TRANSFORM 2045

Long Range Transportation Plan

Background Research Report

January 2019

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1.0 INTRODUCTION

Developing the 2045 Long Range Transportation Plan (LRTP) for the North Port-Sarasota-Bradenton metropolitan area which addresses concerns, issues, and challenges is most effectively done by understanding the current context of the area. The LRTP is a guide for developing the multimodal transportation system of tomorrow built upon the requirements of federal and State law and is designed to promote the visions and goals of the community. This report provides an overview of factors that may potentially effect population allocation and job growth in Sarasota and Manatee Counties through 2045. The Sarasota/Manatee MPO is considering these factors as part of its 2045 LRTP scenario development process. These factors are organized by section in the remainder of this document based on the following themes:

- Section 2.0: Environment
- Section 3.0: Demographics
- Section 4.0: Economics
- Section 5.0: Technology & Innovation
- Section 6.0: Safety

As part of the MPO's TransForum Information Workshop series, the MPO held the first Policy Panel on January 28, 2019 to address and discuss an array of topics geared toward assessing the future of Our REGION (Resilient Environment, Economic Diversity, Growing Strategically, Interdependent Communities, One Region, Next Generation Technologies). This Policy Panel discussion built on the data and analysis that was compiled to better understand how growth has occurred and the current relationships that exist between housing and jobs, commuters, visitors, and recreational users of the transportation system, as well as existing environmental constraints and future opportunities for growth.

Below are a few of the key takeaways identified through the data review and Policy Panel presentations.

Key Takeaways

- Much of the land east of Interstate 75 (I-75) is conservation land or regulated for lower density/intensity uses. Development in these less urbanized areas may follow Resource Management Area patterns in Sarasota County with incentives for compact growth in the form of Villages. More detailed or follow-up analysis is needed to determine development restriction due to wetlands, particularly in view of potential changes to protected waters with Clean Water Act adjustments.
- Population growth is generally anticipated for Sarasota and Manatee Counties (estimated at 0.93% and 1.50% percent annual growth through 2045, respectively). Growth has recently occurred and may continue in/around areas such as those east of I-75, Fort Hamer, Lakewood Ranch, North Port, Parrish, and Venice.
- Development in coastal areas, particularly on the barrier islands, may be constrained by the ability to obtain and/or the cost of flood insurance given flood risk designations from FEMA. Furthering this hazard is the potential for sea level rise. Scenarios for 5- and 10-foot sea level rise based on National Oceanic and Atmospheric Association data show effects for coastal and river areas in the two-county region, including the barrier islands and sizable inland areas around Englewood and North Port. The Sarasota/Manatee MPO's 2018 Security Assessment provides recommendations regarding potential roles for the MPO in hazards planning.
- The Sarasota/Manatee area generally has an aging population, yet both retirement-age and working-age populations are anticipated to be sizable in the future. Transportation needs for both these populations will be important in the future, including hazards planning and evacuation transportation that includes needs for aging populations and commuter transportation. Aging populations are prevalent in coastal areas and may particularly be affected by flooding and sea level rise impacts.

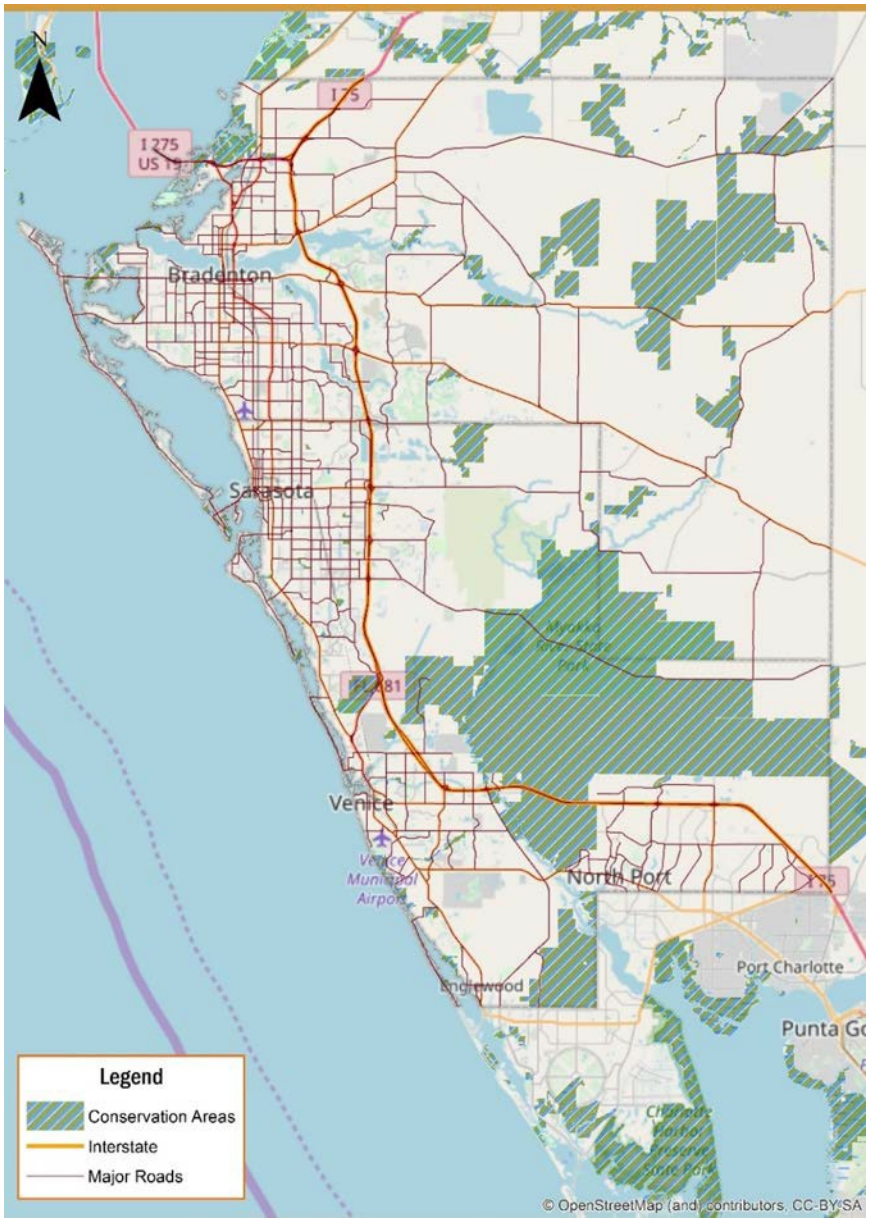
- Wage and salary employment have increased since 1970, while average earnings per job for Manatee and Sarasota Counties has remained below the state measure since that time.
- Port Manatee will continue to be a key focus of economic activity, particularly in view of global trade and logistic connections.
- The availability of affordable residential areas and their location relative to employment areas can influence commuting patterns. The Sarasota/Manatee two-county area maintains several affordable areas for the typical household in terms of income, which may support to some degree working and living within the two-county area. Yet, certain areas which have seen recent growth and expansion, such as Lakewood Ranch and areas east of I-75, do not necessarily constitute affordable areas. The majority of workers living in the area also work in the area (66%) and the majority of jobs in the area are filled by residents of the area (69%). However, there are still sizable percentages of residents and workforce who must commute, affecting inter-regional transportation. There are sizable flows between the Sarasota/Manatee area and Tampa Bay, followed by central and southwest Florida. In terms of intra- regional transportation, sub-areas such as North Port, Englewood, and Parrish may see strong inflows and outflows of commuters. This may be due to the residential nature of these areas with more affordable housing and limited employment opportunities.
- Automated, connected, electric, and shared-use (ACES) vehicle technologies, as well as the emergence and growth of E-commerce, will likely disrupt a variety of transportation aspects. These new technologies and activities will affect, among other aspects, planning, data collection and usage, infrastructure needs, land uses and density/intensity, design, funding, and entities providing transportation. The degree to which ACES technologies are adopted and the combinations in which they are adopted will inform the opportunities and specific considerations for transportation planning and implementation.
- Job automation will likely affect employment in industries such as accommodations and food service, transport and warehousing, manufacturing, health & medical services, and education. Several of these industries may be tied to key economic activities for the state and region, such as tourism, retiree-related industries, and Port Manatee activities.
- Generally, the five safety measures for the MPO have been trending upwards in recent years. The following are 2014-2018 5-year average targets for each measure as determined in the 2018 MPO Safety Assessment. Section 6.0 of this document also summarizes high priority crash locations for safety improvements based on the same assessment.
    - Number of fatalities: 121
    - Fatality rate: 1.670
    - Number of serious injuries: 1,540
    - Serious injury rate: 19.366
    - Number of non-motorized fatalities and serious injuries: 199

2.0 ENVIRONMENT

Conservation Areas and Wetlands

Allocation of population in the future will be constrained or influenced by environmental areas that require protection or require mitigation in order to allow development, including conservation areas such as state parks and wetlands. Map 2-1 shows where there are conservation areas that would prohibit development, one of the largest being Myakka River State Park that would constrain population growth east of I-75 along the southern portion in the Sarasota/Manatee area. The 2014 Florida Natural Areas Inventory indicates that there are 164,650 acres of Local, State, and Federal preserved and conserved lands in Sarasota and Manatee counties combined. The inventory calculated that 12% of Manatee County and 30% of Sarasota County is preservation or conservation lands.[1] Additionally, wetlands cover most of the area; formal determinations would be needed to identify where development could occur and needed mitigation.

Map 2-1: Conservation Areas



Source: Florida Geographic Data Library

Note that at the federal level, the U.S. Environmental Protection Agency and the Department of the Army have proposed revised definitions of the "waters of the United States" that may eventually impact federal authority under the Clean Water Act. A fact sheet from these departments summarizing changes indicates that areas that would still fall under federal jurisdiction include traditionally navigable waters, tributaries, certain ditches, certain lakes and ponds, impoundments, and wetlands adjacent in specified ways to jurisdictional waters.[2] Examples of waters not included are temporary water features, groundwater,

[1] Florida Natural Areas Inventory (April 2014) Acres of Conservation Lands by County, https://www.fnai.org/pdf/MAxCounty_201404.pdf

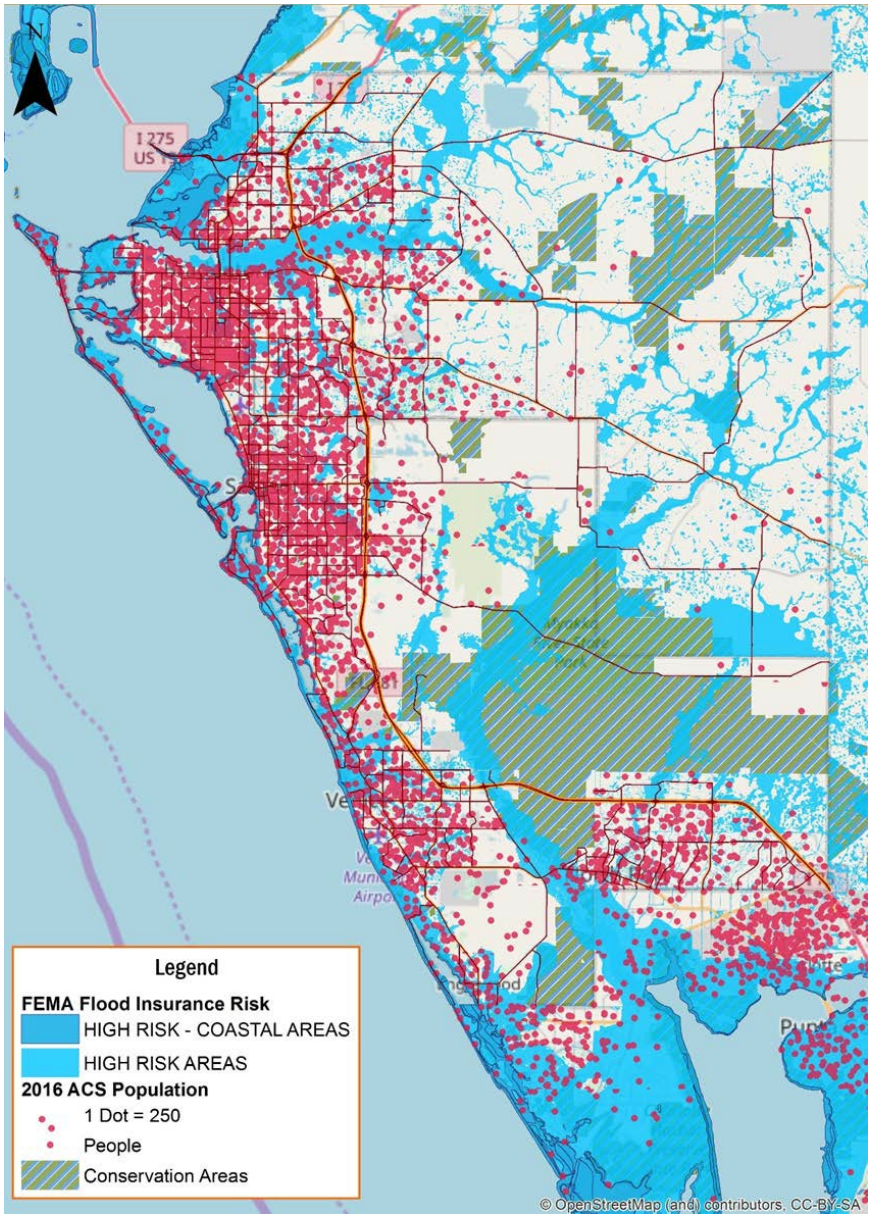
[2] U.S. Environmental Protection Agency and Department of the Army (December 2018) Proposed Revised Definition of "Waters of the United States" (Fact Sheet) https://www.epa.gov/sites/production/files/2018-12/documents/factsheet_-_wotus_revision_overview_12.10_1.pdf

