports offer airport-sponsored courtesy car services as reported in the FAD (see **Table 7-35**). In addition to this airport-sponsored transportation, many fixed-base operators (FBOs) also offer courtesy car services; however, data on these is not collected by FDOT and the data is inconsistent. Much like rental cars, the ability for travelers to utilize a courtesy car reduces their reliance on rental cars, transit, and local pickups. District 2 has the highest percentage of airports with courtesy car pickups, with nearly 39 percent, while District 4 has the lowest, with zero airports providing courtesy car service.

**Table 7-35: Number and Percentage of Airports with Courtesy Cars**

FDOT District	Number of Airports with Courtesy Car Services	Percentage of Total Airports Within the District
1	9	32.1%
2	7	38.9%
3	3	15.0%
4	0	0.0%
5	5	20.0%
6	1	14.3%
7	5	38.5%
<b>Total</b>	<b>30</b>	<b>23.4%</b>

Source: Florida Aviation Database (FAD); Kimley-Horn Analysis

**Figure 7-54** below shows the airports which are currently providing courtesy car services throughout the state and districts.

Figure 7-54: Airports with Courtesy Cars



Source: Florida Aviation Database (FAD); Kimley-Horn Analysis

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#### 7.4.1.2 Connectivity at Non-SIS airports

In addition to the SIS airports throughout the state, the other 108 public-use airports have been reviewed to determine their roadway connections. For each airport, roadways with direct and indirect access to the airport were reviewed to identify the number of lanes for each of the roadways. **Appendix C – Intermodal Connectivity Data** provides a listing of major roadway connections which includes the type, name, and number of lanes for these major airport connections.

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#### 7.4.1.3 SIS Airport Connectivity Analysis

Designated SIS airports are shown in **Figure 7-55**. The connections from the SIS airports to roadways, transit, passenger rail, and rental car facilities were identified in this analysis. While roadways provide access to all airports, the integration of alternative transportation options allows for a more efficient movement of passengers to and from the airport facilities. Intermodal connectivity is also a major attraction for visitors, as it allows passengers to efficiently reach their destinations via multiple transportation methods. The availability of transportation options such as bus transit and passenger rail also helps to promote local use of the airport and can help reduce vehicular volumes on the roadway network. This reduction in traffic volume allows for decreased congestion throughout the surrounding area. A summary of the information provided in this analysis is also provided in **Appendix C – Intermodal Connectivity Data**.

Additionally, the roadway connections to SIS airports were reviewed to determine the LOS. LOS is a measure of the roadway created through the analysis of traffic and roadway conditions which are used to develop a rating between A through F. LOS A indicates that a roadway has no capacity or congestions issues; LOS A through D generally indicate acceptable roadway conditions with limited congestion. Roadways with LOS E and F are considered to have capacity-related congestion issues which could cause delays for users. For this analysis, FDOT District LOS Assessment Reports, Long Range Transportation Plans (LRTPs), State of the System Reports, Transportation Improvement Programs (TIPs), and other reports have been reviewed to determine the roadway LOS near SIS airports.

One of the criteria of being an SIS airport is having access to an existing SIS corridor. The SIS corridors within this FASP are the highway facilities which connect areas of statewide or interregional importance. For example, all of the Interstate roadway facilities within the state are designated as SIS corridors. The 20 SIS airports analyzed have access to SIS corridors either through direct connections or the presence of designated SIS connector roads. SIS connector roads are the highways which connect the SIS corridors with the SIS airports throughout the state. Many of the SIS connector roads near the airports are state road systems that expand beyond the corridor facilities to provide regional access. SIS connector and SIS corridor roadways have been **bolded** and **underlined** within the connectivity outline for each airport.

Figure 7-55: SIS Airports



Source: Florida Department of Transportation (FDOT) Strategic Intermodal System (SIS); Kimley-Horn Analysis

#### 7.4.1.4 SIS Airport Intermodal Services Summary

Many of the SIS airports provide access to intermodal transportation services. **Table 7-36** below indicates the number of SIS airports which provide access to rental car, bus transit, or passenger rail facilities. Currently, all of the SIS airports provide access to rental car facilities and services, while 11 of the SIS airports provide bus transit access. Miami International Airport and Orlando International Airport are the only SIS airports which currently have direct passenger rail service.

**Table 7-36: Number of SIS Airports Where Service is Provided**

Intermodal Service	Number of SIS Airports Where Service is Provided
Rental Car Service	20
Bus Transit	11
Passenger Rail	2

Source: Florida Aviation Database (FAD)

**Table 7-37** below depicts the number of direct access roadways by lane number. This analysis considers the state, U.S. Highway, and Interstate roadways which provide direct access to the SIS airports across the state.

**Table 7-37: Direct Roadway Connections Summary**

Number of Lanes	Number of Roadways
2-3	3
4-5*	20*
6 +**	14**
<b>Total</b>	<b>37</b>

Source: Florida Department of Transportation (FDOT) Strategic Intermodal System (SIS) GIS data

\*The 4-lane University Parkway (City of Sarasota; SRQ) has been included within these calculations

\*\*The 7-lane CR 876 (Lee County; RSW) has been included within these calculations

Of the 37 direct roadway connections providing direct access to the SIS airports, 24 are designated SIS roadways. **Table 7-38** depicts the number of indirect access roadways by lane number. This analysis considers the state, U.S. Highway, and Interstate roadways which provide indirect access to the SIS airports across the state.



**Table 7-38: Indirect Roadway Connection Summary**

Number of Lanes	Number of Roadways
2-4	11
5-6	52
6 +	49
<b>Total</b>	<b>112</b>

Source: Florida Department of Transportation (FDOT) Strategic Intermodal System (SIS) GIS data

The SIS airports have indirect access to 112 roadway connections, of which 41 connections are to designated SIS roadways.

### 7.4.2 SIS Intermodal Connectivity and LOS Analysis

The following summarizes the intermodal connectivity and LOS analysis for each of the 20 SIS airports. A summary matrix of the information is provided in **Appendix C**.

#### 7.4.2.1 Daytona Beach International Airport

Daytona Beach International Airport is in Volusia County in District 5 along the eastern coast of Florida. The airport, which is within the boundary of the River to Sea Transportation Planning Organization, is located along the western edge of the Daytona Beach urbanized area and is adjacent to the Daytona International Speedway as well as Embry-Riddle Aeronautical University. It has direct access to U.S. 92 (W International Speedway Boulevard), an east/west SIS connector. U.S. 92 provides access to I-95, which runs along the entire east coast of Florida. Additionally, U.S. 92 provides access to the Speedway and the Atlantic Ocean. Daytona Beach International Airport also has access to SR 483 (S Clyde Morris Boulevard) which bisects the Embry Riddle campus and SR 400 (Beville Road) which provides a connection to I-4 in the south. Considering the airport has a direct connection to U.S. 92, a high capacity roadway, and access to both I-4 and I-95 within a short distance, it appears that Daytona Beach International Airport is well suited with regards to regional connections.

Per the *Congestion Management Process Report*, the direct access to U.S. 92 has LOS C and the nearby I-95 has LOS B south of U.S. 92 and LOS C north of the interchange with U.S. 92. I-4 maintains LOS B at its terminus with I-95. U.S. 92, I-95, and I-4 are currently meeting their designated LOS standards indicating that congestion is not likely to limit travel to and from Daytona Beach International Airport.

Though the airport is not served by direct bus transit or passenger rail transportation, car rental facilities are available on site. A summary of the intermodal connectivity for Daytona Beach International Airport is outlined below:

- No bus transit
- No passenger rail
- Onsite rental car facilities

- Direct Access Roadway(s)
  - One 8-lane U.S. highway (**U.S. 92**)
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-95)
  - One 4-lane interstate (I-4)
  - Two 4-lane state roads (SR 483, SR 400)

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#### 7.4.2.2 Destin-Ft. Walton Beach Airport

Destin-Ft. Walton Beach Airport is in Okaloosa County in District 3 and is located directly adjacent to the Choctawhatchee Bay, just northeast of Fort Walton Beach. The airport is a military joint-use facility with the co-located Eglin Air Force Base which also makes use of the facility. Destin-Ft. Walton Beach Airport, located within the boundary of the Okaloosa-Walton Transportation Planning Organization, has direct access to SR 123 (Roger J Clary Highway) which is a designated SIS corridor. SR 189 (Lewis Turner Boulevard) and SR 85 (Eglin Parkway) are both designated as military access routes which service Eglin Air Force Base. SR 85 is a major north/south route which provides access to I-10 to the north. Per the *2035 Long Range Transportation Plan*, SR 123 maintains LOS D while SR 85 operates with LOS A/B in the area surrounding the airport. LOS A/B conditions show low congestion potential while the LOS D indicates a roadway which is more likely to see congestion. Travel to Destin-Ft. Walton Beach Airport is likely predictable with low probability of congestion preventing access to the airport.

Currently, Destin-Ft. Walton Beach Airport does not have passenger rail or bus transit available from the terminal, but car rental facilities are located on site. The intermodal options for the airport are outlined as follows:

- No bus transit
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - Two 4-lane state roads (SR 189, SR 85)
  - One 3-lane state road (**SR 123**)
- Indirect Access Roadway(s)
  - One 4-lane interstate (I-10)
  - One 4-lane U.S. highway (U.S. 98)
  - Four 4-lane state roads (SR 20, SR 85, SR 188, SR 393)
  - One 2-lane state road (SR 293, SR 285)

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#### 7.4.2.3 Fort Lauderdale-Hollywood International Airport

Fort Lauderdale-Hollywood International Airport is in Broward County in District 4 in the southeastern portion of Florida. Located in unincorporated Broward County and bordered by the incorporated cities of Fort Lauderdale, Hollywood, and Dania Beach, the airport is within the boundary of the Broward Metropolitan Planning Organization and has direct access to U.S. 1 and the SIS corridor I-595. Fort Lauderdale-Hollywood International Airport has many regional transportation connections; along the I-595 corridor alone, users have access to I-95, I-75, and Florida's Turnpike which are all major roadways within the state. U.S. 1 provides north/south

connections with the urbanized areas along the coast. Located just to the south of the airport, SR 818 (Griffin Road) provides additional connections to both I-95 and the Turnpike west of the airport.

