

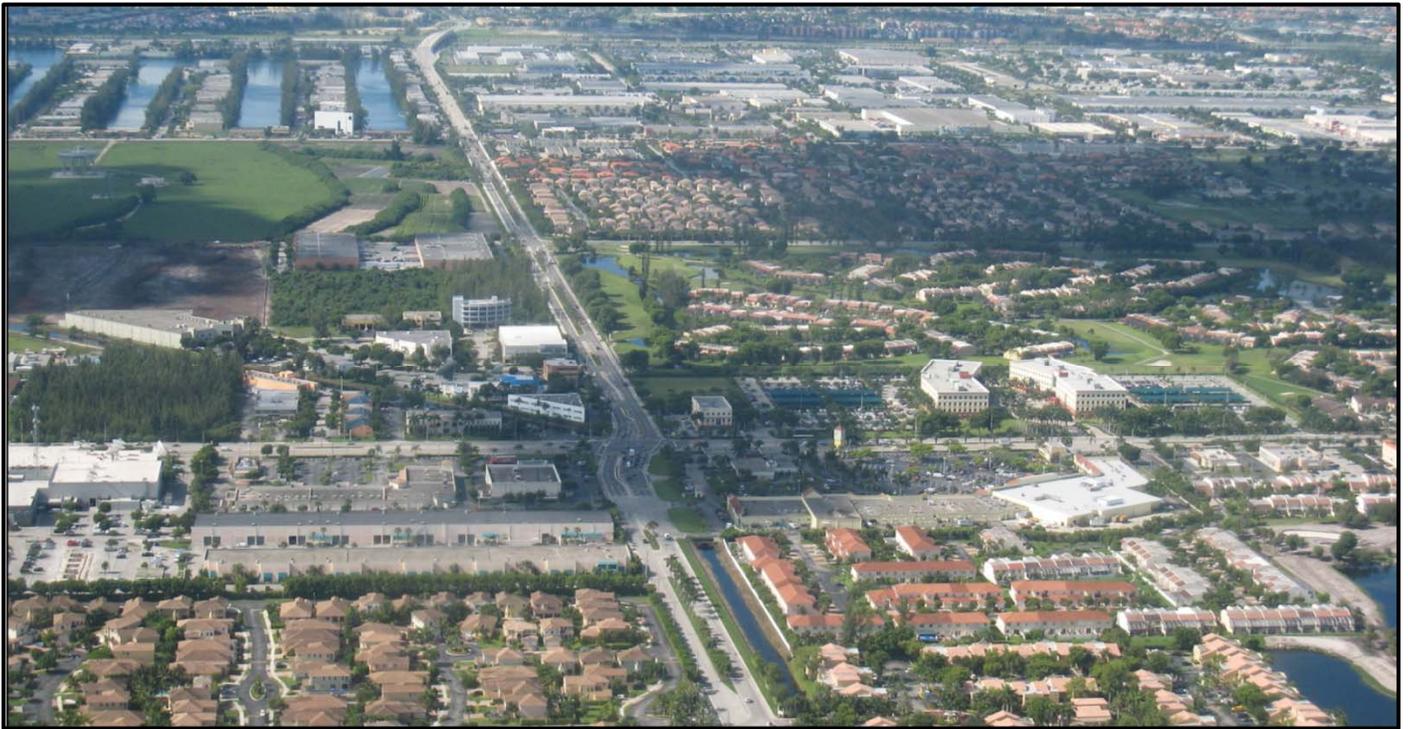
a report on

FLORIDA TRANSPORTATION TRENDS AND CONDITIONS



IMPACT OF TRANSPORTATION

Transportation and Land Use



June 2014



*Produced by the
Florida Department of Transportation
Office of Policy Planning*

*with support from the
Center for Urban Transportation Research
University of South Florida*



www.dot.state.fl.us/planning/trends

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Introduction

Although the rate of growth nationally and in Florida has slowed in recent years, another 4 million new residents are expected to enter the state between 2013 and 2030. While the economic conditions could moderate future growth, history suggests that growth will resume. How that population growth is accommodated will have implications for trip making, transportation system performance, energy use, and consumption of undeveloped land.

Land consumption trends are a function of population growth and the density allowed in local land use plans and the markets' willingness to develop to the allowed intensiveness. Density impacts the amount of travel required to access various activities. As urban densities increase, vehicle miles travelled tend to decline. Land consumption also slows, helping ease development pressure on forests, wetlands, and agricultural lands. Mixed use activity centers with dense and connected transportation networks support walking, bicycling and use of public transportation – consequently impacting the amount and type of transportation infrastructure required and the transportation impacts including safety, energy use, and emissions. Conversely, lower density and single use development with sparse or disconnected networks increase auto dependence and vehicle miles travelled, and contribute to conversion of rural lands for urban use.

Florida Population Projections

The Bureau of Business and Economic Research (BEER) released County level population projections for Florida in March 2013 (FPS165). These projections indicate a medium forecast of 25,583,200 by 2040. Low and high estimates range from 22.9 to 28.9 million. While the rate of growth is not forecast to be uniform during the time period, it averages approximately 1% per year. As a point of reference, the estimated April 1, 2012 Florida population is 19,074,434.

The Census Bureau no longer provides state level population projections. The most recent, 2012 National Population Projections, provides high, medium and low forecasts through 2060. For the medium forecasts national growth rates start at approximately 0.77% per year and decline to 0.5% per year beyond 2045. Approximately half of the growth is attributable to natural growth (births minus deaths) and the remaining half due to net international migration.

Florida's population of 19,552,860 is 6.19% of the census estimated national population of 316,128,839 on July 1, 2013. The Florida Bureau of Business and Economic Research (BEER) 2030 Florida population projection of 23,601,100 is 6.58% of 358,471,000, the mid-level 2030 census national forecast; suggesting Florida continues to grow faster than the nation as a whole, increasing its share of national population. Obtaining this population level would require adding approximately 1/4 million new residents annually or nearly 100,000 households and 145,000 new vehicles per year based on current conditions.

It is currently a particularly challenging time to forecast population due to economic conditions both domestically and internationally and the pace of change in fertility, international migration – particularly as influenced by pending legislation – and domestic migration as states compete for employment growth and housing affordability, taxes, governance, and other factors influence migration patterns.

This report describes land use trends and conditions in Florida and their implications for

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transportation and the environment. The report begins with an overview of the importance of coordinating land use and transportation, and discusses how transportation and land use interact to influence travel behavior. It then examines statewide and regional land use and transportation trends and conditions and methods to improve coordination in transportation and land use planning. The report concludes with a discussion of ongoing challenges, policy directions, and the implications of Florida's land use and transportation trends for the Florida Department of Transportation (FDOT) and its partners.

Importance of Coordinating Transportation and Land Use

Land use and transportation are interdependent dimensions of development. Coordination of the two supports achieving a variety of transportation as well as growth management goals. Attaining these public goals - reducing traffic congestion, increasing use of public transportation, improving roadway safety, lowering emissions, containing public costs, sustaining economic growth, promoting livable communities, preserving natural areas and resources – is enhanced with effective land use and transportation coordination.

How Land Use Affects Public Transportation

Individual travel needs and behavior are influenced by land development patterns. The willingness of individuals to ride public transit, for example, depends in part upon the pedestrian environment at the beginning and end of the trip, as illustrated in Figure 1. Key destinations must be within walking distance of transit stops and accessible via sidewalks. Pedestrian systems, including lighting, sidewalks, and street trees, can be improved to make walking more pleasant, safe, and convenient.

Decisions regarding the location of land uses also affect transit routes and ridership. If land uses that generate transit ridership are located along existing transit routes, then route productivity and transit service improves. Locating such land uses outside an existing service area, however, may result in the need to alter or extend routes leading to longer headways and

**Figure 1 – Transit-Supportive Environment
Ybor City, Tampa**



Source: Center for Urban Transportation Research (CUTR),
University of South Florida.

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less convenient service – both disincentives to transit use. Thus, transit and land use form an interdependent cycle that can either reinforce or impede transit service. Transit-supportive land-use decisions are one way to build transit ridership and ultimately improve service, without the risk and uncertainty of major capital outlays.

Transit, walking, and bicycling operate more efficiently in communities with a finer mix of land uses and an inter-connected street system. Every community needs a defined operational center linked with other parts of the community. This same principle can be translated on a smaller scale to a neighborhood level. Neighborhoods offering a greater mix of land uses within reasonable proximity not only have greater choice of travel alternatives, but also afford residents greater convenience in meeting daily needs. This translates into a higher quality of life.

Transit also reinforces many of the desirable aspects of urban life such as proximity, diversity, and compact scale. Many of the places people love are places where they can walk and meet and interact with their environment outside of an automobile. For this to occur, an area must offer a mix of land uses and services. Mixed-use centers reduce the need for strip commercial development along major roadways and provide better transit destinations.

Alternatively, development of large residential subdivisions at the urban fringe, by focusing goods and services onto strips along arterials and highways, forces residents to make more and longer auto trips, and focuses local traffic onto the arterial system. These development decisions preclude transit and walking and generally make travel less convenient. People may have to drive even where they live within walking distance of their destination. This pattern of development can magnify demand on the arterial system and increase the need for costly roadway improvements as discussed in the next section.

Transit complementary land use decisions are one way to build transit ridership and ultimately improve service, without the risk and uncertainty of major capital outlays.

The Transportation and Land Use Cycle

The importance of coordinating transportation and land use decisions is also clearly illustrated by the cycle of highway maturation, commonly known as the “transportation and land use cycle.” The cycle begins as major improvements in the roadway system change the accessibility of land, causing land values to increase and stimulating real estate development.

In the absence of coordinated planning among jurisdictions that have major roadways, conflicts typically emerge between transportation and development objectives. Development may occur in right-of-way needed for new transportation facilities. Property owners may subdivide arterial frontage into small or narrow lots to maximize the number of lots with direct arterial access. Strip development occurs as local governments rezone highway and interchange area properties for

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commercial use and extend utilities along the highway. Without adequate supporting street and circulation networks, more local trips are made on the arterial. In the absence of effective access management, driveways increase, causing more traffic conflicts, crashes and congestion.

Land use changes also tend to be rapid and intensive near interchange areas, causing a proliferation of driveways and signalized intersections too close to interchange ramps. This can result in heavy volumes of weaving traffic, complex traffic signal operations, crashes, congestion, and traffic backing up the ramps on to the freeway. Driveways and median openings near the ramp termini further compound these problems.

Figure 2 – The Cycle of Highway Maturation



Photo Credit: Florida Department of Transportation.

Soon the roadway or interchange must be expanded or reconstructed to restore its safety and capacity at considerable cost and disruption to the public. Yet right-of-way limitations, shallow property depth, and multiplicity of owners often preclude the ability to reduce driveways and redesign site access and circulation.¹ In some cases, a new arterial or interchange must be built to replace the functionally obsolescent facility, and the process begins again in a new location. The cycle burdens taxpayers, damages homes and businesses, degrades community character and the environment, drives up transportation costs, and reduces the viability of alternative

¹ Access Management Committee, *Access Management Manual*, Transportation Research Board, 2003.