non-qualifying ditches, prior converted cropland, certain stormwater control features, water recycling structures, and waste treatment systems.

Coastal Constraints

Coastal areas, which have historically seen population growth (see Section 3.0), may be constrained or require additional development efforts to accommodate additional growth. Map 2-2 shows FEMA's most recent Coastal High-Risk and normal High-Risk Flood Areas with the 2016 ACS population estimates. The most impacted areas are coastal areas and barrier islands. A significant portion of the population in the two-county area is at risk of flooding; 26% percent of the single-family homes in Sarasota and Manatee Counties are within the FEMA Flood Areas, based on the comparison between the FEMA and ACS data. The MPO should consider the possibility of significant damage to property in future scenario planning activities.

Map 2-2: 2016 ACS Population and FEMA High Flood Risk



Sea-level rise is another consideration affecting the High-Risk Flood Areas. Map 2-3 provides 5- and 10-foot sea-level rise scenarios based on National Oceanic & Atmospheric Administration (NOAA) data for Sarasota and Manatee Counties. Areas affected by these scenarios include the barrier islands and sizable areas inland from the coast around Englewood and North Port. Note that the MPO also has the option to support the Tampa Bay Regional Planning Council Memorandum of Understanding, which would provide more specific projections and mitigation strategies.

Aside from actual flooding, the cost of flood insurance and eventual willingness to provide policies in certain areas will likely affect development in flood hazard areas in the coming years. There have been recent efforts to reform the National Flood Insurance Program, and reform efforts more generally are ongoing. The Biggerts-Waters Flood Insurance Reform Act of 2012 intended to adjust rates to more accurately reflect the real risk of flooding; 80% of policyholders were not expected to see large premium increases since they were not paying subsidized rates. A portion of the remaining 20% were expected to see premium increases of 25% annually.[3] However, the 2014 Homeowner Flood Insurance Affordability Act repealed and modified

[3] Federal Emergency Management Agency (April 1, 2013) Questions about the Biggert-Waters Flood Insurance Reform Act of 2012, https://www.fema.gov/media-library-data/20130726-1912-25045-9380/bw12_qa_04_2013.pdf

certain provisions of the Biggert-Waters legislation to lower rate increases on some policies, prevent some future rate increases, and implement a surcharge on all policyholders ($25 for a primary residence, $250 for other policies). With limited exceptions, flood insurance premiums cannot increase more than 18% annually. The legislation also repealed some rate increases that had already gone into effect and provided funding for an affordability study.[4]

Water Quality

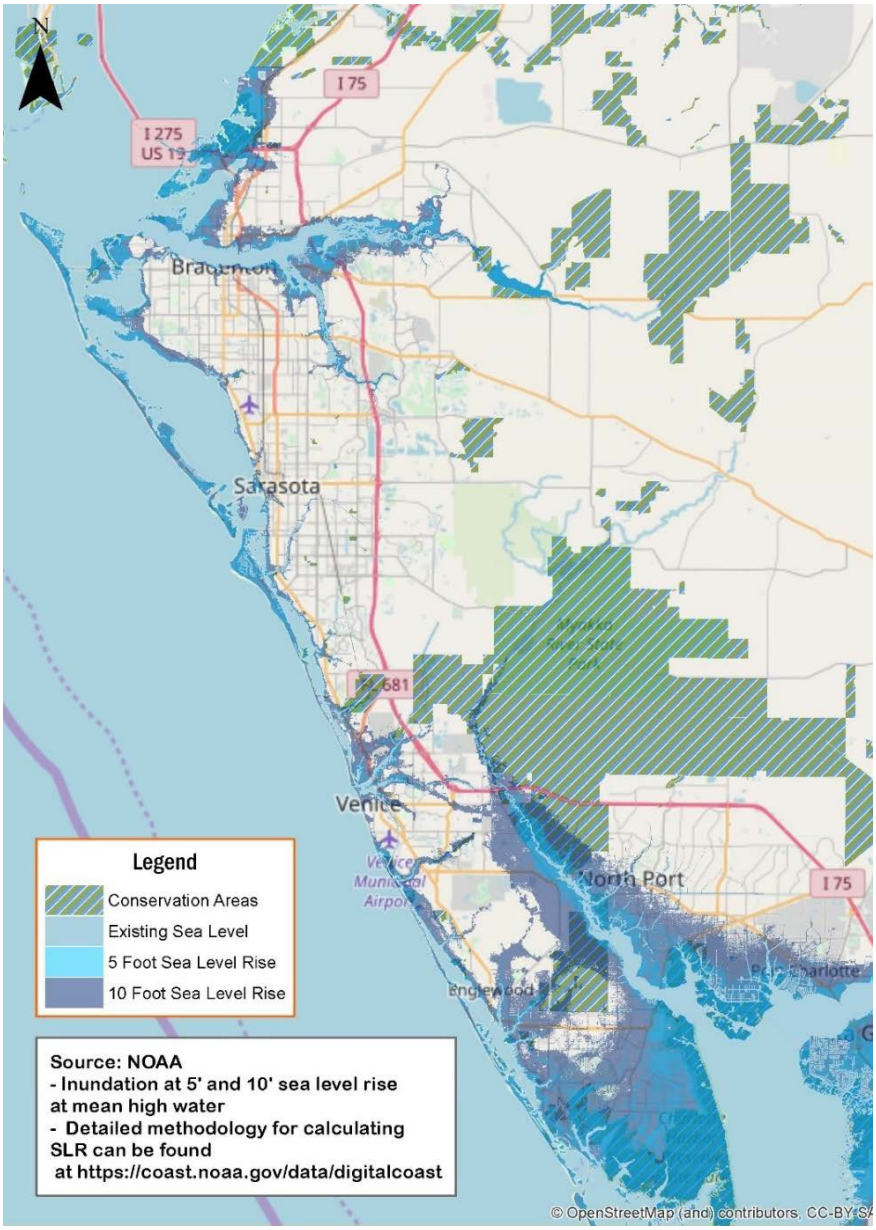
The issue of water quality, and more specifically red tide and other algal blooms, has gained attention in the press over the past several years, including its impacts on tourism.[5] The length and frequency of these phenomena and degree of government efforts to address and mitigate these problems will influence impacts on tourism, yet the impacts on permanent development trends are less evident from media reports.

MPO Hazards Planning Efforts

The MPO also has a 2018 Security Assessment Report providing a review of hazards planning efforts in the area and recommendations to provide guidance on future steps the MPO could take to engage in hazards planning with local governments. These recommendations include:

- Consider a more robust vulnerability/mitigation analysis for regional assets and infrastructure as part of the Long Range Transportation Plan process.
- Act as a clearinghouse to disseminate best practices in resilient design and transportation practices.
- Evaluate opportunities to coordinate hazard planning efforts at a regional scale with local jurisdictions.

Map 2-3: NOAA 5- and 10-foot Sea Level Rise Projections



Sources: Florida Geographic Data Library, NOAA

[4] Federal Emergency Management Agency (April 3, 2014) Homeowner Flood Insurance Affordability Act Overview, https://www.fema.gov/media-library-data/1396551935597-4048b68f6d695a6eb6e6e7118d3ce464/HFIAA_Overview_FINAL_03282014.pdf

[5] See for example Laura Ruane (October 14, 2018) Florida Tourism Industry Sees Resiliency Tested in Hurricane Michael, Water Quality Crises, *Naples Daily News*, https://www.naplesnews.com/story/weather/hurricanes/2018/10/14/hurricane-michael-florida-tourism-industry-resiliency-tested-storm-water-quality-crises/1640543002/

3.0 DEMOGRAPHICS

Population Growth

Based on national and state population estimates released by the U.S. Census Bureau in December of 2017,[6] Florida has a relatively large population with relatively high recent population growth. Florida has become the third most populous state in the nation, after Texas and California, since the 2010 Census with a 2017 population of nearly 21 million people. It was also fifth in the nation for percent growth between 2016 and 2017 with 1.6%. These findings indicate that there is population growth occurring in the state that the Sarasota/Manatee County area could potentially attract.

As part of a paper looking at Florida's historic growth, Stanley Smith of the Bureau of Economic and Business Research (BEBR) provided some insights into why people have moved to the state, since historic growth was primarily found to be due to migration.[7] For people younger than 55, employment was noted as the major reason for moving to Florida; climate became the leading reason for persons over the age of 55.

BEBR is also a widely used resource for population estimates and projections. According to its methodology description, state projections are based on births, deaths, and migration for different population groups determined by age, sex, and race/ethnicity. [8] BEBR also makes projections at the county level, yet notes that the estimates by age, sex, and race/ethnicity cohort used at the state level are not used at the county levels since there may not be enough people in each grouping to make reliable projections; county growth patterns are also volatile enough that using a single technique from only one time period may not be as accurate. Instead, BEBR makes projections using four base techniques:

1. *Linear – the population will change by the same number of persons in each future year as the average annual change during the base period.*
2. *Exponential – the population will change at the same percentage rate in each future year as the average annual rate during the base period.*
3. *Share-of-growth – each county's share of state population growth in the future will be the same as its share during the base period.*
4. *Shift-share – each county's share of the state population will change by the same annual amount in the future as the average annual change during the base period.*[9]

Base periods of different lengths are used to generate projections by each method, producing a set of estimates from which different combinations are taken to create averages that are used for the final projections.

Regarding local projections, Sarasota and Manatee Counties are anticipating annual growth rates of nearly 1 percent and 1.5 percent, respectively, through 2045, indicating a sizable growth rate (Table 3-1 and Figure 3-1).