Per the Broward County *2013 Roadway Capacity and Level of Service Analysis*, U.S. 1 north of SR 818 is LOS C and north of I-595 is LOS F, while I-95 north of SR 818 and I-595 are experiencing LOS F conditions, indicating potential congestion issues. I-595 is experiencing LOS B conditions in the area nearby Fort Lauderdale-Hollywood International Airport indicating better traffic mobility along this roadway. Several of the other roadways within the region around the airport are experiencing LOS F conditions which may affect transportation to and from the airport.

The Broward County Transit bus network provides access to Fort Lauderdale-Hollywood International Airport, but the airport does not have direct access to passenger rail. Access to bus transit may help reduce the overall volume of vehicles currently leading to the LOS F conditions near the airport. Users of this airport also have access to onsite rental car facilities. Fort Lauderdale-Hollywood International Airport has the following intermodal connectivity options:

- Access to bus transit (Broward County Transit)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 6-lane U.S. highway (U.S. 1)
  - One 8-lane interstate (**I-595**)
- Indirect Access Roadway(s)
  - One 10-lane interstate (I-75)
  - One 8-lane interstate (I-95)
  - One 6-lane turnpike (SR 91)
  - Two 4-lane state roads (SR 736, SR A1A)
  - Two 6-lane state roads (SR 818, SR 84)

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#### **7.4.2.4 Gainesville Regional Airport**

Gainesville Regional Airport is in Central Florida in Alachua County within District 2. Located just northeast of the City of Gainesville, the airport is within the Gainesville Metropolitan Transportation Planning Organization and has direct access to SR 24 and SR 222 (NE 39<sup>th</sup> Avenue), both of which are designated SIS connectors. SR 24 connects Gainesville Regional Airport with the City of Gainesville, the University of Florida, and the designated SIS corridors U.S. 331 and SR 20 (SE Hawthorne Road). SR 222 provides access to I-75 to the west and meets with SR 26 to form a connection to U.S. 301 to the east.

Per the *Multimodal Level of Service Report*, SR 222 and SR 24 are both operating at LOS C, indicating that the area likely does not experience congestion issues which would limit access to the airport.

Gainesville Regional Airport does not provide access to passenger rail facilities but does provide access to the Regional Transit System bus network. The bus transit likely reduces the nearby roadway volume which may improve transportation to and from the airport into the future. In

addition to transit, Gainesville Regional Airport also has rental car facilities on site. Intermodal connectivity options for the airport are outlined below:

- Access to bus transit (Regional Transit System)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - Two 4-lane state roads (**SR 24**, SR 222)
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-75)
  - Two 4-lane U.S. highways (U.S. 301, U.S. 441)
  - Three 4-lane state roads (SR 12, **SR 20**, SR 26)

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#### **7.4.2.5 Jacksonville International Airport**

Jacksonville International Airport is in Duval County in northeast Florida in District 2. The airport is in the northern and primarily rural part of the county and is located within the North Florida Transportation Planning Organization. Jacksonville International Airport has direct access with two SIS connectors, SR 102 (Airport Road) and SR 243 (International Airport Boulevard). Indirectly, this airport has access to I-295 which serves as a beltway for Jacksonville and I-95 which provides access to the City of Jacksonville and Nassau County to the north.

Per the *2016 Annual Mobility Report*, all the rural roadways in Jacksonville are meeting or exceeding LOS D. The TIP indicates that Airport Road which connects the airport with I-95 has planned intelligent transportation systems (ITS) improvements. These improvements should increase the flow of traffic to and from the airport for users of I-95. In addition to the ITS changes, a new roadway from Pecan Park road to the north is planned for construction to connect with Airport Road. These two major improvements within the airport area should improve safe and efficient transportation into the future given the likely congestion currently experienced.

Jacksonville International Airport has direct access to the Jacksonville Transportation Authority bus network and has car rental facilities on site, but passenger rail connectivity is not available. The intermodal connectivity options for Jacksonville International Airport are outlined below:

- Access to bus transit (Jacksonville Transportation Authority)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 4-lane state road (**SR 102**)
  - One 5-lane state road (**SR 243**)
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-95)
  - One 4-lane interstate (I-295)
  - One 2-lane U.S. highway (U.S. 17)

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#### 7.4.2.6 Kissimmee Gateway Airport

Kissimmee Gateway Airport is in Osceola County directly south of the Orlando area in District 5 and is located within the boundary of the MetroPlan Orlando Metropolitan Planning Organization. Thacker Avenue provides direct access to U.S. 192 (Irlo Bronson Memorial Highway) which is a designated SIS connector. Additionally, M.L.K. Jr Boulevard provides the direct connection from the airport to U.S. 17/92 (John Young Parkway) which travels through some of the less developed areas to the south of Kissimmee. U.S. 192 forms a network with U.S. 441, U.S. 17/92, and Osceola Parkway to reach Florida's Turnpike to the northeast. U.S. 192 also provides access to I-4 which connects the Kissimmee area with Orlando to the north and Lakeland to the southwest.

U.S. 17/92 has LOS F in the area nearby the airport while U.S. 441/192 maintain a LOS C. An LOS F indicates that congestion is likely within the area. With its location so close to Orlando, it is likely that Kissimmee Gateway Airport and the nearby roadways see congestion regularly.

The airport does not currently have access to bus transit or passenger rail transportation options, but car rental facilities are located on site. An outline of the intermodal transportation options available at Kissimmee Gateway Airport is provided below:

- No bus transit
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 6-lane U.S. highway (**U.S. 192**)
  - One 4-lane U.S. highway (U.S. 17/92)
- Indirect Access Roadway(s)
  - One 4-lane interstate (I-4)
  - One 4-lane turnpike (SR 91)
  - Two 4-lane state roads (**SR 417**, SR 535)

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#### 7.4.2.7 Melbourne International Airport

Melbourne International Airport is in Brevard County along the eastern coast of Florida in District 5. Located within the boundary of the Space Coast Transportation Planning Organization, the airport's SIS connector is SR 508 (NASA Boulevard). Melbourne International Airport has indirect connections to several additional roadways including I-95, U.S. 1 (South Harbor City Boulevard), and U.S. 192 (W New Haven Avenue). The airport is located near the Indian River and Atlantic Ocean, thereby limiting the overall transportation options to the east. Most of the movement within the Melbourne area is directed north/south along the developed coastal areas.

Per the 2016 *State of the System Report*, SR 508, U.S. 1, and U.S. 192 are operating at LOS D, indicating that potential roadway efficiency issues may arise in accessing the airport.

Currently, Melbourne International Airport has access to the Space Coast Area Transit bus system and onsite rental car facilities, but does not have access to passenger rail. A description of the intermodal options available at the airport is provided below:

- Access to bus transit (Space Coast Area Transit)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 4-lane state road (**SR 508**)
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-95)
  - One 6-lane U.S. highway (U.S. 1)
  - One 4-lane U.S. highway (U.S. 192)
  - Three 4-lane state roads (SR 507, SR 518, SR A1A)
  - One 2-lane state road (SR 5054)

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#### 7.4.2.8 Miami Executive Airport

Miami Executive Airport is in Miami-Dade County in the southeastern area of Florida in District 6. Located within the boundary of the Miami-Dade Metropolitan Planning Organization, the airport has direct access to SR 825 (Lindgren Road) which serves as an SIS connector along with SR 94 (SW 88<sup>th</sup> Street) to reach SR 821 (Ronald Reagan Turnpike). SR 825 also provides indirect access to the Dolphin Mall to the north and to Zoo Miami in the south. SR 821 is a north/south designated SIS corridor which connects the Fort Lauderdale area in the north with the Homestead area to the south. SR 94 is an east/west roadway that connects Miami Executive Airport with Biscayne Bay to the east and SR 997 (Krome Avenue) which closely borders the Everglades National Park in the west. Due to the presence of the Everglades National Park and the other conservation areas to the west, much of the transportation within the area is directed along the urbanized coastal areas. LOS data is unavailable for roadways near Miami Executive Airport. Per the 2040 LRTP there are no planned capacity projects in the area nearby to the airport, indicating that the roadways will likely be operating at acceptable levels of efficiency throughout the 2040 planning period.

Currently Miami Executive Airport does not have access to passenger rail or bus transit; however, car rental facilities are located along SR 825 just east of the Airport. An outline of the intermodal options present at the airport is provided below:

- No bus transit
- No passenger rail
- Rental car facilities in close proximity
- Direct Access Roadway(s)
  - One 6-lane state road (**SR 825**)
- Indirect Access Roadway(s)
  - One 6-lane Turnpike (SR 821)
  - One 6-lane U.S. highway (U.S. 1)
  - Two 6-lane state roads (SR 94, SR 874)
  - One 4-lane state road (SR 992)
  - One 2-lane state road (**SR 997**)

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#### 7.4.2.9 Miami International Airport

Miami International Airport is in Miami-Dade County near the southeastern coast of Florida in District 6. Located within the boundary of the Miami-Dade Metropolitan Planning Organization, the airport has direct access to SR 953 (Le Jeune Road) and the SIS designated SR 112 (Airport Expressway) with indirect access to I-95, SR 821 (Ronald Reagan Turnpike), U.S. 27, and U.S. 41. Miami International Airport utilizes Perimeter Road and NW 12<sup>th</sup> Drive to connect with the SIS corridor SR 836 (Dolphin Expressway) to the south, while SR 953 connects the airport to the SIS corridor SR 112 to the north. SR 953 also connects the airport to the SIS corridor SR 826 (Palmetto Expressway), a major north/south roadway located just west of the airport. From a regional perspective, the nearby I-95 and expressways allow for efficient vehicular travel to and from the airport. LOS data is unavailable for roadways near Miami International Airport. SR 836, located just to the south of the airport has planned roadway capacity enhancements within the 2040 planning horizon. These planned enhancements indicate that vehicle travel in the area may soon require improvements. In addition to the roadway connectivity, the airport is located west of the Port of Miami which lies within Biscayne Bay and provides access to the Atlantic Ocean. Miami International Airport, along with the roadway network and waterway connections, creates a location in which transportation and connectivity are abundant.