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transportation modes. Coordinated transportation and land use planning is, therefore, critical to the performance and cost effectiveness of Florida's transportation system.

Understanding Land Use and Transportation Relationships

Access, Accessibility, and Mobility

Three key terms help to understand the relationship between land use and transportation. They have been defined in various ways depending upon the context in which they are applied. In the context of land use and transportation coordination, the following definitions are instructive:

Table 1 – Land Use and Transportation Relationship Definitions

Access	The ability to enter and exit a property via the transportation network.
Accessibility	An area-wide measure of the ease of travel between locations within a defined geographic area (e.g. is the ability to reach a given location from numerous other locations, or the ability to reach a variety of other locations from a given location.)
Mobility	The ability of people to make trips to satisfy their needs or desires by walking, driving, riding a bicycle, riding public transit, or any combination of modes of transportation.

Source: National Highway Institute, *Access Management, Location, and Design*, 1998.

More mobility generally results in better accessibility, as people and goods are able to circulate easily and conveniently to locations within a specified area. As exemplified by the transportation and land use cycle, too much access on major roadways can reduce regional mobility, as traffic entering and exiting a property conflicts with those travelling through. Too little access via the supporting street network can diminish local accessibility by reducing the ability to reach a site from alternative locations. Frequent driveways and signals on the major roadway reduce regional accessibility as well, which in turn shrinks the market area of businesses and increases delay in the movement of people and goods.

Understanding these terms and how they interrelate is vital to effective transportation and land use planning. Ideally, a central business district will be highly accessible both locally and regionally via multiple alternative paths and a variety of transportation modes. These paths could include: a) regional transit service and access-controlled highways that provide regional mobility, b) local transit service and street networks that enhance mobility and accessibility on a neighborhood level, and c) a dense network of sidewalks, bicycle racks, and bus circulators to enhance mobility within the district.

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Types of Growth and Congestion

Transportation and land use needs and relationships also differ based upon the location and type of growth involved – development of the fringe or redevelopment of the core. As noted by Boarnet, “the two are conceptually different and require different approaches to transport investment.”² Investing in automobile infrastructure and in alternatives to the automobile are both essential. The point, says Boarnet, is not to choose one over the other but “to distinguish the appropriate location and contexts for each.”³

Transportation agencies tend to address congestion on regional thoroughfares by increasing lane capacity to serve long distance commuting and fringe development, making fringe areas more accessible. This ultimately attracts new low density growth, increases vehicle miles of travel, and fails to solve congestion as the new trips eventually fill these roads -- a phenomenon known as the law of peak hour congestion: “On urban commuter expressways, peak-hour traffic congestion rises to meet maximum capacity” (Downs 1962, 393-409). Contemporary research continues to verify this phenomenon, indicating that greater emphasis is needed on managing demand, including strategies such as access management, signal coordination, incident management, and managed lanes.

For core areas or activity centers, the goals differ. The emphasis here is less on relieving congestion - a sign of vitality - than on expanding and reinforcing alternative modes. The emphasis in these areas is on walkability and promoting a diverse and compatible mix of land uses. Dense, connected streets with narrower cross sections and continuous sidewalks are among the determinants of walkability, and also help to make activity centers functional, vibrant, and appealing. Boarnet (2008) suggests planners could begin by identifying which centers in the metropolitan area have the most potential to accommodate alternative modes and focus investment on enhancing the multimodal environment near those centers.

Identify which centers in the metropolitan area have the most potential to accommodate alternative modes and focus on investment on enhancing the multimodal environment in those areas (Boarnet 2008).

Statewide Urbanization Patterns

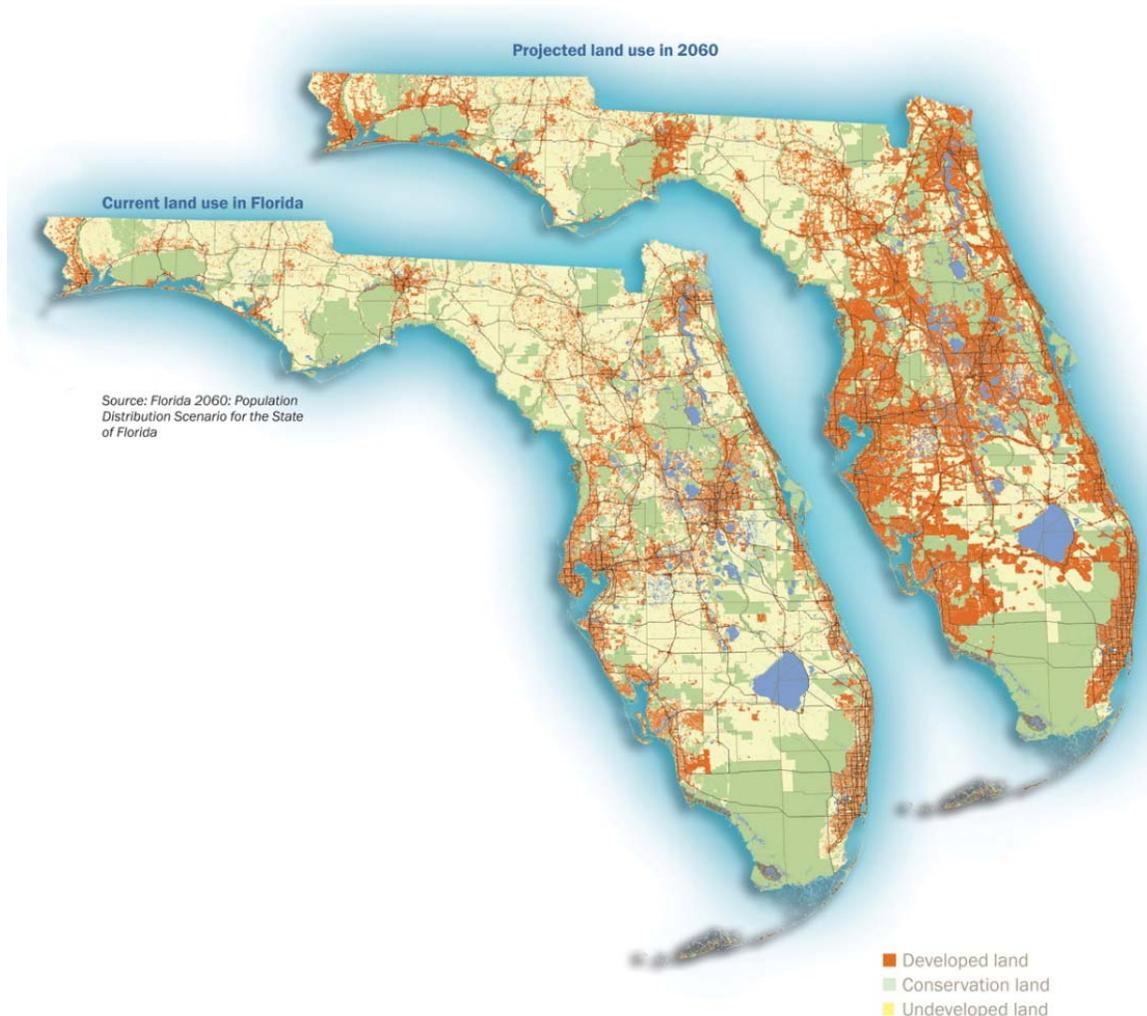
Urbanization in Florida has primarily occurred along the coast and through the center of the state along the I-4 corridor. Most national and Florida trends suggest that Florida’s existing urbanized areas will continue to expand. The nature of that expansion will influence the nature of transportation needs going forward. Figure 3 shows one scenario for future development.

² M. Boarnet, Transportation Infrastructure and Sustainable Development: New Planning Approaches for Urban Growth, Access, No. 33, Fall 2008, pp. 27-33.

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This extrapolates current development trends to characterize the impact on land use to 2060 if trends do not change.

Figure 3 – Current Florida Urbanization Patterns and the Land Area Expected to Become Urbanized



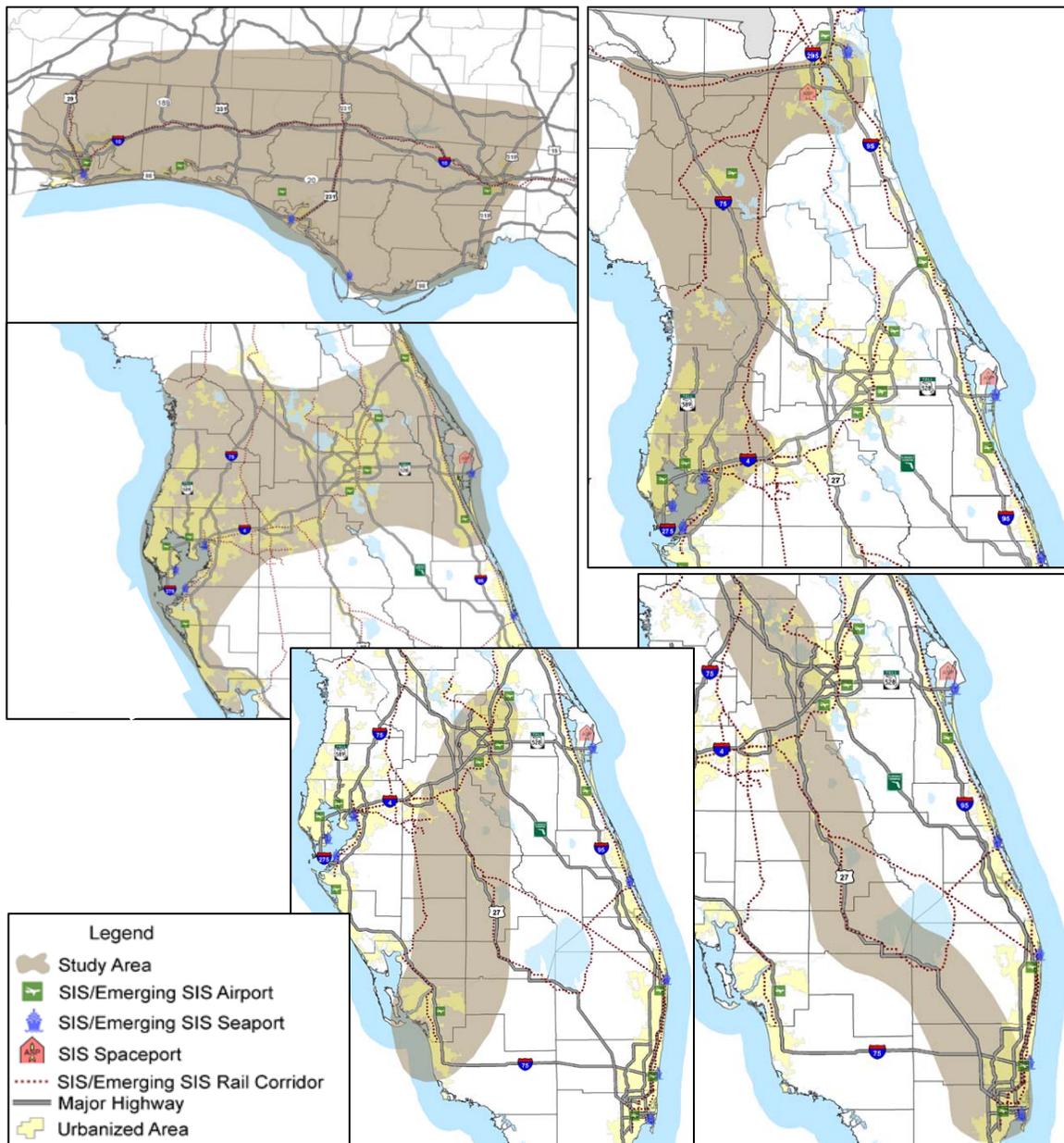
Source: Florida Fish and Wildlife Commission, 2006.