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[6] U.S. Census Bureau (December 20, 2017) Idaho is Nation's Fastest-Growing State, Census Bureau Reports, https://www.census.gov/newsroom/press-releases/2017/estimates-idaho.html

[7] Stanley K. Smith (June 2005) Florida Population Growth: Past, Present and Future, BEBR, https://www.bebr.ufl.edu/sites/default/files/Research%20Reports/FloridaPop2005_0.pdf, pages 8-9

[8] Stefan Rayer and Ting Wang (January 2018) Projections of Florida Population by County, 2020-2045, with Estimates for 2017, BEBR, https://www.bebr.ufl.edu/population/methodology/projections-of-total-population

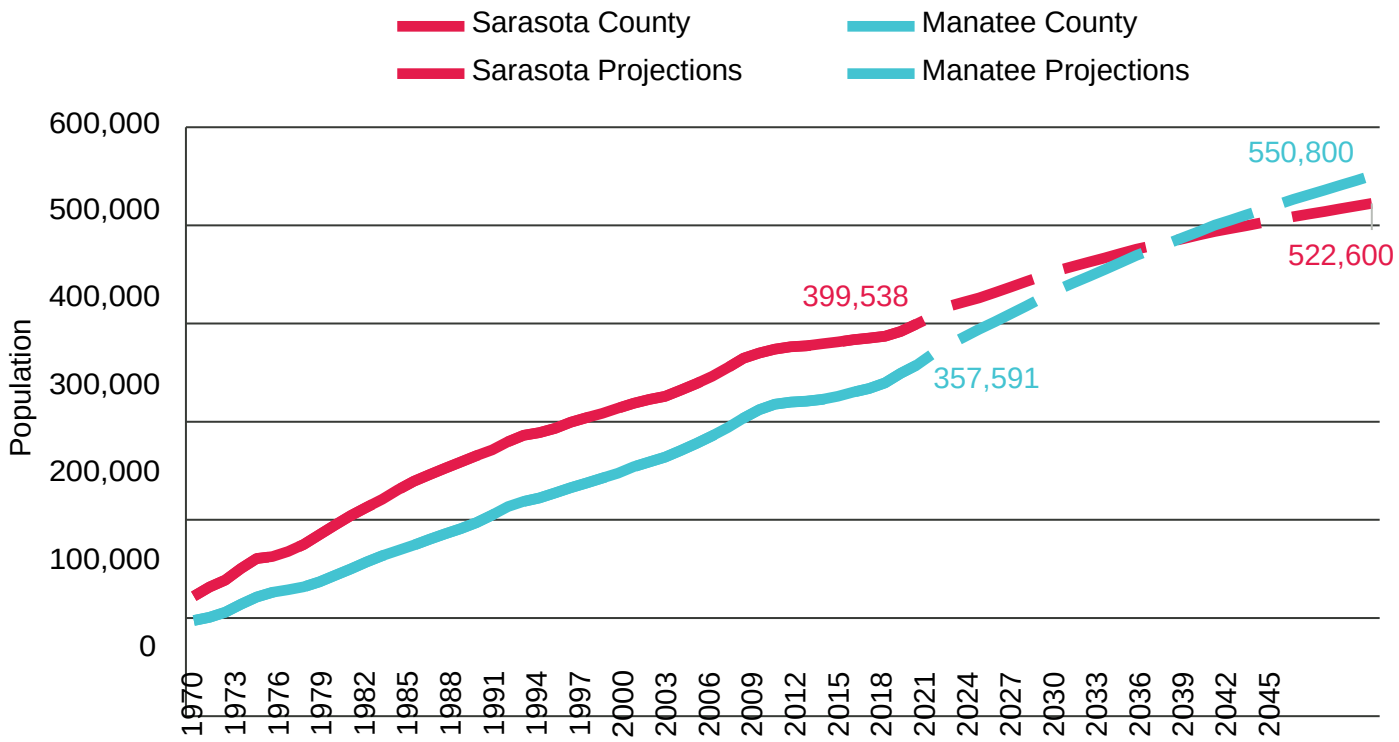
[9] Quoted from Stefan Rayer and Ting Wang (January 2018) Projections of Florida Population by County, 2020-2045, with Estimates for 2017, BEBR, https://www.bebr.ufl.edu/population/methodology/projections-of-total-population

Table 3-1: 2016 – 2045 Average Annual Growth

County	2016 Population	2045 Population	Total Growth (2016-2045)	Annual Growth (%)
Sarasota	399,538	522,600	123,062	0.93
Manatee	357,591	550,800	193,209	1.50

Source: BEBR 2018 Medium-Level Projections, Volume 51 Bulletin 180

Figure 3-1: Sarasota/Manatee County Population Projections

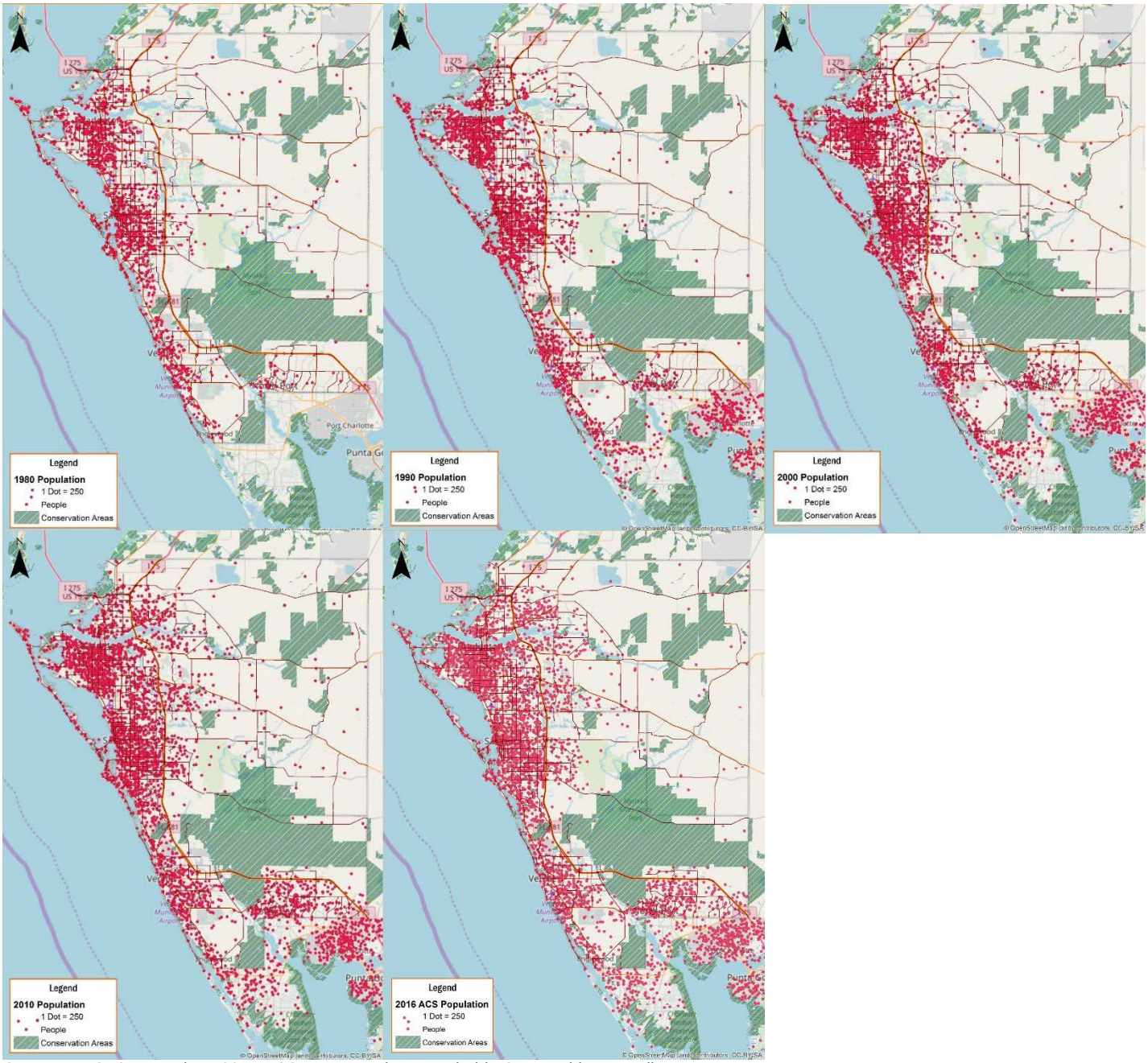


Source: BEBR 2018 Medium-Level Projections, Volume 51 Bulletin 180

Geographic Population Density Trends and Coastal Areas

Figure 3-2 shows the progression of population density in Sarasota and Manatee Counties over time. The population has been concentrated along the coast since 1980, with little population east of I-75 at that time. In following decades, the population has spread south to the North Port area and east of I-75 in areas such as Fort Hamer, Lakewood Ranch, Parrish, and Venice (the southern portion east of I-75 has a vast tract of conservation land, Myakka River State Park).

Figure 3-2: Population Dot Density Over Time (1980-2016)

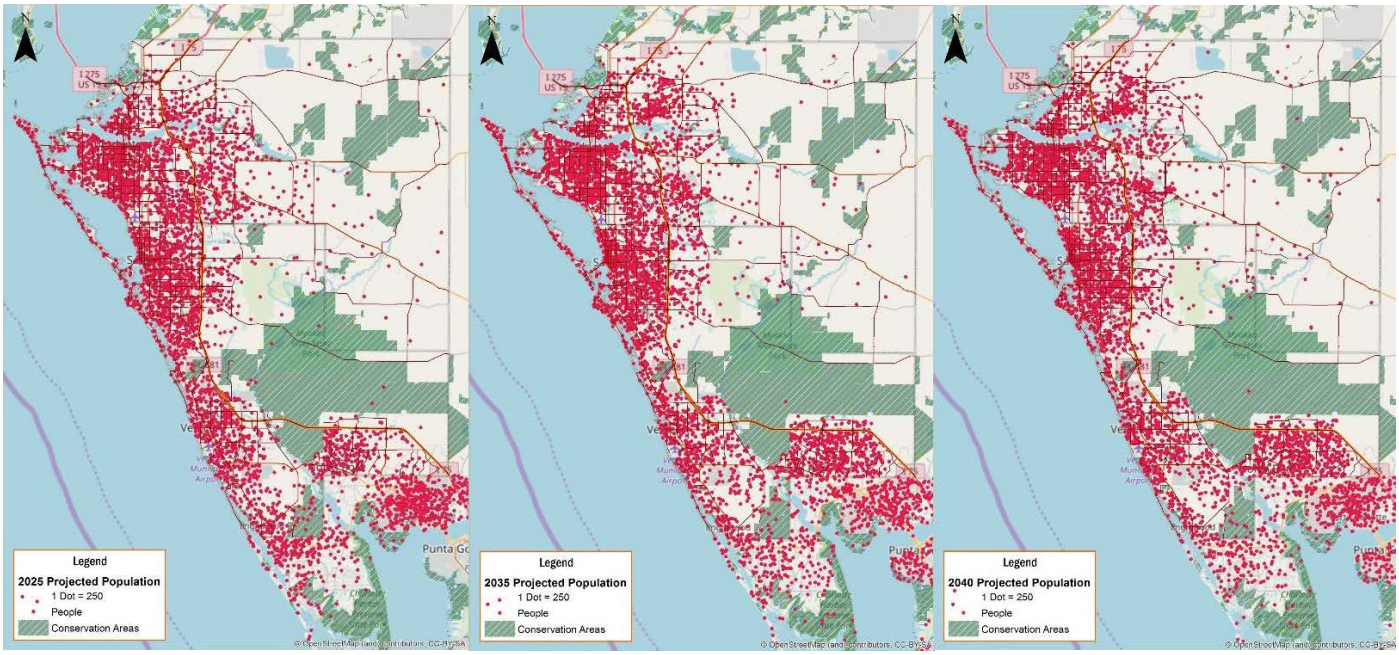


Sources: U.S. Census data, 2017 ACS 5-Year Estimates, Florida Geographic Data Library

Early planning models, such as the Sarasota/Manatee/Charlotte Regional Planning Model, forecasted this population growth east of the I-75 corridor, starting with the 2025 LRTP which had a base year of 1995. Regarding future growth, Figure 3-3 shows how the expected continuation of this pattern was included during

the 2035 and 2040 LRTP updates. In addition to the significant amount of growth anticipated east of I-75, areas around North Port have also been projected to see population density booms. However, moving forward with the 2045 LRTP, allocation of future growth in the coastal areas should account for more regular flooding that may occur due to their intersection with flood and sea level rise zones as indicated in Section 2.0.