Currently Miami International Airport has access to the METROBUS and METRORAIL transit systems, as well as onsite rental car facilities. The Miami Intermodal Center (MIC) is a ground transportation hub located just east of the main terminal area. The MIC houses rental car facilities, METRORAIL (Light rail), Tri-Rail (commuter rail), Amtrak, Greyhound bus, intercity bus, airport shuttles, and access to taxi services. This facility is accessed by the MIA Mover, an automated people mover which travels between the airport's terminal area and the MIC. The intermodal connectivity for the airport is outlined below:

- Access to bus transit (METROBUS)
- Access to passenger rail (METRORAIL/Tri-Rail/Amtrak)
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 6-lane state road (SR 953)
  - One 4-lane state road (**SR 112**)
- Indirect Access Roadway(s)
  - One 8-lane interstate (I-95)
  - One 6-lane turnpike (SR 821)
  - One 6-lane U.S. highway (U.S. 27)
  - One 4-lane U.S. highway (U.S. 41)
  - One 8-lane state road (SR 826)
  - Four 6-lane state roads (SR 948, SR 836, SR 9, SR 969)
  - Three 4-lane state roads (SR 968, SR 933, SR 944)

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#### 7.4.2.10 Northwest Florida Beaches International Airport

Northwest Florida Beaches International Airport is in a primarily rural area of District 3's Bay County in the Florida panhandle. Located within the boundary of the Bay County Transportation Planning Organization, the airport has direct access to SR 388 which is an SIS connector that



provides east/west connections to the airport. From the airport, SR 388 connects to SR 79 to the west and SR 77 to the east. Both SR 79 and SR 77 provide connections south to Panama City Beach and I-10 to the north.

Per the Bay County Transportation Planning Organization (TPO) *Congestion Management Process Plan*, SR 79 is currently operating at LOS B, while SR 77 is operating at LOS C. Congestion is not likely an issue within the area surrounding the airport, leading to predictable travel times to and from Northwest Florida Beaches International Airport.

Northwest Florida Beaches International Airport has rental car facilities on site, but does not have direct access to public transit or passenger rail.

The intermodal connectivity for the Northwest Florida Beaches International Airport is outlined below:

- No bus transit
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 2-lane state road (**SR 388**)
- Indirect Access Roadways
  - One 7-lane state road (SR 79)
  - One 4-lane state road (SR 77)

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#### **7.4.2.11 Orlando International Airport**

Orlando International Airport is in Orange County, located southeast of the City of Orlando and east of the Disney and SeaWorld theme parks in District 5. Located within the boundary of the MetroPlan Orlando Metropolitan Planning Organization, the airport has direct access to SR 528 (Martin Andersen Beachline Expressway) and SR 436 (S Semoran Boulevard/Jeff Fuqua Boulevard). SR 436 is an SIS connector providing a direct connection to the designated SIS corridor SR 528. SR 528 connects to I-4 which provides access to tourist attractions along the southwestern side of Orlando. The airport is also well connected by I-4 and Florida's Turnpike, two heavily used SIS corridors that provide statewide transportation options.

Congestion within the Orlando area is expected, but the two direct access roadways appear to have limited congestion issues. Per the *FDOT District 5 LOS Summary Report 2015*, both SR 528 and SR 436 are operating at LOS C, indicating that the travel to and from Orlando International Airport should be consistent.

The airport currently provides access to the LYNX bus transit, Sun Rail passenger rail system, and rental car facilities. Due to the high tourist visitation of the Orlando area, many of the theme parks in the region provide additional bus transportation to and from Orlando International Airport. Theme park provided transportation options likely reduce congestion on public transportation, thereby improving the overall intermodal network serving the airport. The intermodal connectivity outline for the Orlando International Airport can be seen below:

- Access to bus transit (LYNX)

- Access to passenger rail (Sun Rail)
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 5-lane state road (**SR 528**)
  - One 4-lane state road (**SR 436**)
- Indirect Access Roadway(s)
  - One 8-lane interstate (I-4)
  - One 8-lane turnpike (SR 91)
  - One 6-lane U.S. highway (U.S. 441/92/17)
  - Three 6-lane state roads (SR 528, SR 417, SR 408)
  - Two 4-lane state roads (SR 527, SR 552)
  - One 2-lane state road (SR 15)

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#### 7.4.2.12 Orlando-Sanford International Airport

Orlando-Sanford International Airport is in Seminole County in the City of Sanford, just north of the City of Orlando and in the northern portion of the MetroPlan Orlando Metropolitan Planning Organization. District 5's Orlando-Sanford International Airport is directly connected to SR 417 via Airport Road, and the network of Red Cleveland Boulevard and E Lake Mary Boulevard which are both SIS connectors. SR 46 (E 25<sup>th</sup> Street) is just to the north of SFB and provides access to U.S. 17 (S French Avenue) to the west and the more rural areas of the county to the east. Both SR 417 and SR 46 provide access to I-4 to the west, which allows for travel into the more heavily developed Orlando area. SR 417 also allows for north/south transportation along the eastern edge of the Orlando Metro Area and provides indirect access to the University of Central Florida.

Per the *FDOT LOS Summary Report 2015*, U.S. 17 and SR 46 are currently maintaining LOS C while SR 417 has LOS B throughout the area nearby Orlando-Sanford International Airport. With LOS B and C it is likely that the area doesn't experience much congestion leading to predictable travel times to and from the airport.

Orlando-Sanford International Airport does not maintain access to local bus transit or to passenger rail facilities, although rental car facilities are on site. An outline of the intermodal options at the airport is provided below:

- No bus transit
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 6-lane state road (**SR 417**)
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-4)
  - One 4-lane U.S. highway (U.S. 17)
  - One 4-lane state road (SR 415)
  - One 2-lane state road (SR 46)

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#### 7.4.2.13 Palm Beach International Airport

Palm Beach International Airport is in Palm Beach County along the eastern coast of Florida in District 4. The airport, located within the boundary of the Palm Beach Metropolitan Planning Organization, has direct access to I-95 via the SIS connector James L Turnage Boulevard. James L Turnage Boulevard also connects with Australian Avenue which provides access to U.S. 98 (Southern Boulevard) to the south and SR 704 (Okeechobee Boulevard) to the north. Palm Beach International Airport also has access to Florida's Turnpike. In the area near the airport, the Turnpike is an SIS corridor allowing for north/south transportation options. Additionally, the airport has indirect access to U.S. 1 (S Dixie Highway) and SR 809 (N Military Trail) which both provide north/south transportation options. Palm Beach International Airport is located near both the Atlantic Ocean and the Intracoastal Waterway, which limit development east of the airport. Based on the geographic limitations of the area, many users will be traveling from either north or south of the airport.

Per the *FDOT LOS Assessment Report 2015*, SR 704 and SR 809 are primarily meeting LOS C. I-95 between U.S. 98 and James L Turnage Boulevard maintains LOS B while the sections north and south are reaching LOS C. U.S. 98 between SR 809 and Australian Avenue is LOS F while the section between Australian Avenue and I-95 is LOS C. With many of the roadways near the airport meeting the LOS standards, travel to and from Palm Beach International Airport is likely efficient due to limited congestion concerns. I-95 has a higher LOS than the many of the adjacent roadways in the area which is indicative of its use as a regional transportation option with high traffic volumes. However, U.S. 98 appears to be one of the more congested roadways adjacent to the airport which may hinder travel for airport users on this roadway.

Currently, Palm Beach International Airport has access to the local Palm Tran bus transit system and onsite car rental facilities but does not have access to passenger rail. An outline of the intermodal facilities associated with the airport follows:

- Access to bus transit (Palm Tran)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 10-lane Interstate (**I-95**)
- Indirect Access Roadway(s)
  - One 5-lane Turnpike (SR 91)
  - One 8-lane U.S. highway (U.S. 98)
  - One 4-lane U.S. highway (U.S. 1)
  - One 8-lane state road (SR 704)
  - Three 6-lane state roads (SR 807, SR 882, SR 809)
  - One 2-lane state road (SR A1A)

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#### 7.4.2.14 Pensacola International Airport

Pensacola International Airport is in Escambia County just east of the City of Pensacola near Escambia Bay in District 3. Located in the Florida-Alabama Transportation Planning Organization, the airport is Florida's most western SIS and commercial service airport. This airport is directly

connected with SR 750 (Airport Boulevard), SR 289 (N 9<sup>th</sup> Avenue), and SR 296 (Bayou Boulevard). SR 750, which is an SIS connector, and SR 296 both provide access to I-110 to the west. I-110 is a north/south SIS corridor providing access to the City of Pensacola to the South and I-10 to the north. The relatively small distance from Pensacola International Airport to I-110 and subsequently to I-10 allows for effective regional transportation to and from the airport. I-10 is North Florida's main east/west corridor beginning within Jacksonville and passing through Pensacola into Alabama. SR 750, SR 289, SR 296, and I-110 are currently functioning at LOS D, indicating potential traffic flow and congestion issues in the area around the airport.