As a result of several decades of outward growth, many of Florida’s urbanized areas no longer have defined boundaries. Economic ties have strengthened between regions, supported by a developed intercity roadway network. As a result, much of Florida now functions as a “megaregion” that covers most of the peninsula. More recently, Florida DOT began spearheading an exploration of future corridors that is examining the prospect of distinct future development corridors accommodating some share of the forecast growth for Florida.

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Figure 4 is a map identifying future corridors proposed for further study. The ultimate challenge of accommodating future development will be balancing the transportation needs created by local government future land use plans and private development activities, with the capacity provided by state, regional, and local transportation plans. Given funding limitations, careful integration of land use and transportation planning has become increasingly essential to achieving efficient and sustainable transportation systems that provide Florida's communities with a variety of modal options.

Figure 4 – Future Corridor Study Area Maps



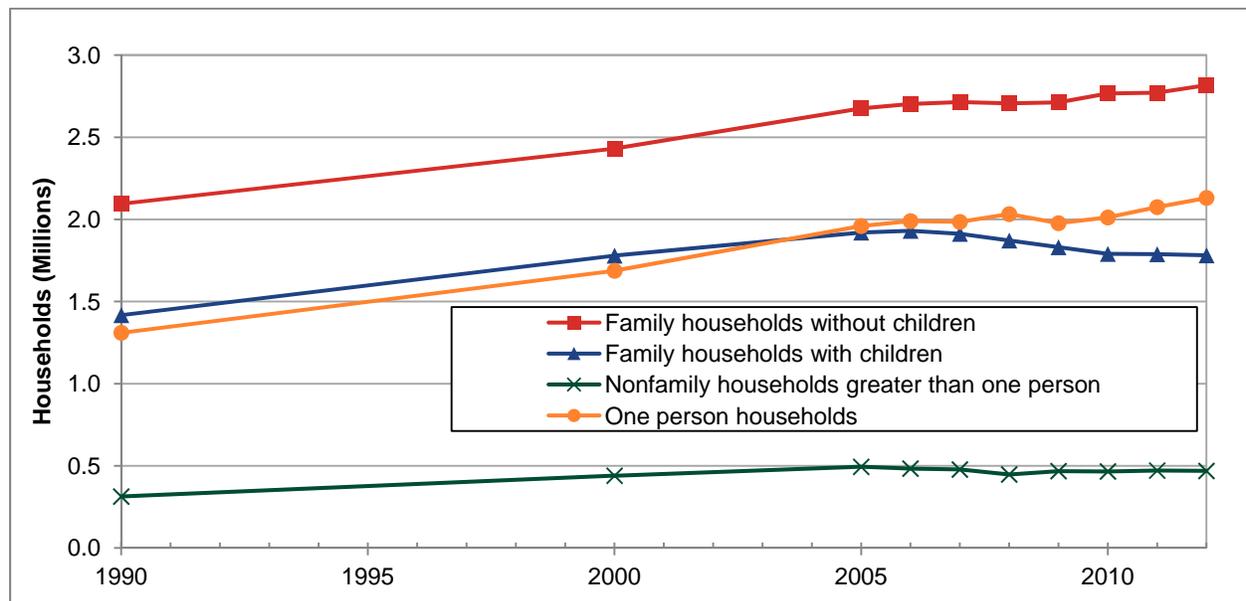
Source: Florida Department of Transportation.

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Socio-demographic and Housing Trends

Development patterns evolve over time partially in response to land availability and affordability trends but also in response to social demographics and other characteristics that influence consumer choices regarding housing. The past several years have seen some significant demographic and economic pressures that have given rise to expectations of changes in development trends. Among the considerations are changes in household composition, housing affordability, vehicle fuel cost, perceptions of growth trends, and the perceived economic benefits and risks associated with homeownership. These factors have individually and collectively been hypothesized as reasons for shifts in residential settlement patterns going forward.

Figure 5 – Florida Household Characteristic Trends



Source: U.S. Census Bureau, *American Community Survey*, 2012.

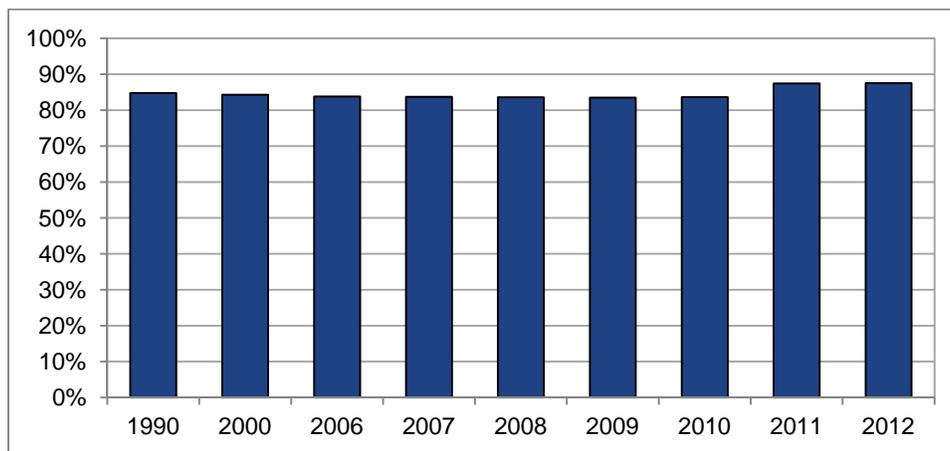
One socio-demographic consideration that influences home type and location decisions is household characteristics. Figure 5 itemizes the transition in the four components that comprise total households. As indicated in the figure, the absolute number of one person households has grown over time. These households might include young individuals setting up households for the first time, single seniors, and others who have chosen this lifestyle. These individuals may have different criteria in selecting household type and location. The other strong growth segment is family households without children. Nonfamily households with greater than one person had increased modestly until 2005 and since that time have been relatively stable. Family households with children also increased from 1990 to 2005 but since that time have declined in absolute numbers. While these trends are relatively modest and no doubt impacted by economic conditions as well as cultural conditions, they do suggest a possibility that smaller, more urban, and more rental oriented housing might have some growth opportunities. Families

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with children have historically driven the suburban residential boom as these households have sought affordable homes with space for a growing family in proximity to quality schools – traits often considered more readily available in suburban locations.

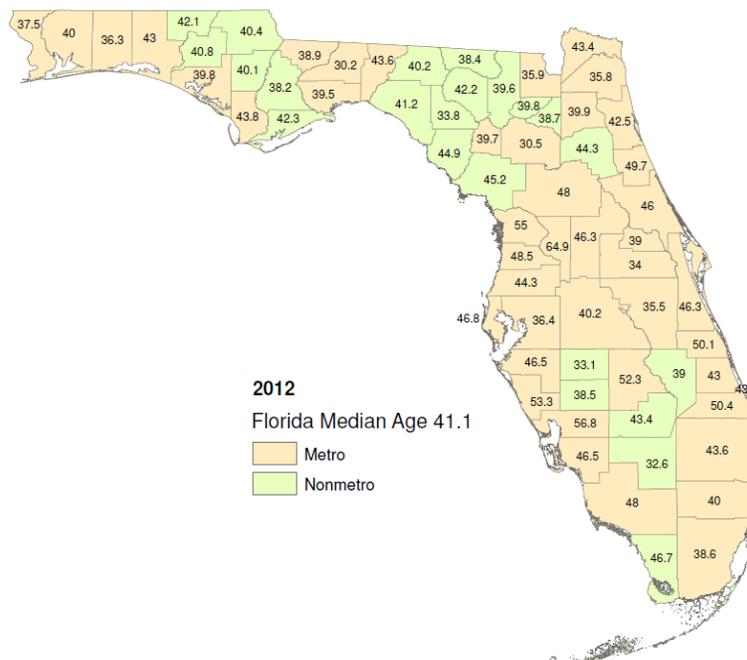
Media attention to housing trends and interest in millennial generation behaviors have fueled speculation that traditional urban–rural, city–suburb, and owner–renter relationships may be changing. Figures 6–8 below explore available data on these trends.

Figure 6 – Florida Urban Area Population Shares



Source: Florida Department of Transportation.

Figure 7 – Florida County Mean Age and Metropolitan Areas Status



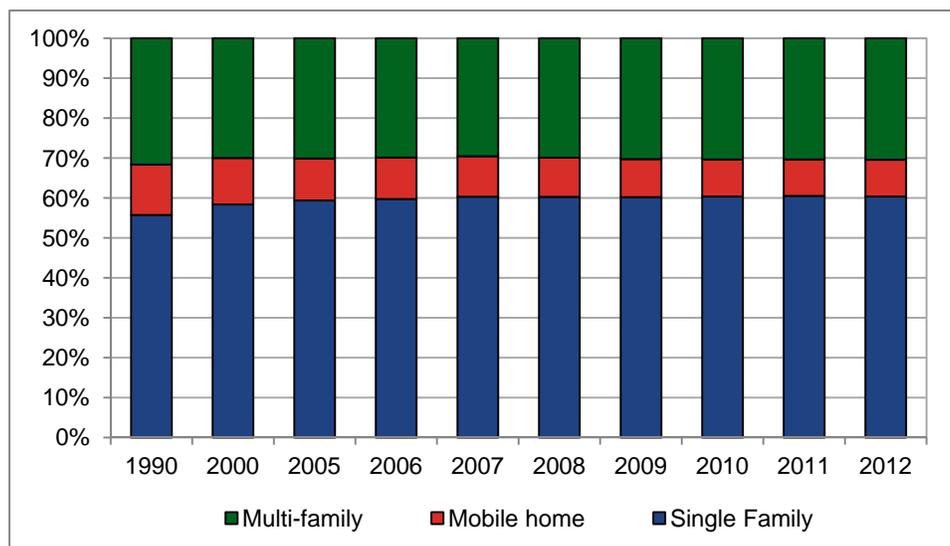
Source: U.S. Census Bureau, *American Community Survey*, 2012.