Figure 3-3: Projected Population Dot Density (2025-2040)



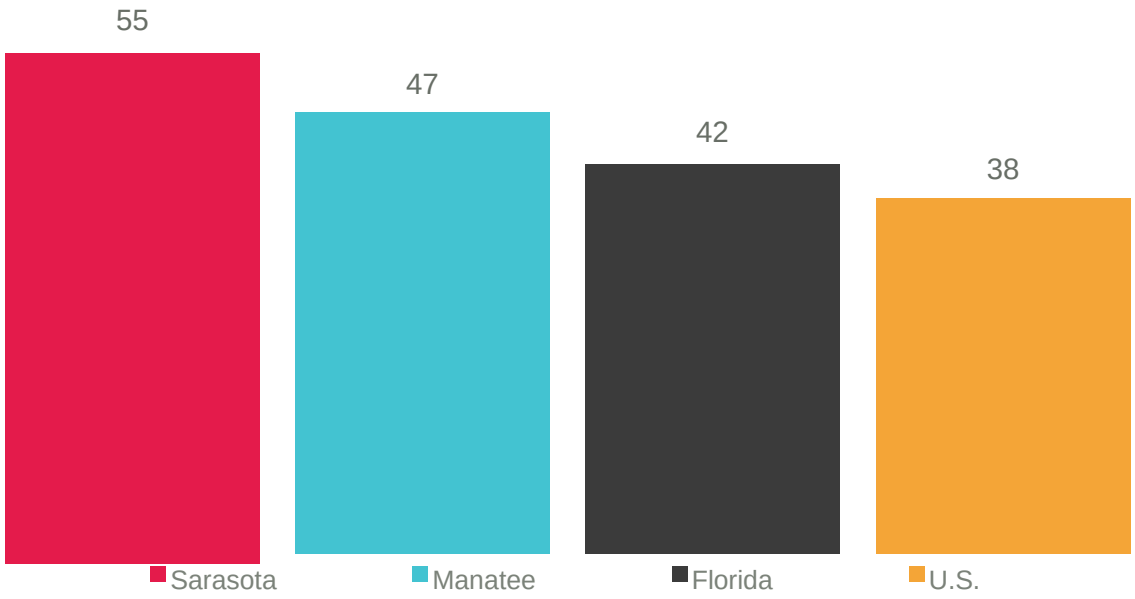
Sources: TAZ SMC, Florida Geographic Data Library

Age Distribution

Florida's population has been aging, similar to nationwide trends.[10] Sarasota and Manatee Counties have higher median ages than Florida as a whole as of 2016 (Figure 3-4). Overall, Sarasota and Manatee Counties have high median ages relative to other counties in Florida, ranking 64 and 54, respectively, out of 67 counties total.

[10] Rich Doty and Suzanne Roulston-Doty (August 6, 2015) The Aging of Florida, BEBR, https://www.bebr.ufl.edu/population/website-article/aging-florida

Figure 3-4: Median Age in 2016



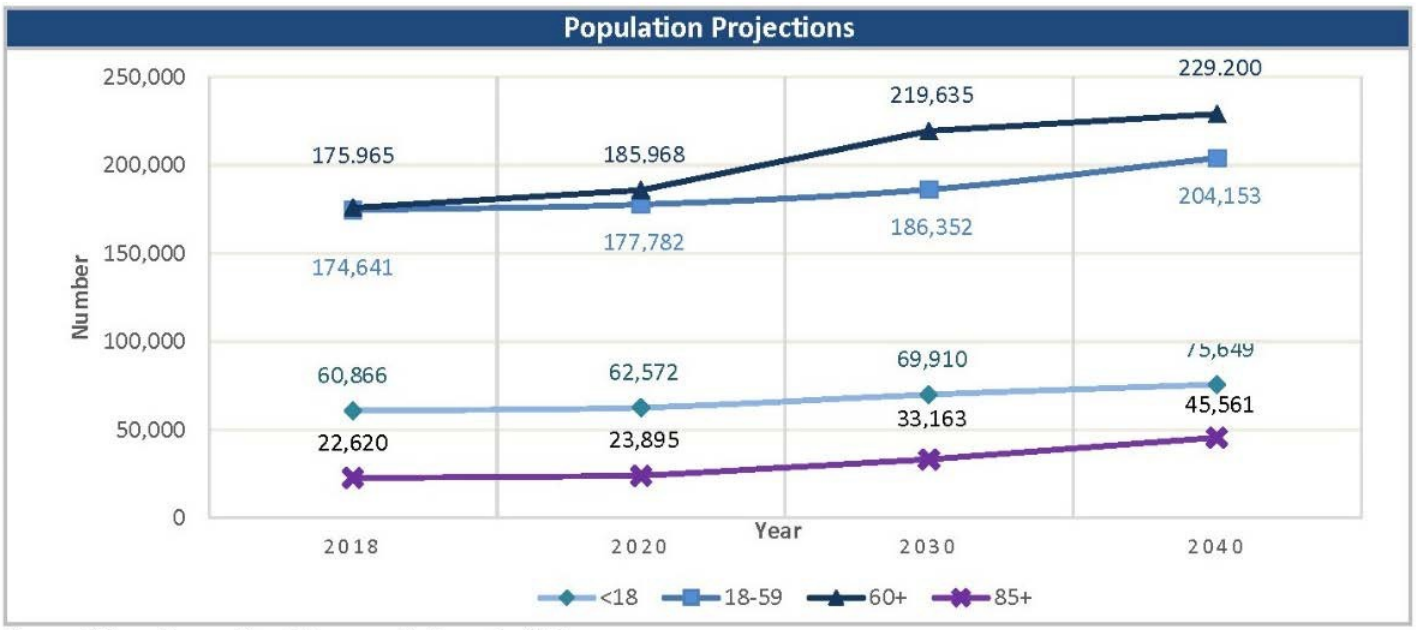
Source: American FactFinder 2017

For Sarasota County, the Department of Elder Affairs anticipates that the population 60 years of age and older will have higher absolute numbers and relatively larger increases through 2040 than the working age population between 18 and 59 years old (Figure 3-5). Yet both groups still have relatively high absolute numbers compared to children under 18.

Similarly, for Manatee County, the Department of Elder Affairs also anticipates relatively large increases in the population 60-years and older relative to the working population between 18 and 59 years old, yet in terms of absolute numbers, the working-age population is expected to be larger (Figure 3-6). Both populations have high absolute number relative to the population under 18.

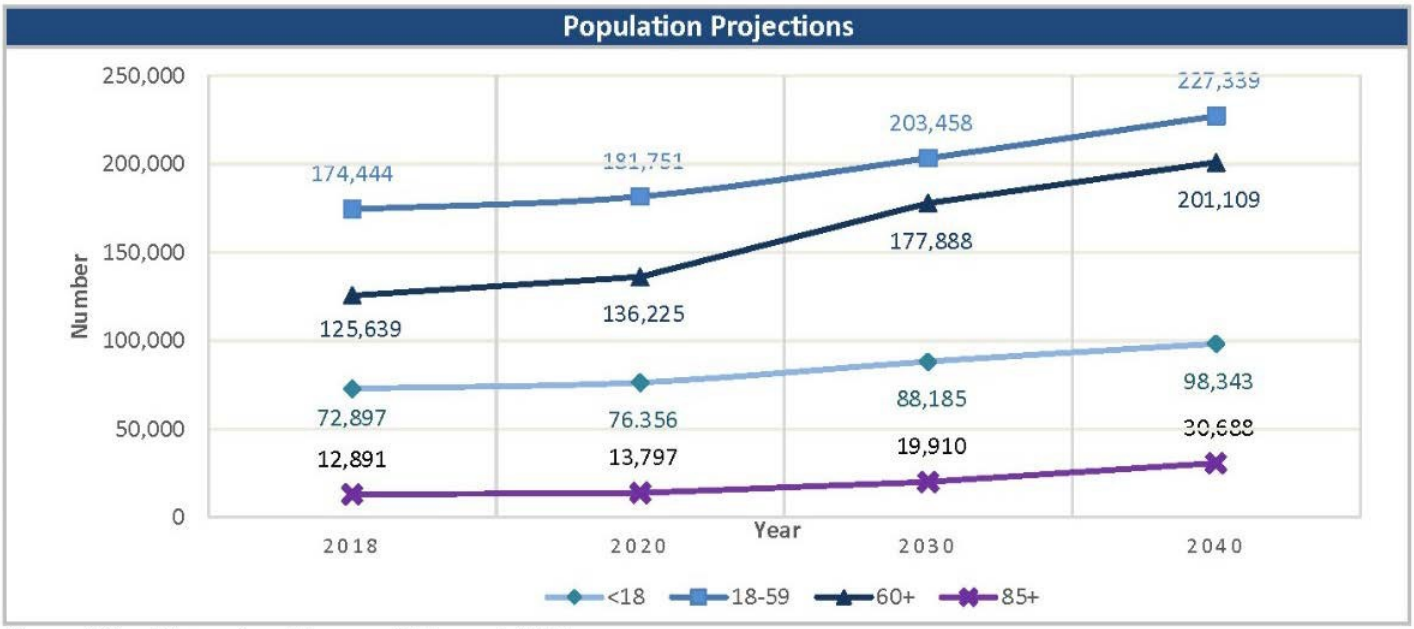
As the age cohort of 18 to 59 spans the greatest numbers of years, it is expected that this grouping would have a higher absolute number relative to the remaining age groupings. However, continued growth of the population in the age cohort of 60 to 85 suggests that future transportation services and decisions will need to consider the needs of an aging population.

Figure 3-5: Population Projections for Sarasota County from Department of Elder Affairs 2018 Profile of Older Floridians



Source: Office of Economic and Demographic Research, 2017

Figure 3-6: Population Projections for Manatee County from Department of Elder Affairs 2018 Profile of Older Floridians



Source: Office of Economic and Demographic Research, 2017

When looking at the age distribution geographically as of 2017 (Map 3-1), many of the barrier islands and the census block groups around Venice have a higher median age corresponding to retirement (66 to 81). There is more of a mix of block groups with median ages corresponding to retirement and working ages (under 65) in the Bradenton and North Port areas. These areas with median ages corresponding to working ages may indicate where employment growth has occurred and where decisions regarding future employment and land use changes may be considered in coming years to better promote a balance of housing and jobs.

Overall, these findings suggest that transportation needs for both retirement- and working-age populations will be important in the future, including hazards planning and evacuation transportation that includes needs for aging populations and commuter transportation.

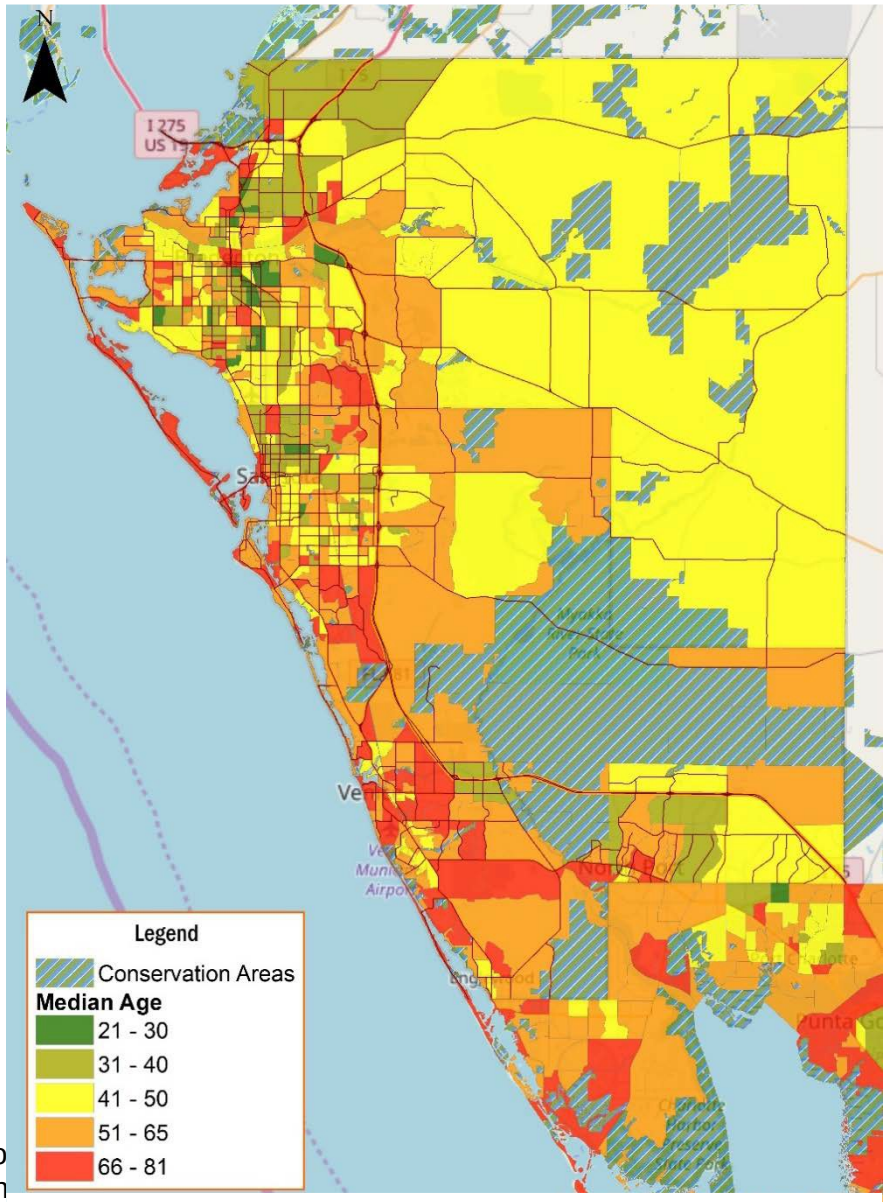
4.0 ECONOMICS

Economic Development Trends and Aspirations

One measure of economic development is the number of jobs. Figure 4-1 shows how the number of jobs in Manatee and Sarasota Counties has generally increased since 1970; this finding indicates that these employment growth trends may continue.