Pensacola International Airport currently has access to the Escambia County Area Transit bus network, and has car rental facilities on site, but does not currently have access to passenger rail opportunities. An outline of the intermodal connectivity at the airport is provided below:

- Access to bus transit (Escambia County Area Transit)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - Three 4-lane state roads (**SR 750**, SR 289, SR 296)
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-110)
  - One 4-lane interstate (I-10)
  - One 4-lane U.S. highway (U.S. 29)
  - One 2-lane U.S. highway (U.S. 90)
  - One 6-lane state road (SR 291)
  - Two 4-lane U.S. highways (SR 295)

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#### 7.4.2.15 Punta Gorda Airport

Punta Gorda Airport is in Charlotte County in District 1 near the confluence of the Peace River and Charlotte Harbor. The airport is in the Charlotte County-Punta Gorda Metropolitan Planning Organization and has direct access to I-75 via Piper Road and Jones Loop Road which are designated SIS connectors. PGD is also connects with the SIS corridor U.S. 17 (Duncan Road) via I-75 and the nearby U.S. 41 (Tamiami Trail) using Jones Loop Road or Airport Road.

Per the *FDOT District 1 LOS Assessment Report*, U.S. 41 and U.S. 17 are primarily reaching LOS C, with the section of U.S. 17 east of I-75 improving to LOS B. I-75 south of Jones Loop Road maintains LOS B while the section north of Jones Loop Road reaches LOS C. With the major roadways nearby the airport having LOS B and C conditions, travel time to the airport is likely consistent. Many of the major roadways within this region are in a north/south orientation due to the large amounts of conservation land to the east which likely leads to the lower traffic volumes that contribute to passing LOS levels on the roadways adjacent to Punta Gorda Airport.

Currently Punta Gorda Airport is not served by bus transit or passenger rail, but rental car facilities are available on site. An outline of the intermodal connectivity at the airport is provided below:

- No bus transit
- No passenger rail

- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 4-lane interstate (**I-75**)
- Indirect Access Roadway(s)
  - One 5-lane U.S. highway (U.S. 17)
  - One 4-lane U.S. highway (U.S. 41)

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#### 7.4.2.16 Sarasota Bradenton International Airport

Sarasota Bradenton International Airport is located on the northern edge of Sarasota County on the border with Manatee County in District 1. Located within the boundary of the Sarasota/Manatee Metropolitan Planning Organization, the airport is closely adjacent to the Sarasota Bay and has direct connections to U.S. 41 (N Tamiami Trail) and U.S. 301 via the SIS connector University Parkway. University Parkway also connects the airport with I-75 to the east, thereby increasing the capability for regional travel for airport users. U.S. 41 and U.S. 301 run parallel to the coast allowing for north/south travel in this area and connect the Cities of Sarasota and Bradenton.

Per the *FDOT 2014 District 1 LOS Report*, U.S. 41, U.S. 301 and University Parkway are all maintaining LOS C in the area near the airport. Alternatively, I-75 is maintaining a LOS F, meaning that congestion is likely on this major roadway. Local travel to and from Sarasota Bradenton International Airport is not likely to be hindered by the LOS C roadways, but regional travel may be impacted by the failing LOS on I-75.

Access to the Sarasota County Area Transit (SCAT) bus transit and rental car facilities are available at Sarasota Bradenton International Airport, but passenger rail is not currently an option. An outline of the intermodal connectivity present at the airport follows:

- Access to bus transit (SCAT)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - Two 5-lane U.S. highways (U.S. 41, U.S. 301)
  - One 4-lane **University Parkway**
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-75)
  - One 6-lane state road (SR 780)
  - Two 4-lane state roads (SR 789, SR 70)

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#### 7.4.2.17 Southwest Florida International Airport

Southwest Florida International Airport is in Lee County in the southwestern portion of Florida in District 1, southeast of the City of Fort Myers. The airport is located within the boundary of the Lee County Metropolitan Planning Organization and has direct access to I-75 via the SIS connector Terminal Access Road and CR 876 (Daniels Parkway). Additionally, the airport has indirect access to U.S. 41 (S Tamiami Trail) as well as SR 82 (Immokalee Road). The surrounding area is generally rural in nature meaning most travelers will likely be using I-75 to travel north/south to reach Southwest Florida International Airport. Much of the development within the area is

located along the coastal area adjacent to the Gulf of Mexico; for this area, much of the traffic will likely utilize U.S. 41 to travel north/south.

Per the *FDOT 2014 District 1 LOS Report*, I-75 and U.S. 41 maintain LOS C in the area near Southwest Florida International Airport. SR 82 has LOS C north of Daniels Parkway but drops to LOS E south of the Parkway. Roadways with LOS C may experience some congestion issues but it appears that travel to and from the airport should be predictable. Congestion is more likely along the SR 82 corridor since sections are reaching LOS E.

Southwest Florida International Airport currently maintains access to the local LeeTran bus network and has onsite rental car facilities but it does not have passenger rail connections. An outline of the intermodal options found at the airport is summarized below:

- Access to bus transit (LeeTran)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 8 lane interstate (**I-75**)
  - One 7-lane county road (CR 876)
- Indirect Access Roadway(s)
  - One 6-lane U.S. highway (U.S. 41)
  - One 4-lane state road (SR 82)

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#### **7.4.2.18 St. Pete-Clearwater International Airport**

St. Pete-Clearwater International Airport is located on the east edge of Pinellas County bordering Tampa Bay in District 7. The airport is within the boundary of the Forward Pinellas Metropolitan Planning Organization and is directly connected to SR 688 (Ulmerton Road) and the SIS connector SR 686 (Roosevelt Boulevard). Both SR 688 and SR 686 connect with SIS corridor U.S. 19 to the west and SIS corridor I-275 to the east. The I-275 corridor provides access into the City of Tampa to the east and to the City of St. Petersburg to the south. U.S. 19 functions as a north/south corridor that connects Pinellas County with other coastal communities.

Per the *2015 Level of Service Report*, both SR 686 and SR 688 are experiencing LOS F conditions leading to potential efficiency issues in the area near the airport. I-275 has LOS B and C conditions closest to the airport but begins to reach LOS E as it heads toward Tampa over the Howard Frankland Bridge. U.S. 19 primarily maintains an LOS of B/C in the area near St. Pete-Clearwater International Airport, but conditions reach LOS F north of SR 686 and south of SR 688. Per the TIP, both SR 686 and SR 688 have improvement projects planned which will likely increase the flow of traffic through the area and to the airport.

St. Pete-Clearwater International Airport is not currently connected with either passenger rail or bus transit, but the airport does have onsite car rental facilities. The intermodal opportunities at the airport are outlined below:

- No bus transit
- No passenger rail

- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 6-lane state road (SR 688)
  - One 4-lane state road (**SR 686**)
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-275)
  - One 6-lane U.S. highway (U.S. 19)
  - One 4-lane U.S. highway (U.S. 92)
  - One 2-lane U.S. highway (U.S. 19)
  - One 5-lane state road (SR 693)
  - Two 4-lane state roads (SR 60, SR 687)
  - One 2-lane state road (SR 590)

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#### 7.4.2.19 Tallahassee International Airport

Tallahassee International Airport is in Leon County, just southwest of the City of Tallahassee, Florida's Capital City, in District 3. The airport is located within the boundary of the Capital Region Transportation Planning Agency and has direct access to SR 263 (Capital Circle SW) which is an SIS connector that provides access to the nearby I-10 to the north. In addition to the interstate, Tallahassee International Airport also has indirect access to U.S. 90 (W Tennessee Street), U.S. 319 (Capital Circle SE), SR 20 (Blountstown Highway), and SR 371 (West Orange Avenue). U.S. 90 and SR 371 are east/west routes through the city which provide access to both sides of the Capital Circle Roadway. SR 20 is another east/west roadway which connects Tallahassee with the more rural areas along Lake Talquin to the west. U.S. 319 provides north/south access to Georgia to the north and Wakulla County to the south.

Per the *Congestion Management Process Report*, SR 263 has LOS F for the area just north of Tallahassee International Airport. Roadway widening projects within the area are anticipated to increase capacity and improve the LOS rating in this area. SR 263 is a popular commuter route into the city, meaning that the airport will likely experience congestion during the work week.

With its location just outside of SR 263, bus transit and passenger rail are not currently offered at Tallahassee International Airport. Though transit options are not available, the maintains rental car facilities on site. An outline of the intermodal options available at the airport are outlined below:

- No bus transit
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 2-lane state road (**SR 263**)
- Indirect Access Roadway(s)
  - One 6-lane interstate (I-10)
  - One 6-lane U.S. highway (U.S. 319)
  - One 4-lane U.S. highway (U.S. 90)
  - One 4-lane state road (SR 20)
  - One 2-lane state road (SR 371)



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#### 7.4.2.20 Tampa International Airport

Tampa International Airport is in Hillsborough County on the western coast of Florida, just north of the Old Tampa Bay in District 7. The airport is located within the boundary of the Hillsborough Metropolitan Planning Organization and is directly connected to two SIS corridors, SR 60 (Gulf to Bay Boulevard/Kennedy Boulevard) and I-275. Additionally, the airport also has access to SR 616 (W Spruce Street/W Boy Scout Boulevard) and SR 589 (Veteran's Expressway). Both I-275 and SR 60 provide connections from Tampa to the east with the Clearwater/St. Petersburg area to the west. SR 616 connects Tampa International Airport with SR 60 at the airport entrance and U.S. 92 (Dale Mabry Highway) to the east. Both U.S. 92 and SR 616 are north/south roadways with U.S. 92 connecting Tampa to St. Petersburg to the south, and SR 589 providing access to the counties in the north. Both SR 60 and I-275 are projected to have capacity problems by the end of the 2040 planning horizon. SR 589 just to the west of the airport will primarily be under capacity except for the area surrounding the intersection with SR 60 and Tampa International Airport. Most roadways around the airport are projected to have capacity issues leading to transportation concerns into the future.