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The share of the population living in areas categorized as urban (as defined by the Census Bureau) has remained relatively constant over time in the vicinity of 83.5 to 87.5 percent (Figure 6). This number ticked up after the 2010 Census as urban area geographies were redefined to reflect density levels measured by the census. This trend is consistent with national data showing continuation of the historical trend of declining rural and small-town population. As agricultural activities have become more automated, the associated direct and supporting jobs have declined and other employment activities have found the larger labor pools required to be competitive available in urbanized areas. As shown in Figure 7, urban areas have a significantly younger population as these individuals seek employment. Given the age profiles of urban versus rural areas, it is likely that rural areas will decline as deaths outnumber births in these geographies absent some trend reversals where rural and small-town employment opportunities and/or housing preferences regain appeal with current and future generations.

As evidenced in Figure 8, housing type classification for Florida has remained relatively consistent since 1990. In fact, multifamily housing comprised a larger share of the housing stock in 1990 than in all the following years.

Figure 8 – Florida Household Dwelling Unit Type



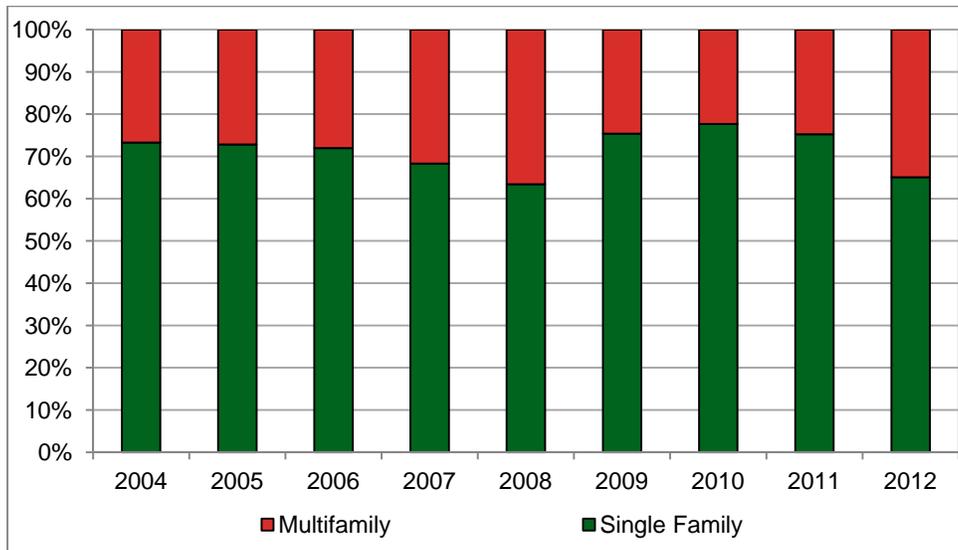
Source: U.S. Census Bureau, *American Community Survey*, 2012.

For the composition of the housing stock to change significantly requires additions to the inventory to be of a different housing mix than the current composition. Figure 9 presents that data on building permit activity. As noted in this figure, fluctuations have been relatively modest from a low single family share in 2008 of 63 percent of permits to a near-term high of 78 percent in 2010. This permit activity pattern indicates that, contrary to some perceptions, single-family shares of the built infrastructure will continue to increase modestly absent a dramatic change in permit activity to more strongly favor multifamily development. For perspective, for the past nine years new permit activity has averaged approximately 120,000 units annually in contrast with a

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2012 total inventory of over 9 million dwelling units. Thus, annual incremental new unit growth of less than 2 percent per year can only very modest affect the overall housing stock composition.

Figure 9 – Florida Household New Building Permit Dwelling Unit Type



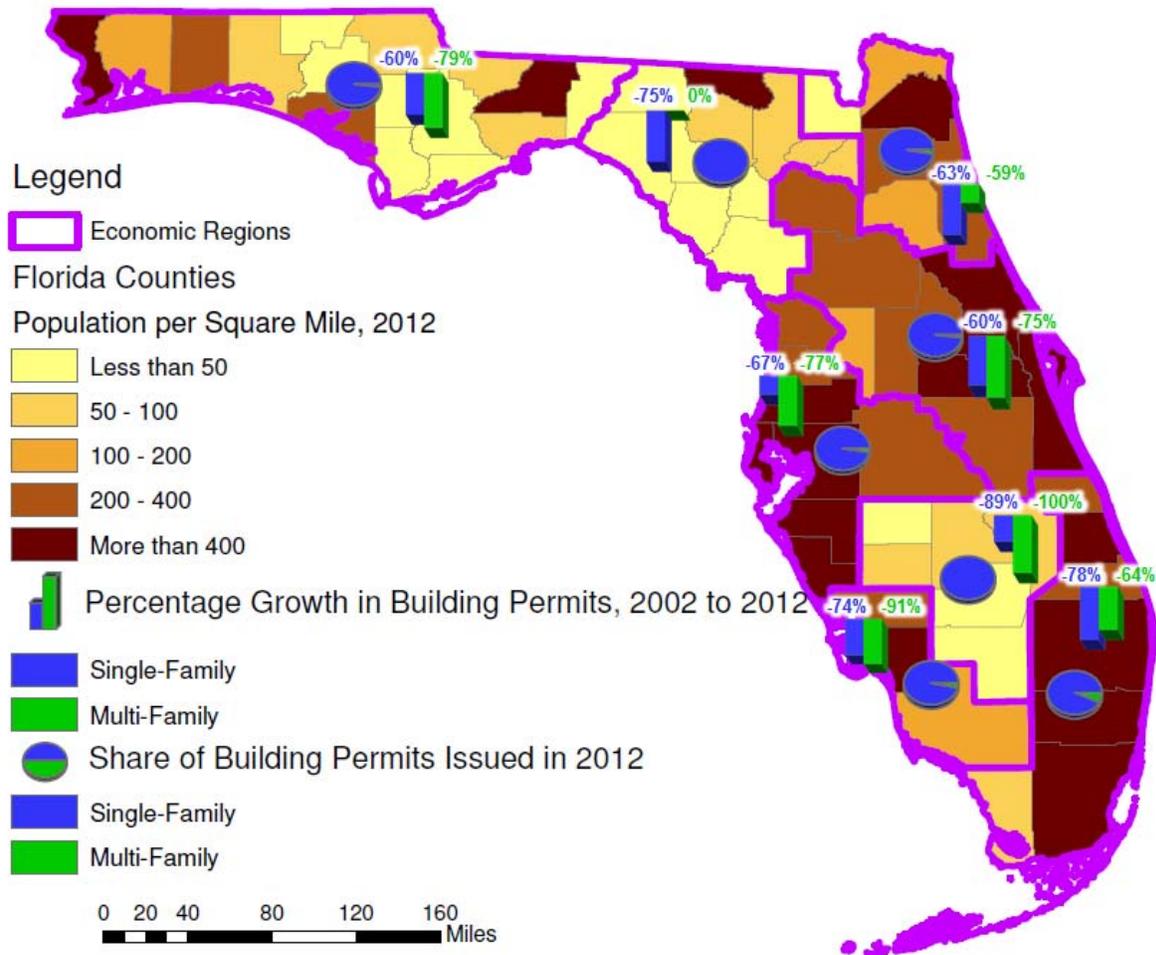
Source: U.S. Census Bureau, *American Community Survey*, 2012.

The pattern of residential development in Florida, both in terms of density and spatial distribution, will be important in shaping future travel needs and options.

Figure 10 illustrates the current relationship between population density and development trends. The background colors represent the population density of the counties as of 2012. The pie charts in each region represent the portion of building permits issued in 2012 for single and multifamily housing. The bar charts represent the change in number of permits issued in 2002 and 2012 for the two types of housing.

As one might expect, generally, those regions with the highest population density have also experienced a greater percentage of multifamily housing starts. Multifamily activity is highest in southeastern Florida. As the bar charts indicate, housing activity has declined since 2002 – in many economic regions significantly. These declines have affected both single and multi-family activity levels.

Figure 10 – County Population Density and Building Permits Issued



Source: Shimberg Center for Affordable Housing; U.S. Census Bureau.

Table 2 – Types of Housing in Florida, 2012

Type	Number Florida	Percent Florida	Percent US
Single Family Detached	4,875,525	54.0%	61.6%
Single Family Attached	568,259	6.3%	5.8%
Multifamily 2-9 Units	982,265	10.9%	13.0%
Multifamily 10+ Units	1,762,123	19.5%	13.2%
Mobile Home	832,536	9.2%	6.4%
Boat, RV, or Other	10,822	0.1%	0.1%

Source: U.S. Census Bureau, *American Community Survey*, 2012.

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As shown in Table 2, Florida has a variety of housing types, and the breakdown of each type differs from the nationwide figures. Census data also indicates that Florida's proportion of single-family detached homes is lower than the nationwide figure of 61.6%, meaning that more of the state's residents live in multifamily or alternative housing arrangements. Florida has a higher incidence of mobile homes than the rest of the country. Multifamily housing units are about as common in Florida as the rest of the US (around 25%), but Florida's multifamily housing tends to be on a larger scale, indicated by the higher incidence of large (over 10 units) multifamily units.

The affordability of housing is another important consideration for transportation. If housing is affordable in urban areas, people are able to locate closer to desired activities such as employment, health care, education, etc. Table 3 shows the trend in housing affordability expressed as the ratio of median income and median home price. As noted, the housing price spike in the early to mid-2000's resulted in home price appreciation significantly exceeding income growth, which negatively impacted housing affordability. Since that time, home price declines have resulted in increased affordability in spite of the fact that median household incomes are below the levels in 2008.

Table 3 – Housing Price and Affordability

Year	Median Home Price	Median Income	Ratio
2012	\$145,000	\$45,040	3.22
2008	\$187,800	\$47,778	3.93
2005	\$235,100	\$42,433	5.54
2000	\$115,900	\$38,819	2.99

Source: US Census Bureau; Floridarealtors.org.

Although recent market conditions have reduced the median home price significantly, the income-home price ratio still exceeds the 3.0 mark recommended by the Federal Housing Administration and personal finance experts. Yet, a growing private expense associated with housing outside of urban areas is automobile operation. A housing plus transportation affordability index reveals that although 69 percent of communities are affordable under the conventional definition (housing costs < 30 percent of income), only 39 percent are affordable using a comprehensive definition (combined housing and transportation costs < 45 percent of income).³ Growing transportation costs are putting further economic strain on American households, especially for low and moderate income suburbanites who are “spending large shares of their income owning and operating cars.”⁴

³ Center for Neighborhood Technology, H+T Affordability Index™ Fact Sheet, 2010,

⁴ A. Tomer, E. Kneebone, R. Puentes, and A. Berube. *Missed Opportunity: Transit and Jobs in Metropolitan America*, Metropolitan Policy Program at Brookings. May 2011.

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Employment and Commuting

Florida has historically boasted a high job growth rate. According to the Florida Department of Economic Opportunity, nonagricultural employment in Florida grew from 7.20 million jobs in January 2003 to 7.69 million in January 2014. Florida added over 44,000 jobs each year, and jobs grew by 6.7% over that period which includes a significant recession. Many of these jobs were in the service, real estate, or construction sectors.

Nationwide, 23.6 percent of all commuters work outside their county of residence. Commuting to work consumes a significant share of the available roadway capacity during peak times, but accounts for less than 20% of the miles driven by the average person. Indeed, the road network's needs are analyzed based on the facility's ability to carry traffic during the peak times of travel for traditional office and manufacturing jobs.