Certain larger factors may affect jobs, such as the cyclical nature of growth in certain Florida industries, including tourism, retiree-related industries, and construction.[11] These industries may follow the ebb and flow of the economy as a whole, so an overall trend may be more moderate than a given "boom" or "bust" period. Additionally, labor force participation has generally been declining, a trend also seen at the national level in recent years.[12,13] A variety of factors may explain this trend, including retirement of the baby boo dynamics, and effects of the recession. Th workers in the labor force; the Florida Cha at 3.3% on its Florida Scorecard, using U.S. Bureau of Labor Statistics information.

Map 3-1: Median Age by Block Group

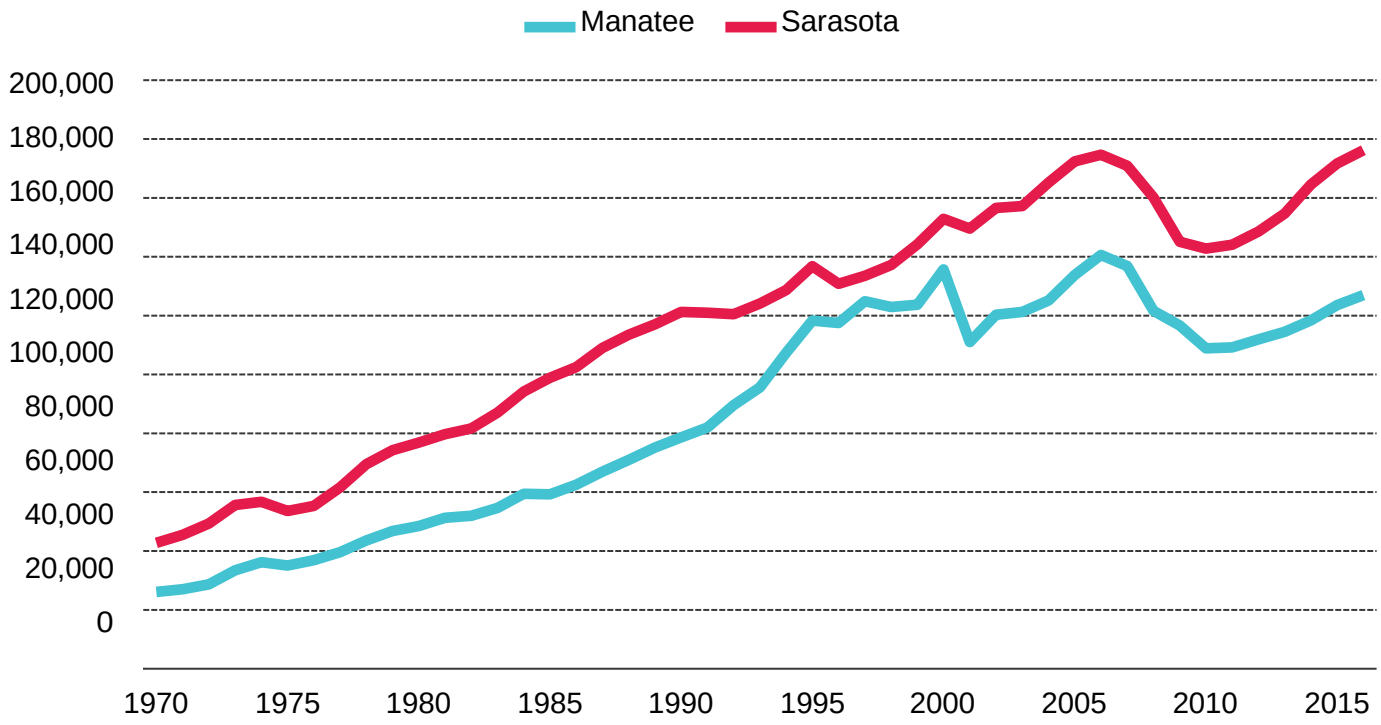


Source: 2017 ACS 5-Year Estimates, Florida Geographic Data

[11] Anita Walsh, Donovan White, David Denslow, Christopher McCarty, and Hector H. Sandoval (September 15, 2016) Florida's Changing Business Model; BEBR; https://www.bebr.ufl.edu/economics/website-article/florida%E2%80%99s- changing-business-model-0

[12] James F. Dewer and David Denslow (April 4, 2014) Will Florida Become the New Mississippi?, BEBR, https://www.bebr.ufl.edu/economics/website-article/will-florida-become-new-mississippi

[13] Hector H. Sandoval (February 10, 2016) Trends in Florida Labor Force Participation, BEBR, https://www.bebr.ufl.edu/economics/website-article/trends-florida-labor-force-participation



Source: Bureau of Economic Analysis; CAINC30 Economic Profile; November 15,

2018 Note: includes both wage- and salary-based employment

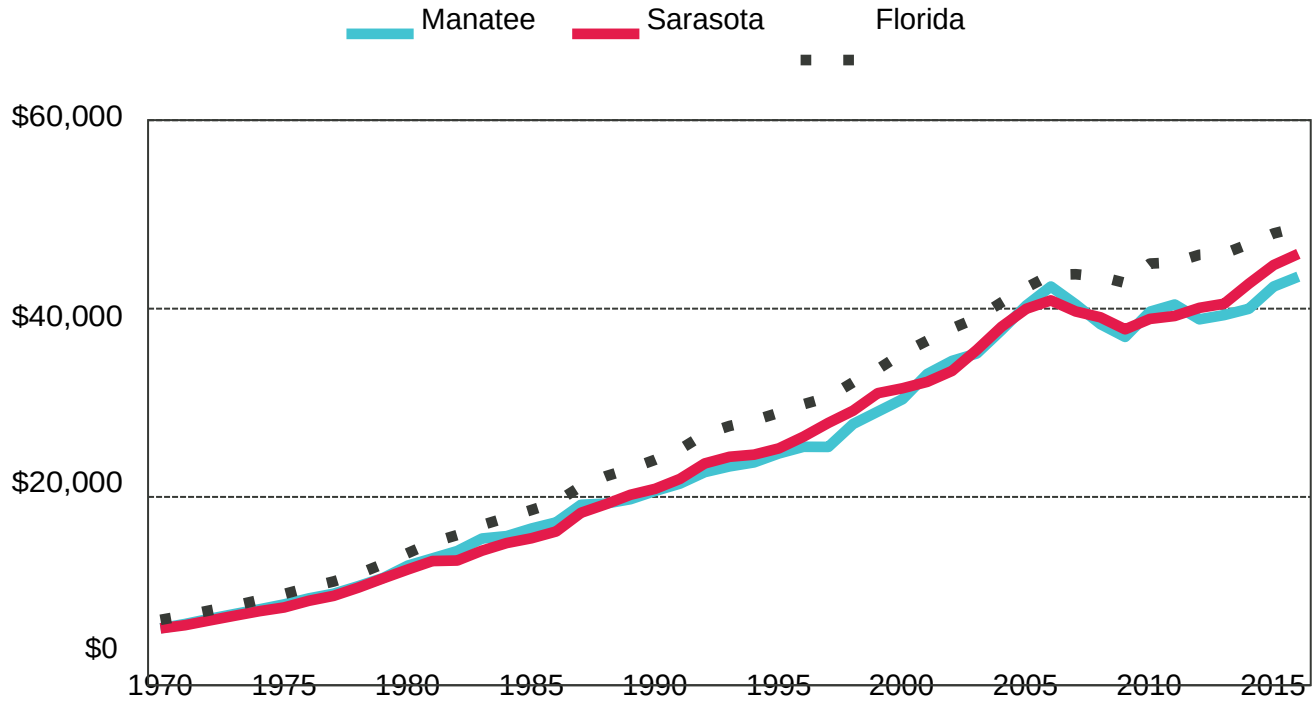
Aside from number of jobs, there is also the consideration of quality of jobs. Notable trends in Florida's economic development include the prominence of lower skill and lower wage jobs; these jobs are often focused on tourism and retirees, in industries such as retail trade and accommodation and food services.[17,18] An additional contributing factor is that there is a lower share of college educated workers.[19] When comparing Manatee County and Sarasota County to the state as a whole, average earnings per job have been consistently lower than the state's since 1970 (Figure 4-2). Employment growth scenarios should also consider the impact of job automation, as lower skill work may be more susceptible to automation (see Section 5.0).

[17] Leroy Collins Institute (February 2014) Tougher Choices: Shaping Florida's Future, http://collinsinstitute.fsu.edu/sites/default/files/Tougher%20Choices%20FINAL%202-20-14.pdf

[18] Ray Schaub (October 1, 2014) Florida's GSP Beats the U.S. Average, But Focus Remains on Low-Skill Industries, BEBR, https://www.bebr.ufl.edu/economics/website-article/florida%E2%80%99s-gsp-beats-us-average-focus-remains-low-skill- industries

[19] Leroy Collins Institute (February 2014) Tougher Choices: Shaping Florida's Future, http://collinsinstitute.fsu.edu/sites/default/files/Tougher%20Choices%20FINAL%202-20-14.pdf
James F. Dewer and David Denslow (March 6, 2014) Retirees and Florida's Job Structure, BEBR, https://www.bebr.ufl.edu/economics/other-research/retirees-and-florida%E2%80%99s-job-structure

Figure 4-2: Average Earning per Job



Source: Bureau of Economic Analysis; CAINC30 Economic Profile; November 15, 2018

Not only will private market factors affect trends in employment growth in the state, but also by efforts from governments and economic development entities. For example, the Florida Chamber of Commerce is working to implement an economic development strategy based on these six pillars:

- Talent supply and education
- Innovation and economic development
- Infrastructure and growth leadership
- Business climate and competitiveness
- Civic and governance systems
- Quality of life and quality places[20]

The Chamber also highlights the importance of global partnerships for the future of economic development, noting that Mexico has become a key trading partner with Florida in recent years (Figure 4-3). The Florida Scorecard tool by which the Chamber measures economic development efforts, including certain trade metrics, indicates that the value of cargo handled by seaports is $83.2 million and has been improving.[21]

Efforts focused on transportation, logistics, and global trade are particularly relevant to the Sarasota/Manatee area given the presence of Port Manatee. Port Manatee itself contributes $2.3 billion annually in economic impact and handled 9.3 million tons of cargo in 2018 and has plans to expand and/or improve aspects of its infrastructure; it also reports supporting more than 24,000 jobs.[22] However, it is important to understand the role that automation plays when considering future infrastructure needs and job opportunities (see Section 5.0).