Tampa International Airport currently provides access to the Hillsborough Area Regional Transit bus network and rental car facilities, but does not offer access to passenger rail facilities. An outline of the intermodal options present at the airport is provided below:

- Access to bus transit (Hillsborough Area Regional Transit)
- No passenger rail
- Onsite rental car facilities
- Direct Access Roadway(s)
  - One 6-lane interstate (I-275)
  - One 7-6-lane state road (SR-60)
  - One 6-lane state road (SR 616)
  - One 5-lane state road (**SR 589**)
- Indirect Access Roadway(s)
  - One 8-lane interstate (I-4)
  - Two 6-lane U.S. highways (U.S. 92, U.S. 41)
  - One 6-lane state road (SR 580)

### 7.5 Activity Drivers

At the state level, Florida enjoys a robust aviation industry due to a number of structural conditions and market opportunities. According to a report by the California Research Bureau, specific factors play key roles in the growth and development of aviation-related industries into certain geographic regions. Some of these factors include a skilled workforce, low labor costs, proximity to markets for inputs and outputs, available transportation infrastructure, quality of life, and favorable policies and political support.

Using this framework to evaluate the state aviation system, it is clear why Florida has emerged as a national and global leader for aviation. The state offers a gateway between the U.S. and major international markets (primarily Latin American and the Caribbean, but also Asia, Europe, and Africa), a skilled labor pool and low labor costs, a robust intra- and inter- state roadway

network, and tax incentives and regulatory conditions designed to draw high-value jobs and industries into the state, among other key factors.

However, despite this statewide strength, analyzing aviation activity on a more granular level reveals that the industry is unequally distributed across regions throughout the state, with significant differences in both the type and volume of activity that occurs. Specific regions and localized areas have emerged as focal points for particular industry segments. For example, while Florida is the primary hub for international trade between the U.S. and Latin America, over 80 percent of that trade activity occurs at Miami International Airport. Florida is also the leading provider of flight instruction in the U.S.; however, activity is primarily centralized around major metropolitan areas in the north, southeast, and central areas of the state.

Like the factors that influence the aviation industry at the statewide level, these regional differences occur due to intrastate aviation drivers that foster the development of aviation activities within specific geographic spheres. The availability of modal connectivity; tourist, environmental, and business assets; universities and other research institutions; and local demographics can shape the evolution of an airport or multiple airports in close proximity to one another. These drivers lead to markets and populations that are over- or under-served by particular operational activities, resulting in widely divergent impacts to local and regional economies, transportation connectivity, and the other benefits associated with aviation access.

One of the key drivers impacting the development of aviation-related industries is the presence of businesses and industries with a tendency to use aviation services. In addition to providing fast, flexible, and secure access between markets, airports can open the door to global commerce for small communities and rural populations by linking remote areas with customers across the world.

While many types of businesses rely on aviation services to transport employees, clients, and goods, a closer examination of industry use of aviation services reveals that certain types of business have a particularly high reliance on air transportation. Air cargo, for example, is characterized by high-value, time-sensitive shipments, such as perishables, electronics, and pharmaceuticals. Airports located near facilities that manufacture, handle, or process these types of goods have an inherent incentive to improve the landside facilities required for air transportation. Generally, the presence of industries with a tendency to use aviation services can drive airport development within a particular geographic area.

To understand how the relationship between industry and aviation services is impacting airport development in Florida, the density of industries with a tendency to use aviation services was mapped, along with airport locations across the state based on county boundaries and FDOT Districts. As shown in **Table 7-39**, 12 types of industries were selected using the 2012 North American Industry Classification System (NAICS). A short description of each code is provided following the table.

As shown, Florida supports 427,996 total establishments with a tendency to use aviation with over five million employees across the state. The professional, scientific, and technical services category hosts the highest number of establishments, while the majority of employees work in

the healthcare and social assistance or retail trade categories—likely driven by Florida's flourishing leisure- and business-travel industries, aging demographic, and growing retiree population.

**Table 7-39: NAICS Industry Classifications**

Code	Definition	Establishments in Florida (No.)	Employees in Florida (No.)
72	Accommodation and food services	38,278	864,029
71	Arts, entertainment, and recreation	7,929	177,762
23	Construction	46,578	332,784
52	Finance and insurance	31,025	333,710
62	Healthcare and social assistance	57,652	1,025,086
51	Information	8,010	163,694
31 – 33	Manufacturing	12,912	284,953
54	Professional, scientific, and technical services	74,102	442,746
53	Real estate and rental and leasing	32,422	156,766
44 – 45	Retail trade	73,196	1,025,788
48 – 49	Transportation and warehousing	13,862	206,761
22	Utilities	737	4,983
<b>Total</b>		<b>427,996</b>	<b>5,318,558</b>

Source: North American Industry Classification System (NAICS) Code, 2014

### 7.5.1 Accommodation and Food Service (Code 72)

Accommodation and food service encompasses all types of traveler accommodations, including hotels, motels, boarding houses, and camping facilities, as well as eating and drinking establishments. These facilities are integral to the travel industry for both business and recreational visitors.

### 7.5.2 Arts, Entertainment, and Recreation (Code 71)

Arts, entertainment, and recreation includes all types of sport and leisure activities, such as cultural institutions, performing arts, spectator sports, and museums and historical sites, as well as the artists, performers, and athletes who participate in such activities.

### 7.5.3 Construction (Code 23)

Each year, airports undertake capital improvement projects such as runway, apron, and taxiway reconstruction and rehabilitations; hangar developments; and terminal improvements. Many of

these projects are high-dollar initiatives that provide a significant boost to local economies and employment opportunities for residents. Additionally, off-airport construction projects are a positive indicator of economic growth and development and can draw business travelers both during development and after construction.

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#### **7.5.4 Finance and Insurance (Code 52)**

Finance and insurance is a significant industry in Florida. This activity is driven, in part, by the state's strong international ties with Latin America, as well as intermodal that facilities the efficient movement of goods to their final destinations such as seaports and roadway networks. Business travelers and investors are drawn to the state from around the globe to access both domestic and international financial markets.

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#### **7.5.5 Healthcare and Social Assistance (Code 62)**

Rural communities depend on Florida's airports to access medical facilities for both specialized and emergency medical care. This qualitative benefit is particularly important for the state's aging population. Additionally, healthcare comprises a significant portion of the state's economic base.

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#### **7.5.6 Information (Code 51)**

Information encompasses a breadth of industries ranging from newspaper, periodical, book, and software publishing; to motion picture and sound recording; wireless communications; telecommunications; and other news and information outlets. These industries rely on air transportation to quickly travel to destinations in the U.S. and abroad, as well as provide services to rural locations most easily accessible by air.

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#### **7.5.7 Manufacturing (Code 31 – 33)**

The manufacturing code encompasses the transformation and/or assembly of all types of raw materials, including agricultural; petroleum-, wood-, and metal-based products; and other natural and synthetic materials into usable goods ready for market. The code also provides a specific category for aerospace manufacturing. Air cargo is particularly critical for just-in-time deliveries between suppliers and manufacturers.

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#### **7.5.8 Professional, Scientific, and Technical Services (Code 54)**

This code describes a wide-range of specialized services ranging from accounting, tax preparation, and business services; engineering and architecture; marketing and public relations; and scientific research. Engineers and architects support landside and airside airport improvement projects, and many other professionals are critical to the ongoing business and management of the aviation industry.

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#### **7.5.9 Real Estate and Rental and Leasing (Code 53)**

Real estate and rental and leasing encompassing the business of buying, selling, and renting of properties and goods. This industry thrives in Florida, which has a substantial second home and winter visitor population. Real estate tours provide visitors with a birds-eye view of available properties with a broader perspective on surrounding communities and adjacent properties.

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#### **7.5.10 Retail Trade (Code 44 – 45)**

Retail trade describes the interaction between the manufacturer or distributor with the final consumer. Airports are particularly important for the transfer of perishable goods and high-value, low-volume products, such as electronics. Additionally, the role of airports in retail trade has become increasingly important with the growth of online retail establishments such as Amazon.

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#### **7.5.11 Transportation and Warehousing (Code 48 – 49)**

Transportation and warehousing includes scheduled and unscheduled air, rail, water, and roadway transportation; postal service; and the storage of goods, as well as the associated logistical support. Airports can serve as the hub of transportation networks and are integral to the movement of people and products.

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#### **7.5.12 Utilities (Code 22)**

The utilities code includes the generation and transmission of electricity, distribution of natural gas, and water systems. Airports are important for the inspection of such utility systems, and they are part of an airport's critical infrastructure.

As shown in **Table 7-40**, there are 67 counties in Florida. Miami-Dade County ranks first in both number of establishments (68,913) and employees (749,681) in the industries included in this analysis. In total, Miami-Dade County supports 16 percent of the total establishments and 10 percent of the employees within the state. Conversely, Glades County hosts the lowest number of employees (207), representing 0.4 percent of the statewide total. Liberty County supports the fewest number of establishments (578), representing one percent of employees working in the industries with a tendency to use air services.