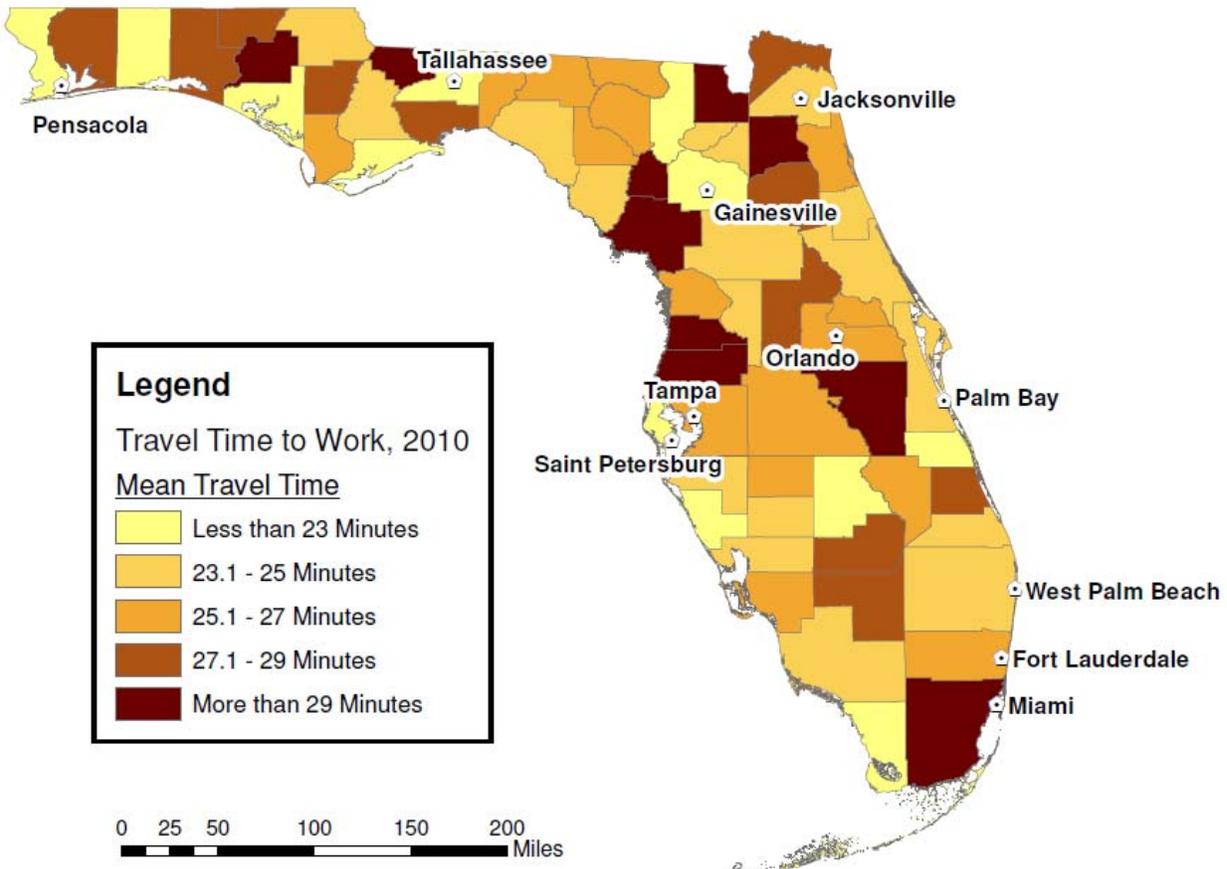
Nationally, it takes workers an average of 25.7 minutes to travel from home to work. In Florida, it is slightly higher, at an average of 26.2 minutes⁵. However, the length of a worker's commute can vary substantially depending on where he or she lives. The map below shows travel time to work by county in 2010. With the exception of Miami-Dade, the longest commutes belong to counties on the fringes of major metropolitan areas. Note, for example, the long commutes found in Pasco and Hernando Counties north of Tampa, or around Tallahassee.

Another factor that affects vehicle miles of travel and travel time to work is decentralization of employment locations. Traditionally, the majority of jobs were located in central business districts (CBD). In recent decades, job growth has trended away from the CBD. The Brookings Institution has highlighted this issue in a recent study⁶. It states that the five largest Florida metropolitan areas are "rapidly decentralizing," meaning that jobs are moving away from the central business districts into traditionally suburban areas. Over time this could lead to shorter commute times, and/or enable residential growth even farther from traditional core areas.

⁵ ACS 2012.

⁶ Elizabeth Kneebone, "Job Sprawl Revisited: the Changing Geography of Metropolitan Employment." Washington, DC: the Brookings Institution, 2009.

Figure 11 – Travel Time to Work by County in Florida



Source: U.S. Census Bureau, *American Community Survey*, 2010.

However, not all of Florida's metropolitan area jobs are decentralized. Cape Coral-Ft. Myers has the highest relative percentage of jobs in the CBD, but employment is spreading outward faster than anywhere else in the state⁷. Tampa-St. Petersburg and Sarasota-Bradenton also have more centralized employment centers, with 25% of jobs lying within three miles of central business districts. The specification of the geographic area and the number of central business districts is critical to how these metrics perform. Tampa – St. Petersburg, for example, would have substantially different metrics if only a single central business district were specified as is common in most Metropolitan statistical areas. On the opposite end, the Miami-Ft. Lauderdale area has only 9% of employment in the CBD, although expansion into the suburbs is quite slow.

⁷ The terms jobs and employees are used interchangeably and refers to employed individuals, not groups or classifications.

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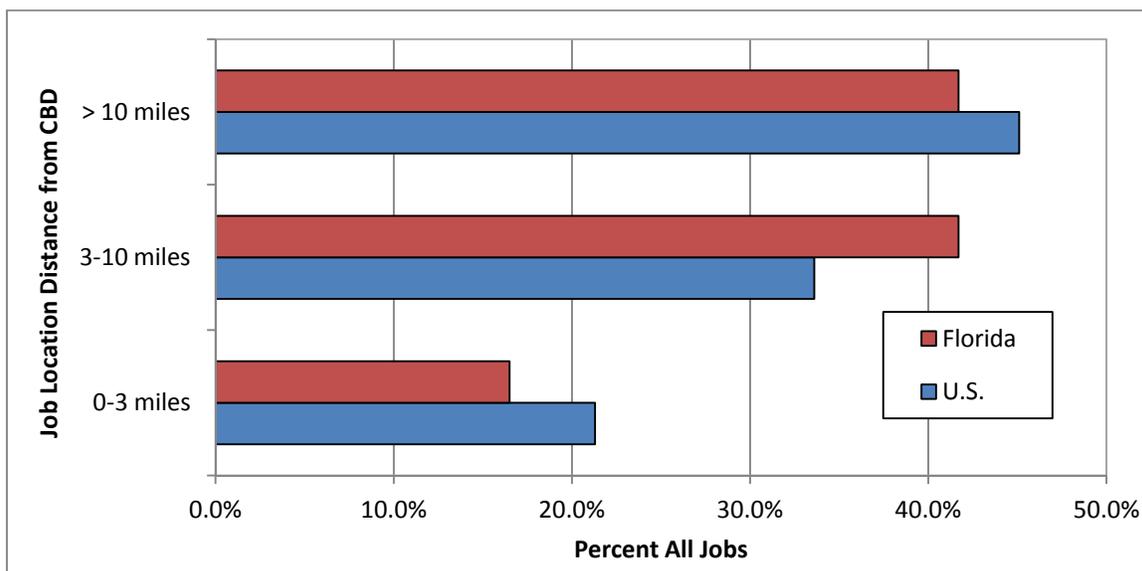
Table 4 – Job Decentralization in Florida

Metropolitan Statistical Area	Total Jobs (Thousands) in 2013	Change Since 2000 (Thousands)	Percent of jobs within 3 miles of CBD(s) (2006)	Percent change inside 3 miles (2006)
Cape Coral – Ft. Myers	288.9	103.4	28.8%	-5.7%
Jacksonville	708.5	149.6	18.3%	-5.5%
Miami-Ft. Lauderdale-Miami Beach	2,965.9	1,115.1	9.3%	-0.7%
Orlando	1,158.4	239.7	13.4%	-2.9%
Sarasota-Bradenton	304.0	14.2	24.5%	-2.9%
Tampa – St. Petersburg	1,354.5	102.3	24.9%	-0.5%

Source: Brookings Institution, as adapted.

As noted in Figure 12, Florida’s largest metropolitan areas show fewer jobs in the CBD than the national sample. However, Florida’s “inner ring” suburbs have a much higher proportion of jobs. Inner ring suburbs are found three to ten miles from the CBD, and were often developed shortly after World War II. Exurban areas in Florida tend to have fewer jobs than exurbs nationally.

Figure 12 – Percentage of Jobs within Proximity of CBDs, 2006



Source: Brookings Institution.

These trends suggest that a balancing may be occurring in the jobs to worker ratio as job centers disperse. One might expect this to reduce vehicle miles travelled over time. However, efforts to address the work trip with transit or to balance jobs and housing are

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complicated by a national work force that is increasingly specialized, frequently changes jobs, and resides in a household with more than one worker.⁸ Florida's historic suburban growth trends have often resulted in residential development creating bedroom suburbs followed later by community retail, services and eventually other employment types as the area matures.

Urban Form and Non-work Trips

With over 9 million persons in Florida's labor force of the 19.3 million residents, approximately 53 percent of Florida's population is not in the active workforce. Travel needs of these persons, as well as non-work travel by employed persons, constitute the vast majority of all travel in Florida. Although these trips are spread across the entire day, accommodating these non-work trips (e.g. for school, medical services, recreational purposes, or shopping) is an important part of planning for Florida's transportation and land use needs. It also suggests the need for transportation/land-use coordination to go beyond focusing just on access to employment but rather include consideration of access to the full range of land-use activities when evaluating accessibility.

Growth in Annual Vehicle Miles Traveled (VMT) in Florida

Due to Florida's high rate of population growth, and the way in which that growth has been distributed, the number of vehicles on the road has been steadily increasing. Historically, growth in annual VMT outpaced the rate of population growth by more than 2 to 1. More recently, auto availability, total VMT, and VMT per capita trends have changed. As Table 5 indicates, annual VMT in 2012 is below the levels reached in 2005. These changes, many of which preceded the recent economic slowdown, reflect a variety of trends in economics, socio-demographics, and technology that collectively bring to a close the half-century era of growth in labor force, auto availability, and suburbanization – trends which drove auto's dominance as a travel mode. What remains to be seen is the extent to which these changes will influence the transportation land-use relationship going forward.

Table 5 – Florida VMT Growth

Year	Annual VMT	Cumulative % Increase
2012	188.2 billion	47%
2005	201.0 billion	57%
1995	127.8 billion	--

Source: Florida Department of Transportation.