[20] Florida Chamber of Commerce (2018) Six Pillars Caucus System, https://www.flchamber.com/research/six-pillars/
[21] The Florida Scorecard (2018) Infrastructure & Growth Leadership, https://thefloridascorecard.org/pillar&c=0&pillar=3 [22] Dave Sanford, Port Manatee (January 28, 2019) Preparing to Move Freight, Fuel, and Food; TransForum conference presentation; Venice, FL

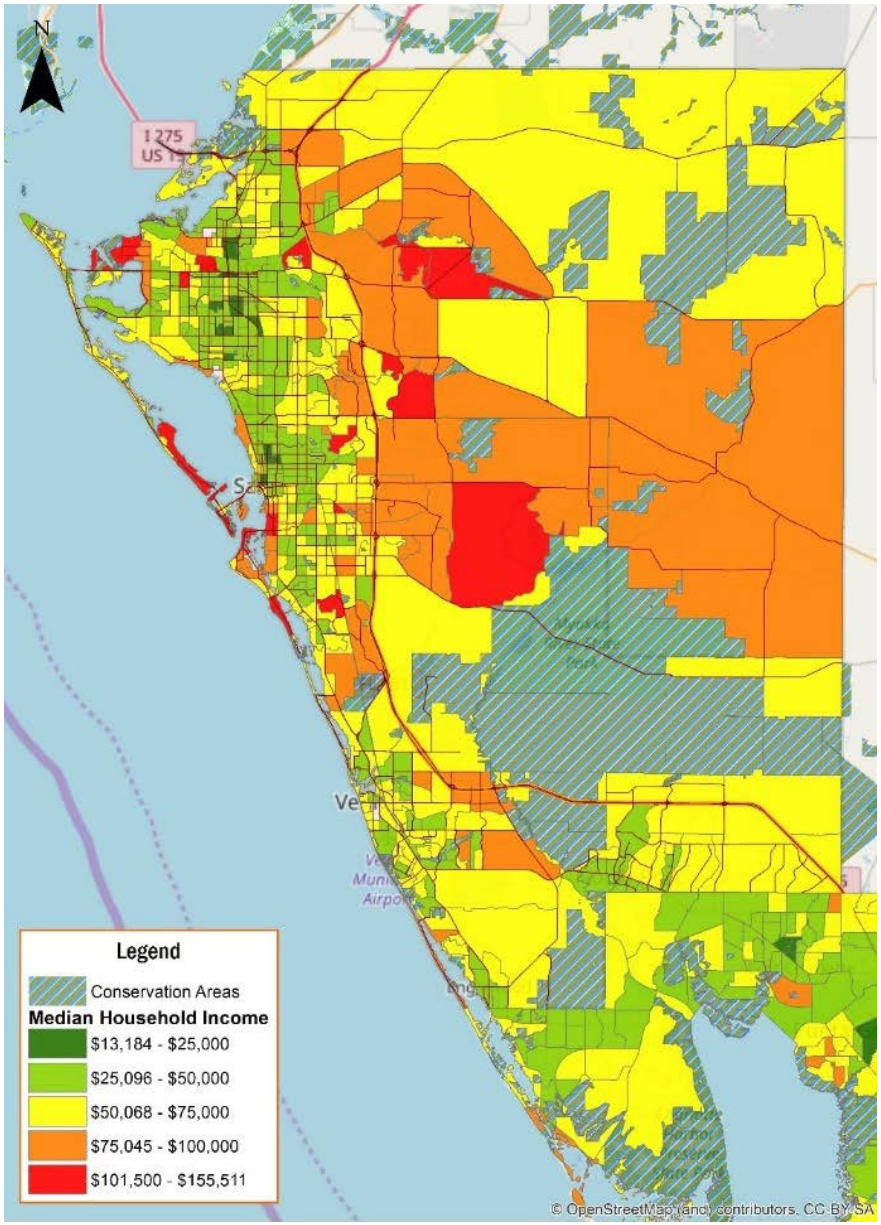
Figure 4-3: Florida's Top Global Partners

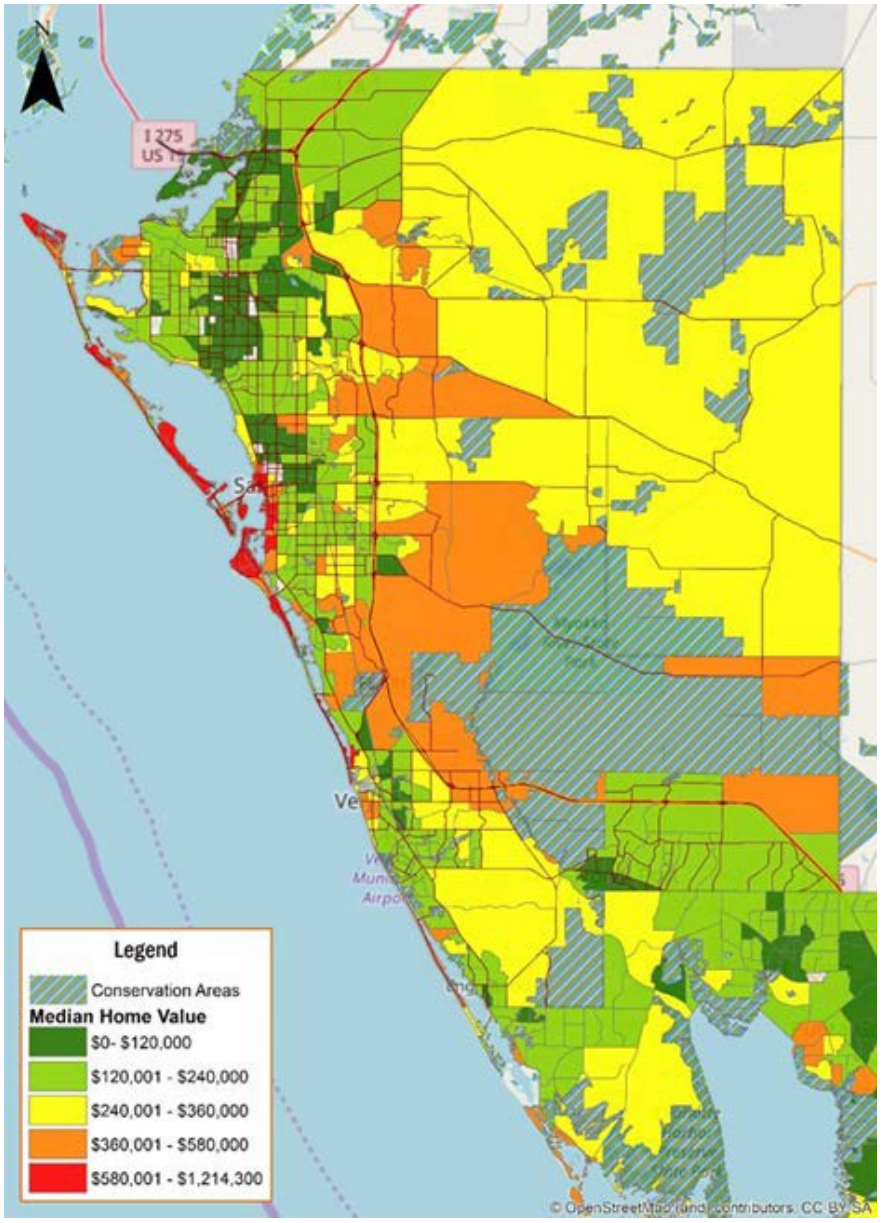
Source: Alice Ancona, Florida Chamber of Commerce (January 28, 2019) Preparing for Disruption and Transformation; TransForum conference presentation; Venice, FL.

Affordability

The quality of jobs and income levels relate to affordability, which can subsequently impact commuter flows among affordable residential areas and employment areas (discussed further in remainder of this section). The Area Median Income (AMI) for the North Port-Sarasota-Bradenton area is $70,300; based on a multiplier of 2.5 that is used as a general measure of calculating affordability, the just value of an affordable home would be $175, 750. Figure 4-4 shows median income by block group compared to median homes values, showing lower income households and lower home values near Bradenton, North Port, Parrish, South Bradenton, and south along the coast including the Venice area (excluding barrier islands). Map 4-1 combines income and housing affordability, showing where single-family homes are affordable at 100% AMI (assuming a general affordability factor of a home value at 2.5 times the AMI). These homes are mainly concentrated along the coast (not including the barrier islands) east of I-75, with concentrations near Bradenton, North Port, Sarasota, and South Venice. The map suggests that a typical household in terms of income levels has options in terms of where to locate in the Sarasota/Manatee area. Notably however, certain areas which have seen recent growth and expansion, such as Lakewood Ranch and areas east of I-75, do not appear on Map 4-1 with affordable single- family homes.

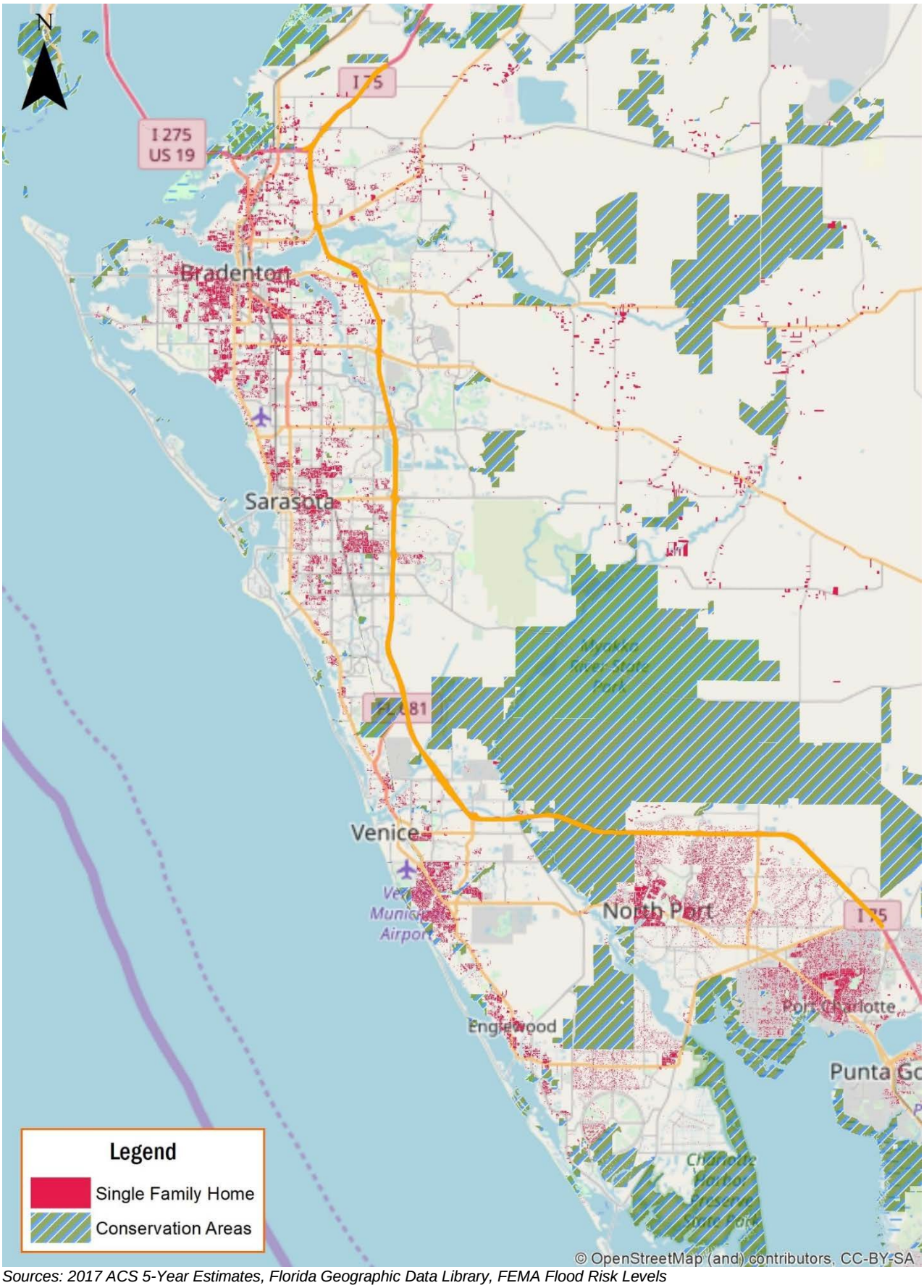
Figure 4-4: 2017 Median Household Income and Median Home Value by Block Group