**Table 7-40: Number of Establishments and Employees Working at Businesses with a Tendency to Use Air Services by County**

County	Establishments (No.)	Employees (No.)
1. Alachua	4,877	74,025
2. Baker	314	3,717
3. Bay	3,757	53,926
4. Bradford	332	3,015
5. Brevard	10,872	137,177
6. Broward	48,264	521,245

County	Establishments (No.)	Employees (No.)
7. Calhoun	157	1,154
8. Charlotte	3,022	31,748
9. Citrus	2,122	20,567
10. Clay	2,944	32,771
11. Collier	8,878	97,118
12. Columbia	1,112	14,609
13. DeSoto	338	3,147
14. Dixie	133	1,006
15. Duval	19,560	336,768
16. Escambia	5,503	82,657
17. Flagler	1,547	13,963
18. Franklin	268	1,886
19. Gadsden	500	7,180
20. Gilchrist	182	1,123
21. Glades	80	257
22. Gulf	224	1,423
23. Hamilton	139	663
24. Hardee	287	3,686
25. Hendry	449	4,141
26. Hernando	2,467	26,281
27. Highlands	1,474	16,727
28. Hillsborough	28,164	437,196
29. Holmes	212	1,528
30. Indian River	3,233	34,270
31. Jackson	619	6,564
32. Jefferson	194	792
33. Lafayette	71	381
34. Lake	5,370	59,684
35. Lee	13,849	164,967
36. Leon	6,022	80,422

County	Establishments (No.)	Employees (No.)
37. Levy	552	3,849
38. Liberty	57	578
39. Madison	247	2,304
40. Manatee	6,640	74,279
41. Marion	5,573	65,702
42. Martin	4,232	43,417
43. Miami-Dade	68,913	749,681
44. Monroe	3,079	27,997
45. Nassau	1,347	13,570
46. Okaloosa	4,261	48,249
47. Okeechobee	622	5,032
48. Orange	28,128	525,934
49. Osceola	4,373	55,778
50. Palm Beach	37,012	391,365
51. Pasco	7,208	75,056
52. Pinellas	22,272	302,536
53. Polk	8,885	137,129
54. Putnam	971	10,397
55. Santa Rosa	2,060	19,174
56. Sarasota	10,656	113,275
57. Seminole	10,494	122,938
58. St. Johns	4,529	42,708
59. St. Lucie	4,126	46,910
60. Sumter	1,123	16,071
61. Suwannee	534	6,610
62. Taylor	303	3,763
63. Union	105	681
64. Volusia	9,869	114,536
65. Wakulla	335	2,261
66. Walton	1,646	16,114



County	Establishments (No.)	Employees (No.)
67. Washington	308	2,880

Source: North American Industry Classification System (NAICS) Code, 2014

As depicted in **Table 7-41**, FDOT District 4 along Florida's south Atlantic coast, has the highest number of establishments with a tendency to use aviation (96,867), representing 23 percent of the statewide total. District 5, one of the fastest growing regions in Florida, supports the highest number of employees (1,111,783), representing 21 percent of the statewide total. District 5 also hosts the highest total number of airports in the state with 21 GA and four commercial service facilities.

However, a high-level comparison of total number of airports versus establishments and employees does not reveal any broader trends. It should be noted that, while District 6 supports the fewest total number of airports (eight), Miami International Airport experiences the highest number of operations and a significant share of statewide air cargo activity (80 percent). The presence of Miami International Airport in District 6 coupled with the district's relatively small geographic size likely constrains the development of additional airports in the state's southernmost tip.

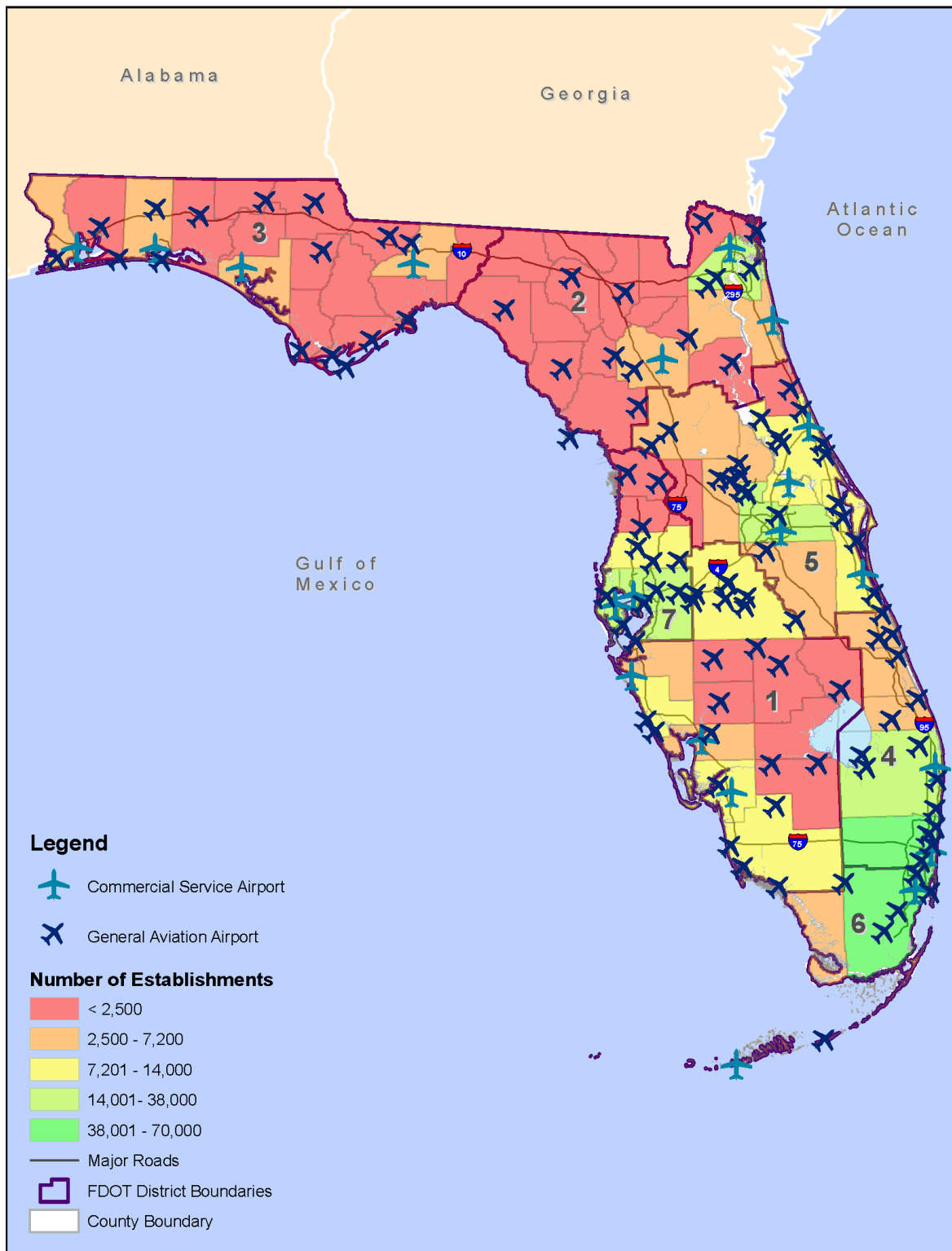
**Table 7-41: Number of Establishments and Employees Working at Businesses with a Tendency to Use Air Services by FDOT District**

FDOT District	Total Establishments		Total Employees		No. of Airports		
	No.	Percentage (%)	No.	Percentage (%)	Commercial	General Aviation	Total
1	55,180	13%	651,506	12%	3	24	27
2	38,252	9%	551,960	10%	3	15	18
3	26,123	6%	326,788	6%	4	16	20
4	96,867	23%	1,037,207	20%	2	15	17
5	77,349	18%	1,111,783	21%	3	22	25
6	71,992	17%	777,678	15%	2	6	8
7	62,233	15%	861,636	16%	2	11	13

Source: North American Industry Classification System (NAICS) Code, 2014; FDOT; Kimley-Horn, 2017

The density of establishments with a tendency to use aviation on a statewide level is presented in **Figure 7-56**. The highest density of these establishments is near the state's largest metropolitan area in the vicinity of Miami, spanning Districts 6 and the lower portion of District 4. Given that this region is the most densely populated area and home to numerous major corporations, this density of airports is not surprising.

**Figure 7-56: Density of Establishments with Tendency to Use Aviation and Public-Use Airports**



Source: U.S. Census and the American Community Survey (ACS); Kimley-Horn Analysis

**Table 7-42** includes the public-use airports associated with a high-density of establishments associated with businesses with a tendency to use aviation services. Please note these airports were identified on a statewide level based on geographic proximity to businesses with a tendency to use aviation services. A micro-level analysis of actual aviation-related businesses and/or activity at individual airports was not conducted for the FASP 2035.