⁸ Alan Pisarski, "The Tipping Point," May 22, 2009.
<http://www.heritage.org/research/smartgrowth/wp052209a.cfm>

Coordination in Transportation and Land Use Planning

While the need for better integration of transportation and land use planning has been recognized for decades, the active coordination of transportation and land use planning is now receiving increasing attention. In an era of scarce resources, it is critically important that this coordination take place to ensure the development of an efficient and effective transportation system.

Statewide Coordination: The 2060 Florida Transportation Plan

At the state level, Florida produces a long range transportation plan. The current version of that plan, adopted in 2010, is the 2060 Florida Transportation Plan (FTP). The FTP provides direction for the state's transportation system over the next several decades. The plan identifies specific goals:

- Invest in transportation systems to support a prosperous, globally competitive economy
- Make transportation decisions to support and enhance livable communities
- Make transportation decisions to promote responsible environmental stewardship
- Provide a safe and secure transportation system for all users
- Maintain and operate Florida's transportation system proactively
- Improve mobility and connectivity for people

The second and last goals in particular acknowledge the relationship between transportation and land use. The plan speaks to some significant trends that directly relate to the transportation land-use relationship.

Emerging megaregions – *The key unit of economic competition is shifting from metropolitan areas to megaregions – networks of urban and rural areas connected through economic relationships and infrastructure. The Florida peninsula may be one of about 10 megaregions driving U.S. growth in the global economy – and the connections between Miami and Jacksonville or Orlando and Tampa, for example, may become more important than differences between them.*

Shifting development patterns – *The sprawling development pattern of the past 50 years may give way to higher density development focused in urban centers. Florida's diverse population desires a range of choices for where to live – vibrant cities, quiet suburbs, small towns, and rural places – but with distinctive characteristics and easy access from homes to jobs, schools, shopping, and services. Higher density, mixed use urban development and rural employment centers – connected with multimodal transportation corridors and separated by open spaces – will be a key emphasis of development over the next 50 years.*

The FTP describes how the responsibility for transportation and land use coordination is distributed among jurisdictions and levels of government, and calls on FDOT and its partners to

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“play a stronger role than in the past for ensuring that transportation investments support livable communities and preserve Florida’s environment.” FDOT seeks to work with regional and local partners to increase mobility in a manner that is compatible with community visions for future growth and development.

Regional Coordination and Visioning

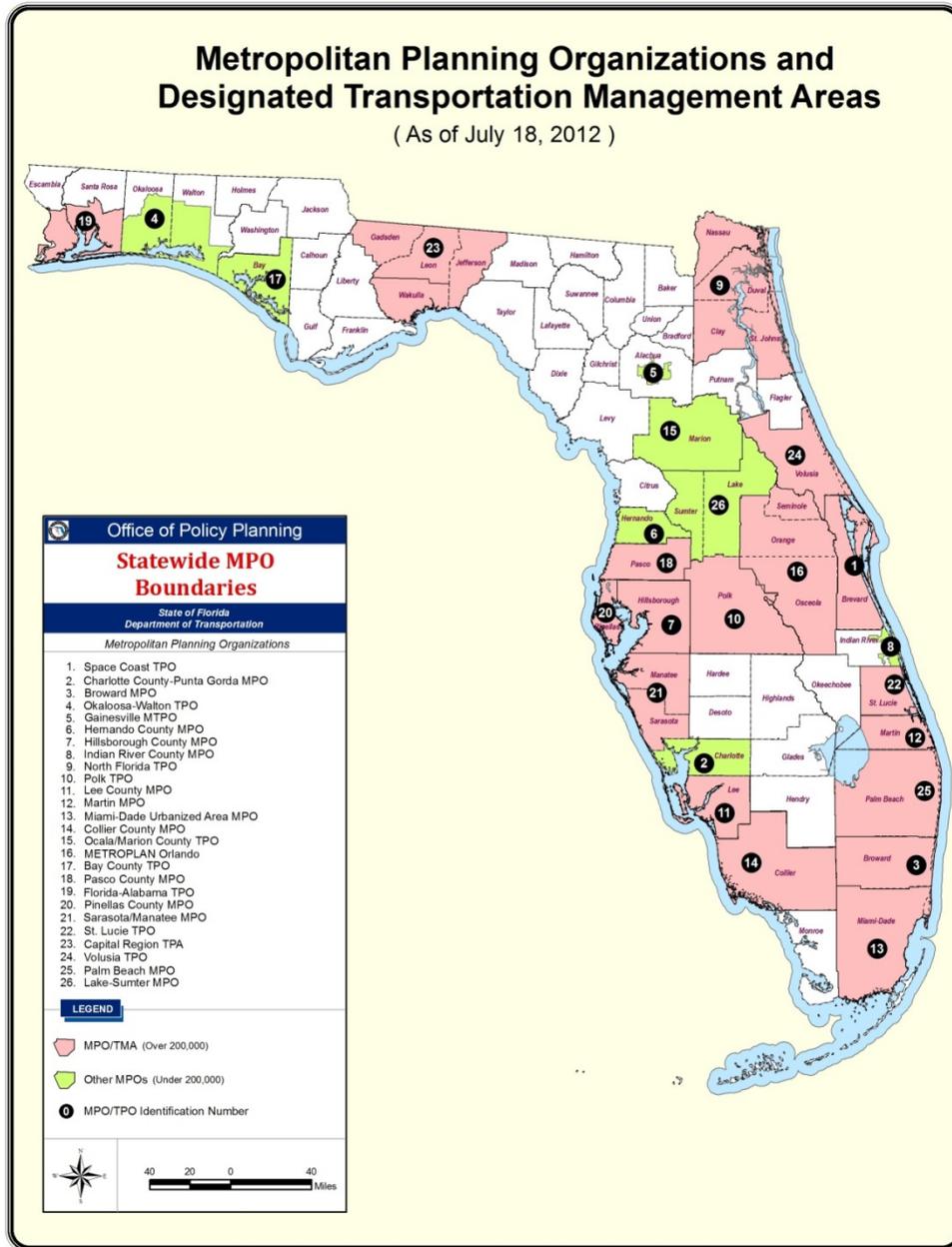
Increasingly, Florida’s economy is functioning at a regional scale as development spreads out from city centers and metropolitan areas grow together. The FTP identifies regional-level coordination as critical to the process of making good decisions about transportation planning and programming. The FTP established a long-range objective that each region should develop a regional vision and action plan that integrates transportation, land use, economic, community, and environmental systems to guide transportation decision-making. These regional visions and action plans contribute to closer coordination among currently separate planning processes.

Although historically focused on roadway improvement plans, metropolitan planning organizations (MPOs) are increasingly seeking to achieve improved regional transportation and land use coordination. Florida MPOs are also increasingly engaged in regional visioning processes with other partners, as noted later in the report. Figure 13 identifies Florida’s MPO’s. A 2013 review of Florida MPO long range transportation plans found that the 2035 MPO long range transportation plans involved a major change or shift from previous plans due to various factors, such as addressing multiple modes, emphasizing transit, testing land use scenarios, and/or optimizing the performance of existing facilities.

The Transportation Regional Incentive Program (TRIP) has accelerated regional collaboration efforts among MPOs within broader economic regions, such as the Central Florida MPO Alliance and the West Central Florida MPO Chairs Coordinating Committee. The TRIP program, administered by FDOT, offers funds from state documentary stamp taxes to pay for up to 50 percent of the costs of projects on eligible regional projects. Agencies requesting TRIP funding must develop a regional transportation plan that identifies and prioritizes regionally significant transportation facilities and is consistent with local comprehensive plans. TRIP provides an incentive for private sector and local entities to build consensus around improvements to regionally significant transportation facilities and include these improvements in their long-range plans.

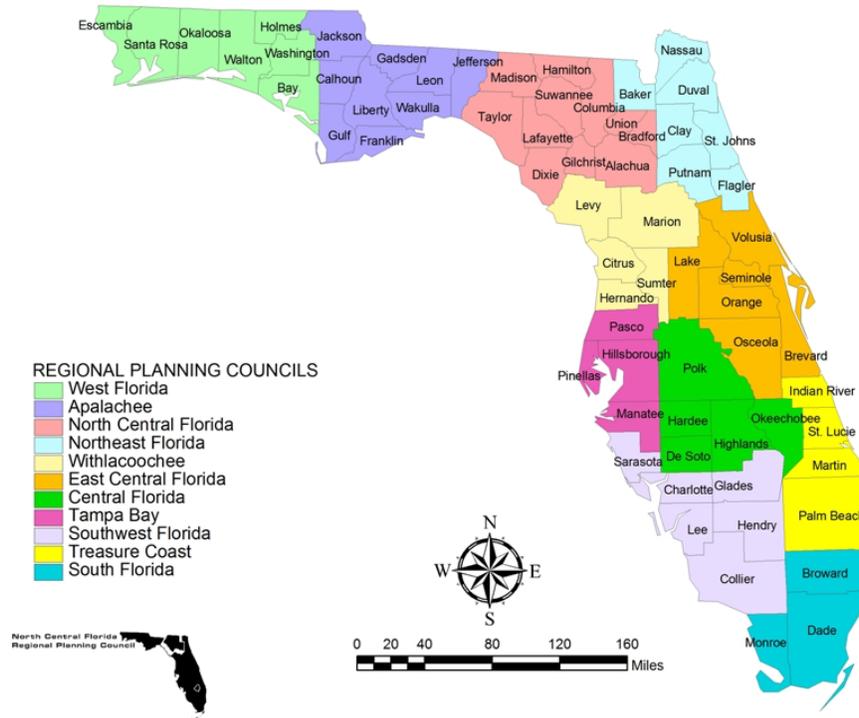
In addition to the MPOs, Florida’s 11 Regional Planning Councils (RPCs) are charged with serving as coordinating bodies to aid local governments in making decisions about growth and development that affect both local communities and the region as a whole. The RPCs, in collaboration with the MPOs and other local and regional organizations, therefore, have an important role to play in coordinating transportation and land use throughout the state. Figure 14 identifies the regional planning councils.

Figure 13 – Metropolitan Planning Organizations and Designated Transportation Management Areas (As of July 18, 2012)



Source: Florida Department of Transportation, *Office of Policy Planning*.

Figure 14 – Florida Regional Planning Councils



Source: North Central Florida Regional Planning Council.

Several other groups, notably Chambers of Commerce, have undertaken regional visioning efforts. These efforts bring together the private and public sectors to make collective decisions about the region's future. Regional visions can play an important, long-term role in increasing regional land use and transportation coordination. Figure 15 shows the active regional governing efforts in the state. Note that regional visioning efforts do not necessarily conform to the legislatively-identified regional planning councils, although RPCs are frequently active leaders in these efforts.