Sources: 2017 ACS 5-Year Estimates, Florida Geographic Data Library

Map 4-1: Single Family Homes Available at 100% AMI



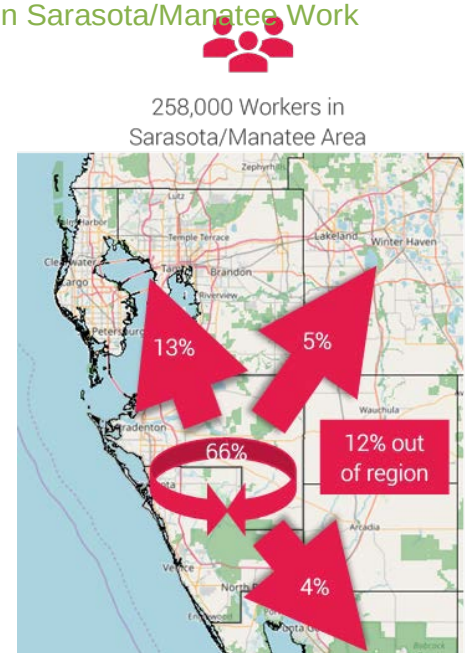
Sources: 2017 ACS 5-Year Estimates, Florida Geographic Data Library, FEMA Flood Risk Levels

Commuter Patterns

Wage differences have been found to influence the degree of commuting in Florida generally, yet a 2016 BEBR study did not find Sarasota or Manatee County to be areas that saw the strongest commuter flows.[23] This finding aligns with previous findings in this section, which suggested that the typical household in terms of income could find affordable areas within the region to live. Further analysis, detailed below, of the inflows and outflows of workers using the U.S. Census Bureau's OnTheMap tool supports these findings as well. The analysis suggests that a majority of workers and residents in the Sarasota/Manatee area are staying within the area to live and work, respectively. However, there is still a sizable degree of commuting outside the region that requires inter-regional transportation considerations. Additionally, certain sub-areas of the region, such as North Port, Englewood, and Parrish may experience heightened commuter flows likely due to the residential nature of these areas with more affordable housing and limited employment opportunities.

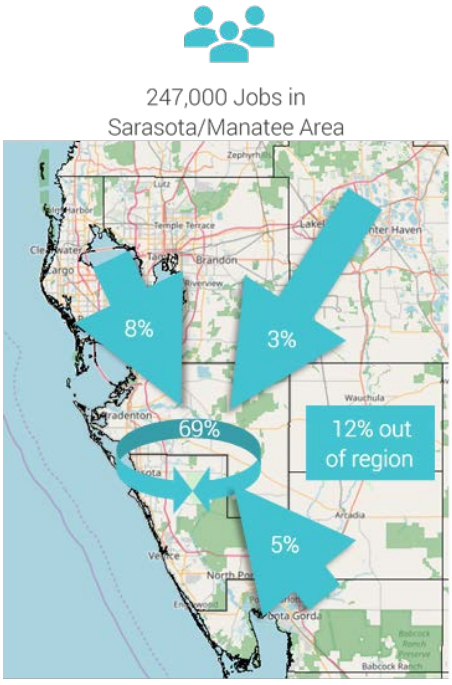
The U.S. Census Bureau's OnTheMap tool indicates that a majority of the 258,000 workers living in Sarasota/Manatee also work in the two-county region (66%); a 13% share commute to the Tampa Bay area, while a collective 9% commute to the adjacent regions of Central Florida and Southwest Florida (Figure 4-5). Flipping the analysis, of the 247,000 jobs in the Sarasota/Manatee Region, 69% percent of them are taken by people who live in the two-county region. An 8% share of the jobs are taken by people living in the Tampa Bay area, and a collective 8% live in the Central Florida and Southwest Florida regions (Figure 4-6). This indicates that the local economy provides enough jobs to support many of the workers in the two-county region and has remained accessible enough for workers to live in the same area where they work; yet there is still a larger regional sharing of workers and jobs with more workers (258,000) living within the two counties than available jobs (247,000).

Figure 4-5: Where People who Live in Sarasota/Manatee Work



Source: 2015 U.S. Census Bureau,

Figure 4-6: Where People who Work in Sarasota/Manatee Live



Source: 2015 U.S. Census Bureau, OnTheMap

The same worker and resident flow analysis was conducted for the North Port/Englewood area and Parrish to understand sub-area commuter patterns on the north and south extremes of the two-county region. Of the 24,000 workers living in the North Port/Englewood area, only 11% are employed there, while 89% work outside the area (Figure 4-7). Of the 9,800 jobs in the area, 27% of them are taken by residents of North Port/Englewood, and 63% live outside of the area (Figure 4-8). The difference in the number of jobs and the number of workers for these two census designated places is extremely high, with a shortage of 14,200 jobs.

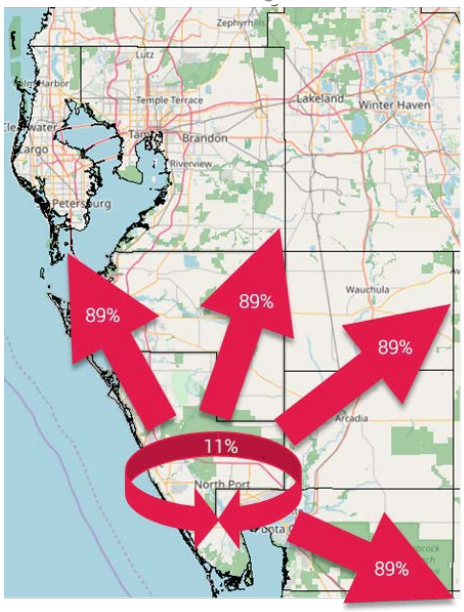
[23] Anthony Mortellaro and Hector H. Sandoval (August 17, 2016) Why Do People Commute to Other Counties to Work?, BEBR, https://www.bebr.ufl.edu/economics/website-article/why-do-people-commute-other-counties-work

Similarly, of the 10,307 workers living in Parrish, only 4.5% work in the area, while 95.5% commute elsewhere for work (Figure 4-9). Of the 2,621 jobs in the area, approximately 17.5% are filled by residents of Parrish, while 82.5% are filled by workers living elsewhere (Figure 4-10).

The difference in commuter flow percentages between areas analyzed is likely due to the residential nature of North Port, Englewood, and Parrish, with more affordable housing (see Figure 4-4) and limited employment opportunities. Regarding typical commuting lengths, they have been generally increasing in Sarasota and Manatee, in line with general trends at the state and national level (Figure 4-11). Sarasota County generally has had slightly lower commute times than Manatee, but within a few minutes. In terms of method for commuting, driving along strongly predominates among other methods, although telecommuting still represents a notable percentage along with carpooling (Table 4-1).