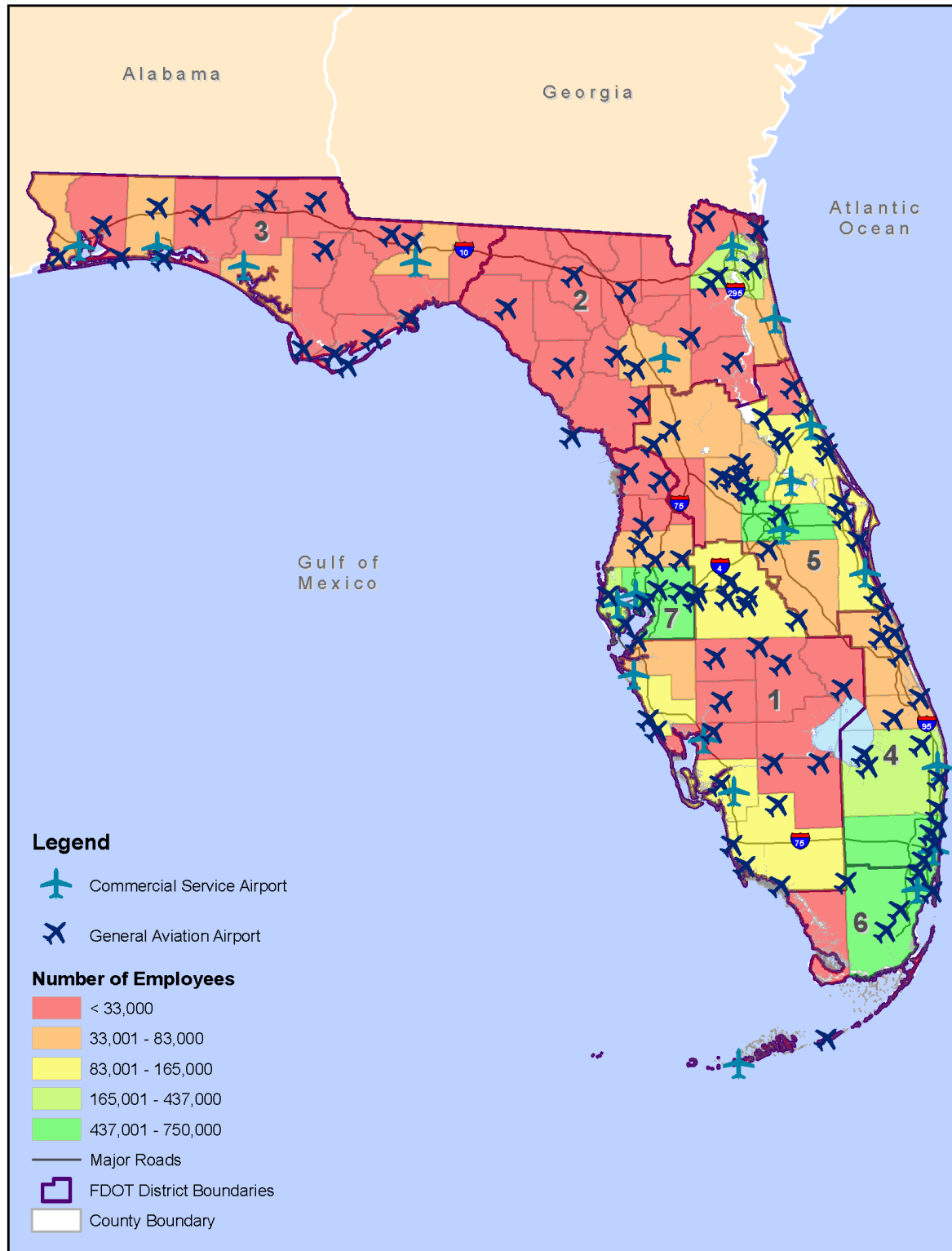
**Table 7-42: Airports Associated with a High-Density of Business Establishments**

FDOT District	Airport	FAA ID	County
6	Dade-Collier Training and Transition Airport	TNT	Miami-Dade
	Miami Executive Airport	TMB	Miami-Dade
	Miami Homestead General Aviation Airport	X51	Miami-Dade
	Miami International Airport	MIA	Miami-Dade
	Miami Seaplane Base	X44	Miami-Dade
	Miami-Opa Locka Executive Airport	OPF	Miami-Dade
4	Downtown Fort Lauderdale Heliport	DT1	Broward
	Fort Lauderdale Executive Airport	FXE	Broward
	Fort Lauderdale-Hollywood International Airport	FLL	Broward
	North Perry Airport	HWO	Broward
	Pompano Beach Airpark	PMP	Broward

Source: Kimley-Horn, 2017

As depicted in **Figure 7-57**, workers at those establishments are concentrated in District 6, the southern portion of District 4, and within a small pocket within District 5. Mirroring the results of the analysis of establishment density, each of these areas is located in the immediate vicinity of a major metropolitan area providing extensive intermodal connectivity. The area within District 5 serves the Orlando area along the I-4 corridor. While this area does not provide the highest concentration of business establishments (see Figure 7-56), it supports the second highest density of establishments. Thus, while the total number of establishments is less, the businesses in District 5 support a higher number of employees per location.

**Figure 7-57: Density of Employees at Businesses with Tendency to Use Aviation and Public-Use Airports**



Source: U.S. Census and the American Community Survey (ACS); Kimley-Horn Analysis

**Table 7-43** lists the airports located in the areas that support a high-density of employees at businesses with a tendency to use aviation services. As noted above, these airports were identified on a statewide level based on geographic proximity to businesses with a tendency to use aviation services. A micro-level analysis of actual aviation-related businesses and/or activity at individual airports was not conducted for the FASP 2035.

**Table 7-43: Airports Associated with a High-Density of Employees Working at Businesses with a Tendency to Use Aviation Services**

FDOT District	Airport	FAA ID	County
4	Downtown Fort Lauderdale Helistop	DT1	Broward
	Fort Lauderdale-Hollywood International Airport	FLL	Broward
	Fort Lauderdale Executive Airport	FXE	Broward
	North Perry Airport	HWO	Broward
	Pompano Beach Airpark	PMP	Broward
5	Bob White Field	X61	Orange
	Executive Airport	ORL	Orange
	Orlando Apopka Airport	X04	Orange
	Orlando International Airport	MCO	Orange
6	Dade-Collier Training and Transition Airport	TNT	Miami-Dade
	Miami Executive Airport	TMB	Miami-Dade
	Miami Homestead General Aviation Airport	X51	Miami-Dade
	Miami International Airport	MIA	Miami-Dade
	Miami Seaplane Base	X44	Miami-Dade
	Miami-Opa Locka Executive Airport	OPF	Miami-Dade
7	Peter O Knight Airport	TPF	Hillsborough
	Plant City Airport	PCM	Hillsborough
	Tampa Executive Airport	VDF	Hillsborough
	Tampa International Airport	TPA	Hillsborough

Source: Kimley-Horn, 2017

The two analyses presented above assessed the density of total establishments with a tendency to use aviation services and their employees. While this type of analysis is helpful in identifying areas of high economic output potentially reliant on airports, it does not provide a nuanced assessment of how aviation is impacting regional or local economies. For example, an area with a high total employed population will likely have more employees working at such establishments as a matter of volume. However, businesses with a tendency to use aviation

services may be relatively insignificant when considered within the broader economic context of the area. As such, an assessment of total numbers of establishments and employees can distort the perceived importance of aviation in local and regional economies.

To provide a more refined level of analysis, an assessment of total employment at businesses with a tendency to use aviation services as a percentage of the total employed population was conducted. This more detailed analysis provides valuable insight into those areas that are particularly reliant on aviation for the overall economic health of the community or region.

As shown in **Table 7-44**, there are 67 counties in Florida. Orange County hosts the highest percentage of employees working at establishments with the tendency to use aviation services, with 525,934 aviation-related employees out of a total workforce of 583,518 (90 percent). Glades County hosts the lowest percentage of the employed population working at businesses with a tendency to use aviation services (6.6 percent). Miami-Dade County ranks first in both number of employees working at a business with a tendency to use aviation services (749,681) and total employed population (1,168,193). However, Miami-Dade County ranks 18th in the state by percentage of working population at a business with the tendency to use aviation services (64.2 percent).

**Table 7-44: Percentage of Employed Population Working at a Business with the Tendency to Use Air Services by County**

County	Employees Working at Businesses with a Tendency to Use Air Services (No.)	Total Employed Population (No.)	Percentage of Employed Population Working at Businesses with a Tendency to Use Air Services (%)
1. Alachua	74,025	114,598	64.6%
2. Baker	3,717	10,040	37.0%
3. Bay	53,926	76,325	70.7%
4. Bradford	3,015	9,094	33.2%
5. Brevard	137,177	226,651	60.5%
6. Broward	521,245	868,504	60.0%
7. Calhoun	1,154	4,590	25.1%
8. Charlotte	31,748	54,955	57.8%
9. Citrus	20,567	43,804	47.0%
10. Clay	32,771	84,412	38.8%
11. Collier	97,118	135,870	71.5%
12. Columbia	14,609	24,543	59.5%
13. DeSoto	3,147	12,240	25.7%

County	Employees Working at Businesses with a Tendency to Use Air Services (No.)	Total Employed Population (No.)	Percentage of Employed Population Working at Businesses with a Tendency to Use Air Services (%)
14. Dixie	1,006	5,179	19.4%
15. Duval	336,768	399,840	84.2%
16. Escambia	82,657	126,728	65.2%
17. Flagler	13,963	35,011	39.9%
18. Franklin	1,886	4,188	45.0%
19. Gadsden	7,180	16,631	43.2%
20. Gilchrist	1,123	5,994	18.7%
21. Glades	257	3,888	6.6%
22. Gulf	1,423	5,583	25.5%
23. Hamilton	663	4,093	16.2%
24. Hardee	3,686	9,281	39.7%
25. Hendry	4,141	14,143	29.3%
26. Hernando	26,281	56,925	46.2%
27. Highlands	16,727	30,510	54.8%
28. Hillsborough	437,196	592,676	73.8%
29. Holmes	1,528	6,244	24.5%
30. Indian River	34,270	52,728	65.0%
31. Jackson	6,564	15,744	41.7%
32. Jefferson	792	5,096	15.5%
33. Lafayette	381	3,024	12.6%
34. Lake	59,684	119,383	50.0%
35. Lee	164,967	253,965	65.0%
36. Leon	80,422	136,982	58.7%
37. Levy	3,849	13,800	27.9%
38. Liberty	578	2,715	21.3%
39. Madison	2,304	6,196	37.2%
40. Manatee	74,279	137,078	54.2%
41. Marion	65,702	116,650	56.3%