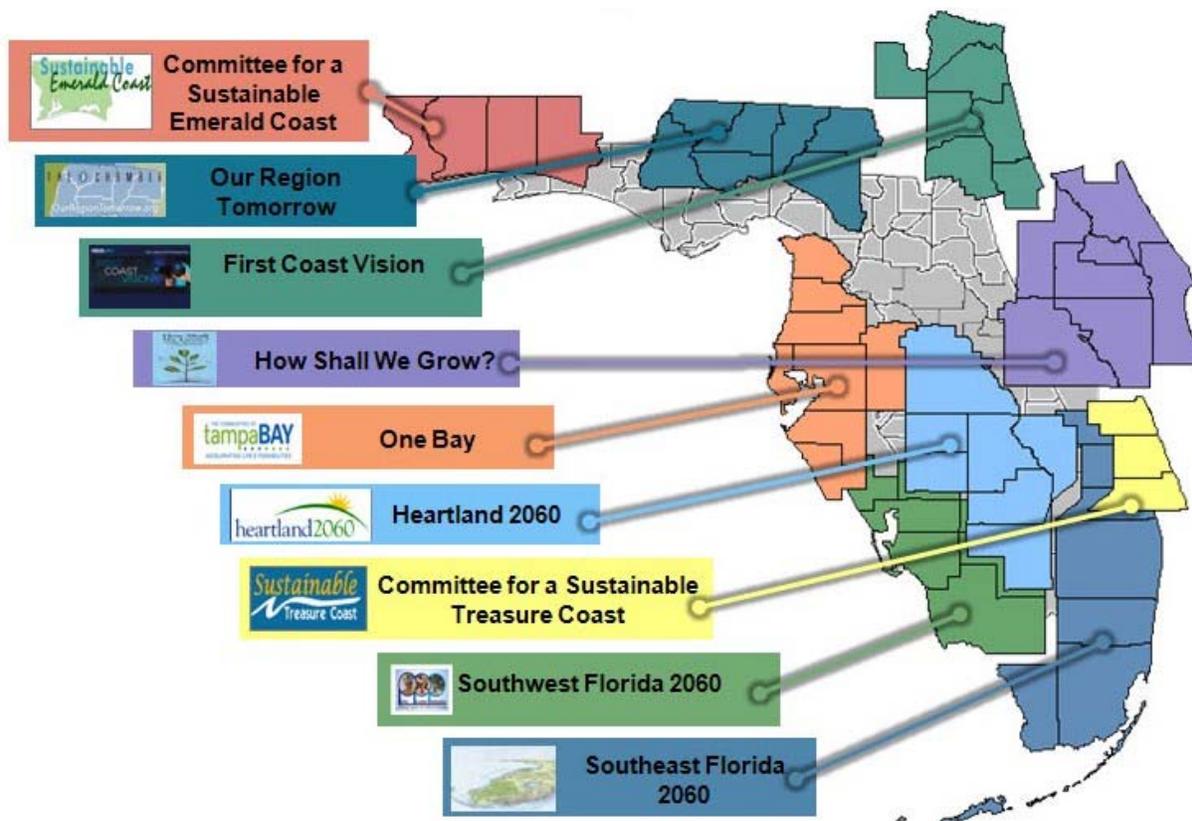
The oldest regional visioning effort is myregion.org in the Greater Orlando area. This program was led by the Orlando Regional Chamber of Commerce, but received substantial support from the MPO (METROPLAN Orlando) and the East Central Florida Regional Planning Council in the area. The results of the myregion.org effort indicated that the region desired to preserve countryside outside of city centers; promote growth in current city, town, and village centers; and provide a variety of transportation choices. The results of myregion.org have been incorporated into many local government plans, and a follow-on effort dubbed "How Shall We Grow?" has been launched.

Owing to the success of Greater Orlando's efforts, other regions of the state have begun similar efforts. A similarly-organized effort known as One Bay now exists in the Tampa Bay area. One

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Bay is a public and private partnership spearheaded by five regional organizations: Tampa Bay Regional Planning Council, Tampa Bay Estuary Program, Southwest Florida Water Management District, Tampa Bay Partnership Regional Research & Education Foundation and the Urban Land Institute Tampa Bay District. This effort is also promoting land use and transportation scenarios to guide the region's future growth and transportation options. Similarly, First Coast Vision (Jacksonville/St. Augustine) began in early 2009, and is being administered by a coalition of the Urban Land Institute and several economic and environmental groups.

Figure 15 – Regional Visioning Initiatives in Florida.



Source: Florida Department of Transportation.

Concepts for regional visioning efforts are also found in less urban areas of the state. Our Region Tomorrow (Tallahassee) began in 2008, and includes parts of South Georgia in its analysis area.

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Local Government Planning and Coordination

Land use planning in Florida is primarily a responsibility of local governments through their comprehensive plans, policies, and land development regulations. Local governments also plan and implement transportation improvements through this process. Local governments in Florida have been required to develop comprehensive plans since 1975, when the legislature enacted the Local Government Comprehensive Planning and Land Development Regulation Act.

The 1985 Growth Management Act further required each local government to adopt land development regulations that enforce the comprehensive plan and required comprehensive plans to include transportation, land use, and capital improvements elements that are internally consistent and financially feasible. The concept of concurrency was also introduced in the 1985 Growth Management Act, requiring transportation and other public facilities and services to be in place within a certain timeframe to support the impacts of the new development.

In 2011, the Florida Community Planning Act made sweeping changes to Florida's planning and growth management requirements, making transportation concurrency optional and adding multimodal transportation planning requirements. Comprehensive plans must still contain a number of elements, including a multimodal transportation element that addresses mobility issues in relation to the size and character of the local government.

Chapter 163.3177(6)(b), F.S. states that the purpose of the transportation element is to plan for a multimodal transportation system "that places emphasis on public transportation systems, where feasible. The element shall provide for a safe, convenient multimodal transportation system, coordinated with the future land use map or map series and designed to support all elements of the comprehensive plan." The plans are to be based on professionally accepted data sources and analysis methods, and must address a variety of issues, including system needs, levels of service, availability of transportation facilities and services, correction of existing deficiencies, and methods for meeting identified needs.

Generally, the requirements are as follows:

1. Local governments outside of a metropolitan planning organization (MPO) boundary with a population of 50,000 or less are only required to address traffic circulation for major thoroughfares and transportation routes, as well as bicycle and pedestrian ways. Larger local governments not located within an MPO, of which there are only a few, must also address mass transit, and ports, and aviation and related facilities.
2. Local governments within a metropolitan planning organization (MPO) boundary must address all modes of travel including: public transportation, pedestrian and bicycle travel, airports and aviation development, rail, seaports, access to facilities and intermodal

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terminals, compatibility around airports, land uses to promote public transportation, and evacuation of coastal populations.

3. Regardless of metropolitan planning areas, municipalities with a population greater than 50,000, and counties with a population greater than 75,000 must also include “mass-transit provisions...” as specified, as well as plans for port, aviation and related facilities and plans for circulation of recreational traffic.

Local government transportation elements must be coordinated “with the plans and programs of any applicable metropolitan planning organization (MPO), transportation authority, Florida Transportation Plan, and Florida Department of Transportation’s adopted work program.” (§163.3177(6)(b), F.S.) The intergovernmental coordination element calls for interlocal agreements to be enacted within 1 year of adoption that ensure coordination in establishing LOS standards for public facilities maintained by another entity.

Related requirements for the future land use element are:

- Promote the efficient and cost-effective provision or extension of public infrastructure and services.
- Promote walkable and connected communities and provide for compact development and a mix of uses at densities and intensities that support a range of housing choices and a multimodal transportation system, including pedestrian, bicycle, and transit if available.
- Future land use maps must show multimodal transportation district, transportation concurrency management area, and/or transportation concurrency exception area boundaries for those communities that choose to employ these techniques.

The local coastal management element must limit public expenditures that subsidize development in high-hazard coastal areas. In addition, the capital improvements element must:

- cover at least a 5-year period and must be reviewed annually (may be modified as needed by ordinance; no comprehensive plan amendment is required).
- include standards to ensure the availability of public facilities and adequacy of those facilities to meet established acceptable levels of service (LOS).
- identify projects needed to achieve and maintain LOS for the 5-year period as either funded or unfunded and give each a level of priority for funding, and
- include in the schedule of transportation improvements the applicable MPO’s transportation improvement program (TIP) “to the extent that such improvements are relied upon to ensure concurrency and financial feasibility.” The schedule must be coordinated with the applicable MPO’s long-range transportation plan.

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Land Use and Transportation Management Strategies

Local governments alone or in coordination with FDOT and other agencies have several planning and regulatory tools at their disposal to coordinate transportation and land use objectives. Table 6 lists a variety of land use and transportation management strategies that may be employed as part of a corridor management plan or local comprehensive planning program. This section explores some of these key strategies.

Table 6 – Transportation and Land Management Strategies

Sample transportation actions	Sample land planning actions
<ul style="list-style-type: none">• increased supply of parallel relievers and continuous collector streets as alternative routes;• “complete” streets in urban areas with sidewalks, adequate pedestrian refuges, and provisions for public transportation;• improved local street network connectivity;• flexible work hours, vanpools, subsidized transit passes, and other transportation demand management strategies;• congestion or parking pricing;• better management, design, and operations of major intersections;• multimodal transportation impact assessment that addresses the ability to reach a site conveniently and safely by walking, bicycle, transit, and car.	<ul style="list-style-type: none">• encouraging multi-use rather than single use developments and neighborhoods;• restricting development in the planned right-of-way for transportation facilities;• making approval of certain large developments contingent on the proximity and availability of high-capacity, high-speed transit ;• orienting development along streets in urban areas where practical;• mixed-use activity centers or transit oriented developments planned along transit lines;• zoning envelopes along new highways in rural and undeveloped areas to cluster commercial activity at key nodal points and minimize strip development.

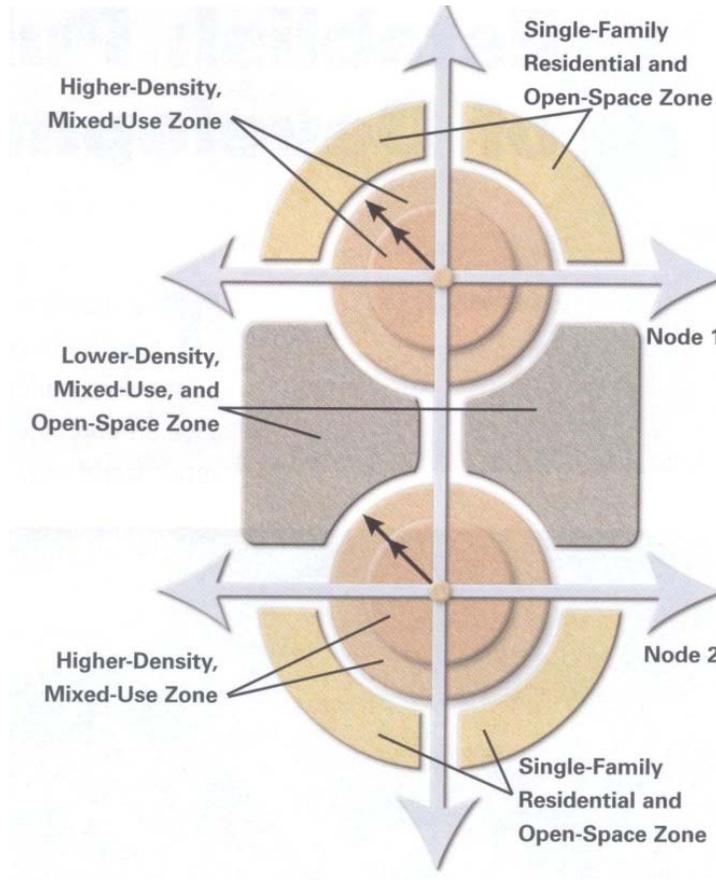
Source: K. Williams and H. Levinson, “Access Management Past Present and Future,” *Proceedings of the 2008 Access Management Conference*, Baltimore Md.

Activity Centers: Several local governments have adopted a policy of focusing development into activity centers. Activity centers are dense clusters of trip attractors like retail shops, office space, restaurants, or cultural venues. They may also be designed as transit oriented developments. Some activity centers are very large (such as a central business district), while others can be as small as a collection of neighborhood retail shops. Some housing is located in activity centers, but it is limited to very high density condominiums and apartments. The area surrounding the activity center contains progressively lower-density residential units, along with

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green space. Activity center strategies are commonly applied in corridor management plans as a method of reducing strip development and providing walkable centers that can be served by transit or the automobile, as illustrated in Figure 16.

Figure 16 – Activity Center Development Along Major Corridors and Transit Lines



Source: Urban Land Institute, *Ten Principles for Reinventing America's Suburban Strips*, 2001.
Image Credit: Starwood Urban

Transit-oriented development (TOD): TOD policies can be used to require or encourage certain developments served by transit to be highly walkable, dense, and with a compatible mix of uses. Providing TOD along transit corridors creates walkable destinations at key transit stops and stations and helps to reinforce transit ridership. FDOT developed a Florida TOD Guidebook and Florida TOD Framework to help advance this land use strategy in the state.

Form Based Codes: A regulatory strategy applicable to various types of urban centers and corridors is called a form based code. Form based codes can help improve the pedestrian experience, thus encouraging walking and bicycling as modes of transportation. Such codes allow development that meets urban form criteria instead of solely land use criteria. They link building form and street and block development to a regulating plan, which varies according to context (e.g. district, neighborhood, corridor). A benefit of form based codes is that they can

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accommodate higher densities, while ensuring that growth does not adversely impact urban form. In this way, it helps to address citizen concerns over the impact of density on livability.

Context Sensitive Solutions (CSS): CSS has given rise to a number of new street typologies in recent years. These typologies build upon the rationale of functional classification, while explicitly considering street design and modal emphasis in varying land use contexts. They aim to provide mobility for all modes of transportation with a greater focus on the pedestrian. Commonly used categories are Parkway, Boulevard, Avenue, Street, and Alley/Lane. CSS can address major thoroughfares as they pass through walkable areas such as a town center or supporting activity center. The process engages stakeholders to plan and design transportation facilities that meet specific principles.

Complete streets is a national movement oriented toward reducing the dominance of automobiles in street planning and design by ensuring consideration of all users including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Many communities in Florida, and nationally, are adopting or seeking to adopt complete streets policies and guidelines in an effort to achieve changes in local and regional practice. A key benefit of a complete streets policy to local government multimodal land use and transportation planning is that it is a relatively simple, yet effective method of achieving greater attention to the full range of modes in street network planning and design.

Access Management: Access management is the coordinated planning, regulation, and design of access between roadways and land development.⁹ Limiting access along major roadways reduces traffic conflicts and flow interruptions, while improving safety for drivers, pedestrians, and bicyclists. Strategies include the control of the location, spacing and design of driveways, median openings, street connections, and traffic signals. Roadway design elements, such as nontraversable medians and turn lanes, are also employed. The Florida Department of Transportation has had an access management program since 1985 that applies to the state highway system. Numerous local governments have also enacted ordinances and policies in support of access management on state and local thoroughfares.

Basic principles of access management are:

1. Provide a specialized road system in which different roads serve different purposes. A balanced roadway network serves a range of functions from higher speed, long distance movement, where access must be controlled (e.g. freeways, expressways), to local access (e.g. local or minor collector streets), where speeds and traffic volume are curtailed.
2. Limit direct access to major (arterial) roads. Direct property access should be limited

⁹ K. Williams, et al. *NCHRP 15-43: Second Edition of the TRB Access Management Manual*, August 2013 (publication pending).

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along roads intended to serve higher volumes of traffic over longer distances at higher speeds; it should be denied whenever reasonable access can be provided along a roadway of lesser importance to through traffic movement.

3. Maintain long, uniform spacing of traffic signals on major (arterial) roads to support signal coordination and efficient traffic progression over a wide range of traffic conditions.
4. Locate access connections away from roadway intersections. Driveways and street connections should be located outside the functional area of road intersections or interchanges to preserve intersection safety and operations.
5. Provide a supporting street and circulation system. An interconnected network of collector and local streets and unified site circulation plans improve local mobility and site accessibility, remove local trips from arterial roads, and reduce the need for direct property access to arterials.

Corridor Management Plans: Corridor management plans are a means to coordinate land use and transportation plans and decision-making along an entire corridor. Corridor management plans can address a variety of land use and transportation issues, such as preservation of right of way, context sensitive roadway design, transit needs and infrastructure, development of parallel routes, supporting street networks, and alternative access to corridor development.

Recognizing the safety and operational benefits of access management, several FDOT Districts have prepared state highway corridor management plans in coordination with local governments and metropolitan planning organizations. These plans address median design, median openings, signal spacing, auxiliary lanes, and methods to reduce direct driveway access via service roads, supporting street networks, shared driveways, and inter-parcel connections.

A key benefit of corridor management planning is the ability to improve state and local coordination in access management. An added benefit of the planning process, is that it educates stakeholders on the importance of corridor management and helps staff and officials better understand how best to refocus their policies or practices to achieve lasting solutions to identified problems.

Examples abound in Florida of where local governments have allowed land division and development along important state highways without new collector and local streets. Local traffic in these areas has contributed to traffic congestion on major roadways due to the inadequate and poorly connected street networks. Frequent driveway access generates traffic conflicts that add to congestion and safety problems on the Strategic Intermodal System (SIS) and other important highways

Location Efficient Development: Location efficient development gives financial or tax benefits to

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construction that is better suited to meeting the transportation vision of the region. For example, a city may grant tax relief to a retail development located near the central business district or close to a transit line. If the tax relief was not granted, the developer may have chosen to build in a location that is not transit-accessible or is distant from the city center. A similar concept is found in residential construction, known as location efficient mortgages. In a location efficient mortgage, the homeowner is given a lower interest rate or allowed to place a reduced down payment if the home is near transit, close to the city center, or will be the location of a home office. The alternative loan terms reflect lower transportation costs being borne by the homeowner.

Freight Planning and Land Use

Freight mobility is critical to the economic success of Florida and its communities. Over the past several decades, the impact of transportation and land use decisions on the movement of freight has become increasingly appreciated by the public sector. Historically, freight movement has been a primary responsibility of the private sector and the public role revolved around such things as regulating trucking and occasional interfaces with rail, port, and air freight entities.

As the transportation system has become more congested, recognition of the need to ensure efficient movement of freight and commercial activities has grown. Public-private partnerships and cooperation with freight and commercial stakeholders are increasingly viewed as critical aspects of the transportation planning process. This trend recognizes both the economic importance of ensuring competitive freight system performance and the need to mitigate safety, noise and air quality impacts of accommodating freight transportation in urban environments. Some of these initiatives are leading to improved transportation and land-use coordination. Recent examples include the following:

- Construction of the I-4 – Selmon Expressway intermodal connector with dedicated toll truck lanes to support freight operations at the port of Tampa Bay that now minimize community impacts of truck traffic on local streets in Tampa’s historic district.
- Cooperation with CSX in central Florida to enable the development of Sun Rail passenger service and to move some freight traffic out of the urban environment.
- Development of a major tunnel project to support the Port of Miami enabling improved accessibility while minimizing community impacts.

An important aspect of local government planning is ensuring the accessibility of ports and airports through the surface transportation system for the efficient movement of people and freight. In addition, the urban multimodal environment creates a number of challenges for freight activity. Complete streets policies, context sensitive solutions, and traditional neighborhood developments can result in narrower streets, traffic calming, and compact intersections that impact the operational needs of delivery trucks and cause more regular encroachment of turning vehicles into opposing lanes. Local governments must balance the need for access by large

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trucks, freight rail, and other modes of freight transportation with the circulation needs of autos, bicycles, pedestrians, and transit users. Emerging strategies include separation of certain freight-related land uses into centers (aka urban freight villages or intermodal staging locations) that can be effectively served by rail and regional goods movement corridors, thereby reducing adverse impacts of freight movement on communities,

Conclusion

This Trends and Conditions report has provided an overview of the relationship between transportation and land use and the importance of coordinating transportation and land use planning decisions. As more people move to Florida and as the economy expands, the demand for transportation will increase. The nature of that increase in transportation demand will be influenced by the location and intensity of future development and redevelopment and by the socio-demographic characteristics of the new Floridians, especially the age profile. Florida's rapid growth not only creates a transportation challenge but also provides an opportunity to leverage the ability of transportation service and infrastructure investments to influence land development patterns and to manage growth and land use patterns for the benefit of the overall transportation system.

Population age profiles, labor force participation, housing preferences, economic conditions, and technologies including those that enable communication as a substitution for travel, are all changing in ways that are not easy to predict nor to fully discern the significance of future travel needs and demands. Thus, planning activities need to be cognizant of the best available information on changing trends in land-use and travel but also need to acknowledge the uncertainty inherent in longer-term forecasts or plans regarding travel demand and its relationship to land use.

Every transportation decision has an impact on how development will happen in Florida and how the state will look in the future, just as every land use and development decision impacts the transportation system. As outlined in this report, transportation and land use decisions are influenced by a number of factors and various stakeholders and levels of government. Thus, attempting to ensure that the implications of transportation and land use decisions are considered together is an inherently complex technical and political process.

In the end, coordination between land use and transportation requires the good-faith effort of several levels of government. This is because no one agency is responsible for both sides of the coordination equation. Major transportation improvements are the domain of the Florida Department of Transportation, metropolitan planning organizations, and public transit providers. Meanwhile, land use authority is solely vested in the hands of local governments. Scarce resources, increasing knowledge regarding the transportation land-use relationship, and concerns about economic and environmental sustainability will likely increase coordination of

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transportation land-use decisions among these groups.

Florida has long been a leader in using innovative strategies and mechanisms for making better transportation and land use decisions. The state continues to adapt its policies and practices to account for lessons learned and ever-changing conditions, and FDOT has been an active participant in state, regional, and local growth management initiatives. Indeed, perhaps the most significant land use and transportation trend is the growing recognition of the importance of this relationship as evidenced by the many efforts to more fully coordinate transportation and land use in the planning process. In the coming years, FDOT will continue to work with its partners to proactively coordinate transportation and land use decisions so that the additional people that call Florida home each day, and the over 19 million people who already are here, have healthy and vibrant communities in which to live, shop, work and play.

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