County	Employees Working at Businesses with a Tendency to Use Air Services (No.)	Total Employed Population (No.)	Percentage of Employed Population Working at Businesses with a Tendency to Use Air Services (%)
42. Martin	43,417	59,954	72.4%
43. Miami-Dade	749,681	1,168,193	64.2%
44. Monroe	27,997	37,245	75.2%
45. Nassau	13,570	31,488	43.1%
46. Okaloosa	48,249	83,880	57.5%
47. Okeechobee	5,032	13,271	37.9%
48. Orange	525,934	583,518	90.1%
49. Osceola	55,778	125,752	44.4%
50. Palm Beach	391,365	601,892	65.0%
51. Pasco	75,056	183,249	41.0%
52. Pinellas	302,536	416,128	72.7%
53. Polk	137,129	241,665	56.7%
54. Putnam	10,397	24,596	42.3%
55. Santa Rosa	19,174	65,991	29.1%
56. Sarasota	113,275	151,924	74.6%
57. Seminole	122,938	205,734	59.8%
58. St. Johns	42,708	93,903	45.5%
59. St. Lucie	46,910	110,660	42.4%
60. Sumter	16,071	21,858	73.5%
61. Suwannee	6,610	15,673	42.2%
62. Taylor	3,763	7,297	51.6%
63. Union	681	4,274	15.9%
64. Volusia	114,536	195,556	58.6%
65. Wakulla	2,261	12,916	17.5%
66. Walton	16,114	24,815	64.9%
67. Washington	2,880	8,451	34.1%

Source: North American Industry Classification System (NAICS) Code, 2014; American FactFinder, 2017

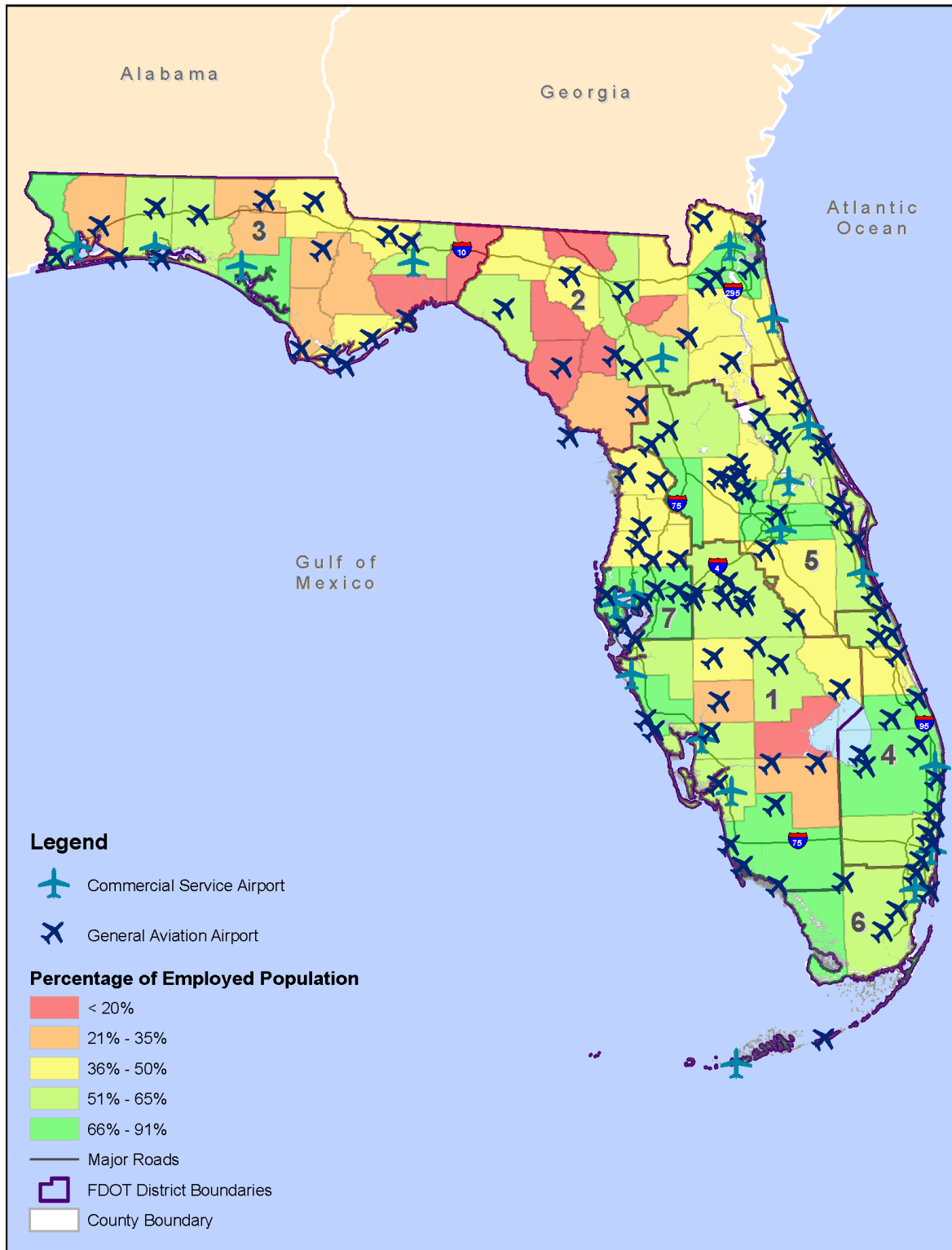
Figure 7-58 presents the density of employees at businesses with a tendency to use aviation as a percentage of the total working population.

While there is some overlap with areas with a high number of total establishments and employees, this analysis reveals several distinct pockets of activity where aviation is particularly impactful to local economies. The most notable differences between the first two analyses, which examined the total density of establishments and their employees (as presented in Figure 7-56 and Figure 7-57, respectively) and this analysis (as presented in Figure 7-58) are found in southern District 1 and western District 3. These districts both experience some of the lowest concentrations of establishments and employees working at businesses with a tendency to use aviation, but highest concentrations of employees as a percentage of the total working population.

This concentration of workers is predictable in District 3, as the area is home to Eglin Air Force Base, Tyndall Air Force Base, and several other major military installations. This federal presence has drawn some of the world's largest aerospace, aviation, and defense contractors to the Florida Panhandle, bringing job opportunities for the specialized professionals who work in these fields. District 1's economy is continuing to rebound from the most recent economic recession and has benefitted from recent population growth catalyzed by new residents moving northward along the coast. As a result, industries such as construction, real estate and leasing, professional services, and finance and insurance are likely experiencing a surge of activity. District 4 along the Gulf Coast is undergoing a similar period of economic growth and diversification.

Other areas with a high percentage of the working population at a business with the tendency to use aviation include southern District 7, central District 5, and eastern District 2. In each case, the workforce density is centered upon a major urban center (Tampa, Orlando, and Jacksonville, respectively). There is also a notable pocket of activity in western District 5 along the I-75 corridor in Sumter County. While this area does not host an airport, a relatively dense concentration of airports is located in Lake County to the east, as well as several facilities in Marion County to the north and Citrus, Hernando, and Pasco counties to the west.

**Figure 7-58: Density of Employees at Businesses with Tendency to Use Aviation as a Percentage of Total Working Population**



Source: U.S. Census and the American Community Survey (ACS); Kimley-Horn Analysis

**Table 7-45** lists the airports located in the areas that support a high-density of employees at businesses with a tendency to use aviation services as a percentage of the total employed workforce.

**Table 7-45: Airports Associated with a High-Density of Employees as a Percentage of the Employable Population at Businesses with a Tendency to Use Aviation Services**

FDOT District	Airport	FAA ID	County
1	Airport Manatee	48X	Manatee
	Buchan Airport	X36	Sarasota
	Everglades Airpark	X01	Collier
	Immokalee Regional Airport	IMM	Collier
	Marco Island Airport	MKY	Collier
	Naples Municipal Airport	APF	Collier
	Sarasota Bradenton International Airport	SRQ	Sarasota
	Venice Municipal Airport	VNC	Sarasota
2	Cecil Airport	VQQ	Duval
	Herlong Recreational Airport	HEG	Duval
	Jacksonville Executive at Craig Airport	CRG	Duval
	Jacksonville International Airport	JAX	Duval
3	Ferguson Airport	82J	Escambia
	Northwest Florida Beaches International Airport	ECP	Bay
	Pensacola International Airport	PNS	Escambia
4	Belle Glade State Municipal Airport	X10	Palm Beach
	Boca Raton Airport	BCT	Palm Beach
	Indiantown Airport	X58	Martin
	North Palm Beach County General Aviation Airport	F45	Palm Beach
	Palm Beach County Glades Airport	PHK	Palm Beach
	Palm Beach International Airport	PBI	Balm Beach
	Palm Beach County Park Airport	LNA	Palm Beach
	Witham Field	SUA	Martin
5	Bob White Field	X61	Orange
	Executive Airport	ORL	Orange

FDOT District	Airport	FAA ID	County
	Orlando Apopka Airport	X04	Orange
	Orlando International Airport	MCO	Orange
	Albert Whitted Airport	SPG	Pinellas
7	Clearwater Airpark	CLW	Pinellas
	Peter O Knight Airport	TPF	Hillsborough
	Plant City Airport	PCM	Hillsborough
	St. Pete-Clearwater International Airport	PIE	Pinellas
	Tampa Executive Airport	VDF	Hillsborough
	Tampa International Airport	TPA	Hillsborough

Source: Kimley-Horn, 2017

## 7.6 Summary

A number of different types of analyses were conducted during the FASP 2035 to gauge the success of the system in meeting the needs of users and stakeholders. A review of system performance in meeting system goals, objectives, PMs, and Pls identifies areas of focus for future system enhancement. Mapping the availability of services and facilities throughout the state within a 30-minute drive time (or 30 nautical mile distance) identifies potential gaps in existing and projected population coverage within these boundaries. Recognizing and identifying the drivers of aviation activity across the state, especially as it relates to attraction and retention of industries is important for continued aviation activity diversity across the state. Finally, a review of existing airport connections to other modes of transportation highlights areas that would benefit from enhanced intermodal connectivity. The findings of these four analyses help inform the recommendations included in **Chapter 10 – Recommendations**.