Figure 4-7: Where People who Live in North Port/Englewood Work

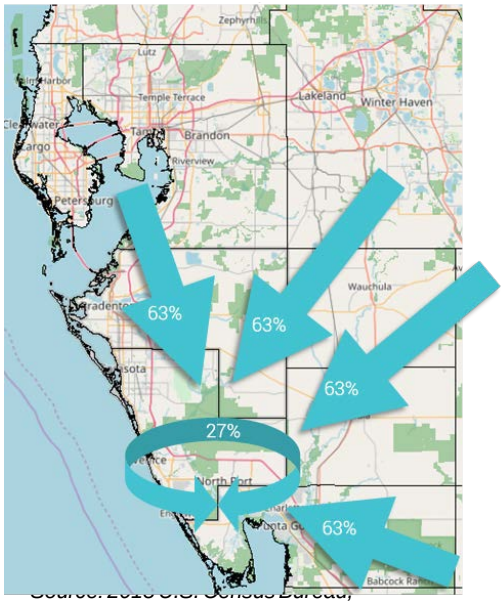
24,007 Workers in North Port/Englewood



Source: 2015 U.S. Census Bureau,

Figure 4-8: Where People who Work in North Port/Englewood Live

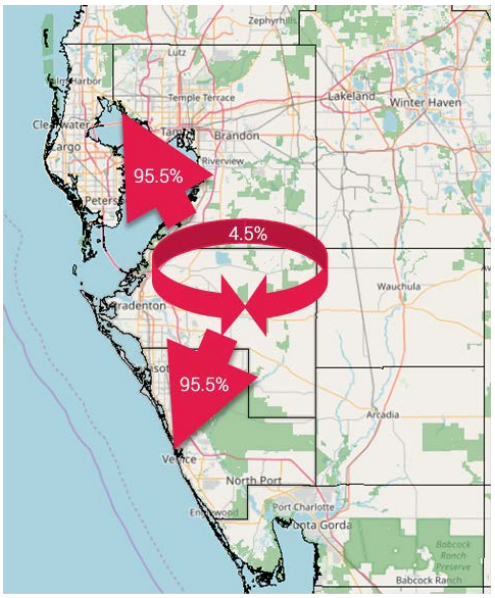
9,756 Jobs in North Port/Englewood



OnTheMap

Figure 4-9: Where People who Live in Parrish Work

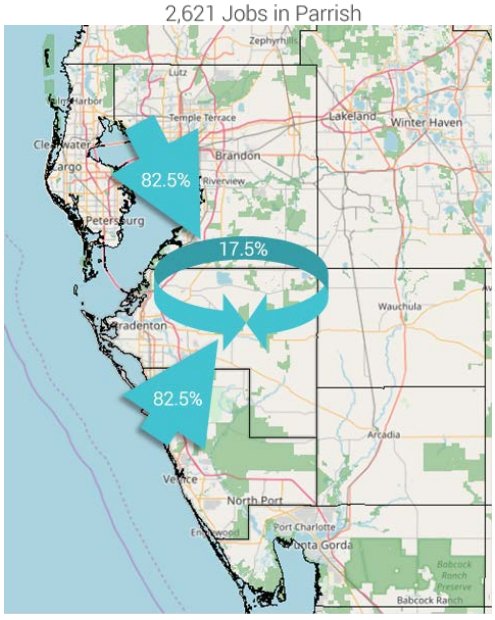
10,307 Workers Living in Parrish



Source: 2015 U.S. Census Bureau, OnTheMap

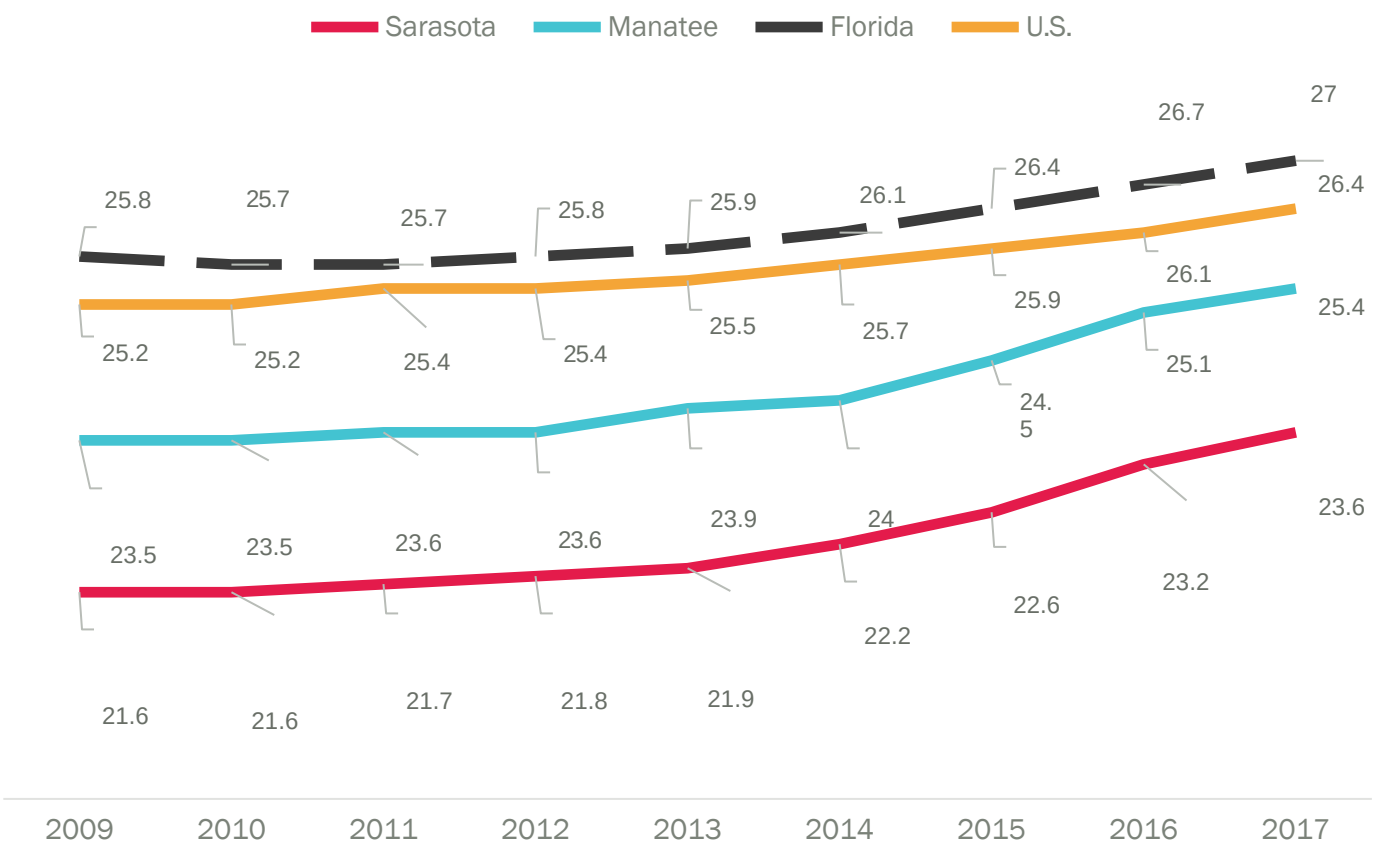
Figure 4-10: Where People who Work in Parrish Live

2,621 Jobs in Parrish



Source: 2015 U.S. Census Bureau, OnTheMap

Figure 4-11: Average Commute Time to Work (Minutes)



Source: U.S. Census Bureau, 2017 American Community Survey (5-Year Sample)

Table 4-1: Average Commute Time and Commute Method Shares

Commute Indicators	Sarasota County	Manatee County
Average Commute Time (Minutes)	23.6	25.4
Drove Alone	83.1 %	79.7 %
Carpooled	6.7%	8.7%
Public Transportation	0.7%	0.8%
Walking	0.9%	1.4%
Bicycle	1.0%	0.5%
Worked at Home	6.6%	7.5%

Source: U.S. Census Bureau, 2017 American Community Survey (5-Year Sample)

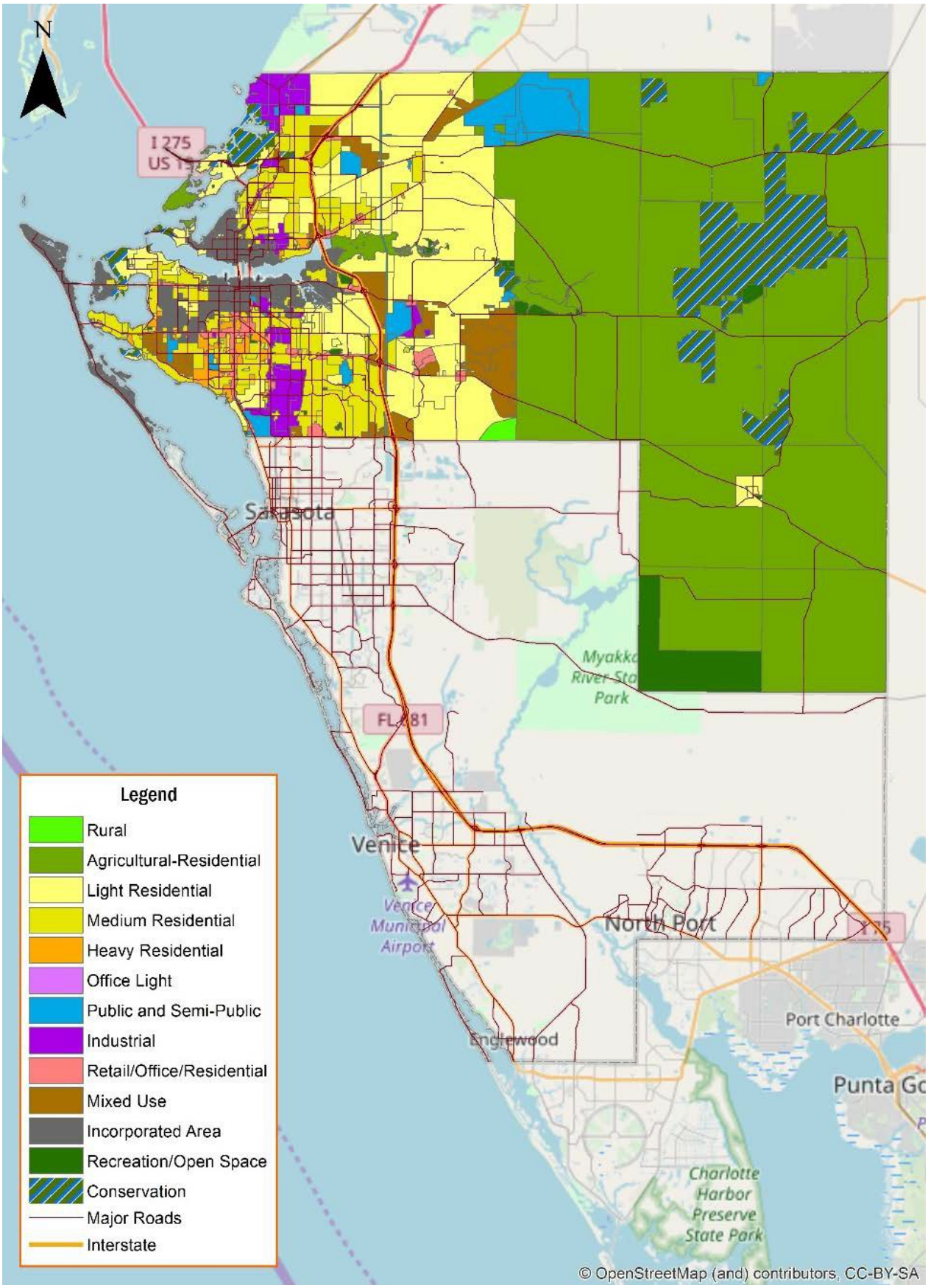
Development Regulations

The degree of development planned for and allowed by regulations will also influence the accommodation of growth and employment. A high-level way of assessing this potential is by looking at future land use designations. This analysis focuses on the future land use planning of the unincorporated counties, given that incorporated areas are generally located west of I-75 where significant population growth has already occurred and assuming that these areas will continue to act as centers of employment and residential accommodation during this planning period. Maps 4-2 and 4-3 show the future land use for Sarasota and Manatee Counties.

Most of the rural, conservation, agricultural, or open space land is east of I-75; Manatee County allows a sizable amount of residential and mixed-use west of I-75, in the Parrish area, and south of Parrish. Much of the future land use for Manatee County that is not agricultural-residential, conservation, or recreation/open space land to the east is a residential designation ranging from 1 to 20 in maximum gross potential density (DU/GA), depending in part on additional locational factors (e.g., along urban corridors). Much of the future land use designation for unincorporated Sarasota County that is not rural or conservation land is moderate density residential, ranging from two to five units per acre.

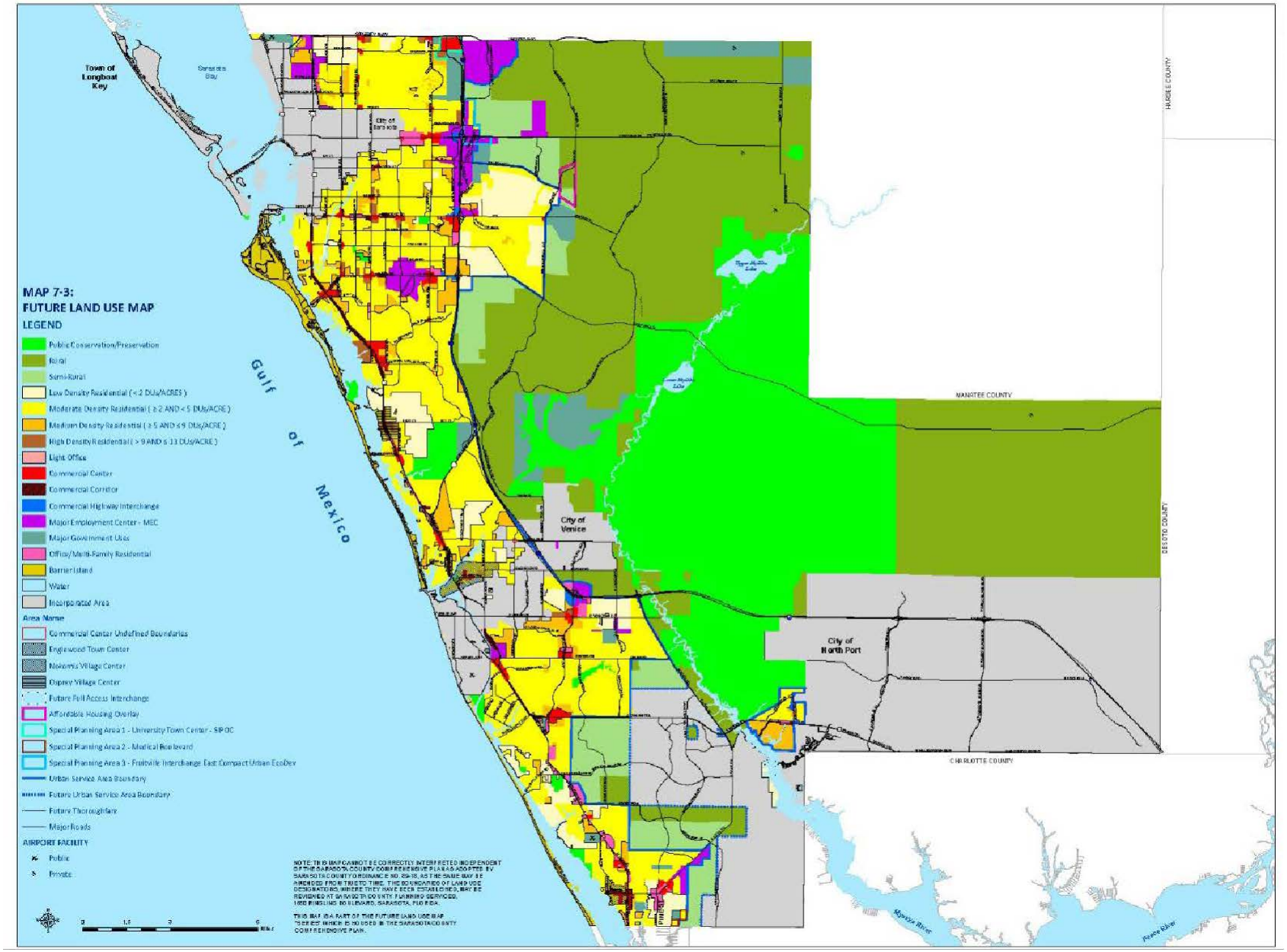
Additionally, there are programs in each County that further promote compact development. Sarasota County has a Resource Management Area system from Sarasota 2050 that is an incentive-based overlay on the Future Land Use Map to encourage compact development, among other goals. It provides guidance for designated sub-areas within the county (shown on Map 4-4). Incentives and programs associated with this effort include a Transfer of Development Rights program, Purchase of Development Rights, and Conservation Subdivision design (clustering of housing units in rural areas to create protected open space). Details are provided in the County Comprehensive Plan. Manatee County offers a Transfer of Development Rights program for more targeted purposes to transfer units to certain affordable housing developments, promoting a mix of incomes (see Section 545.2(I) of its Land Development Code).

Map 4-2: Manatee County Future Land Use



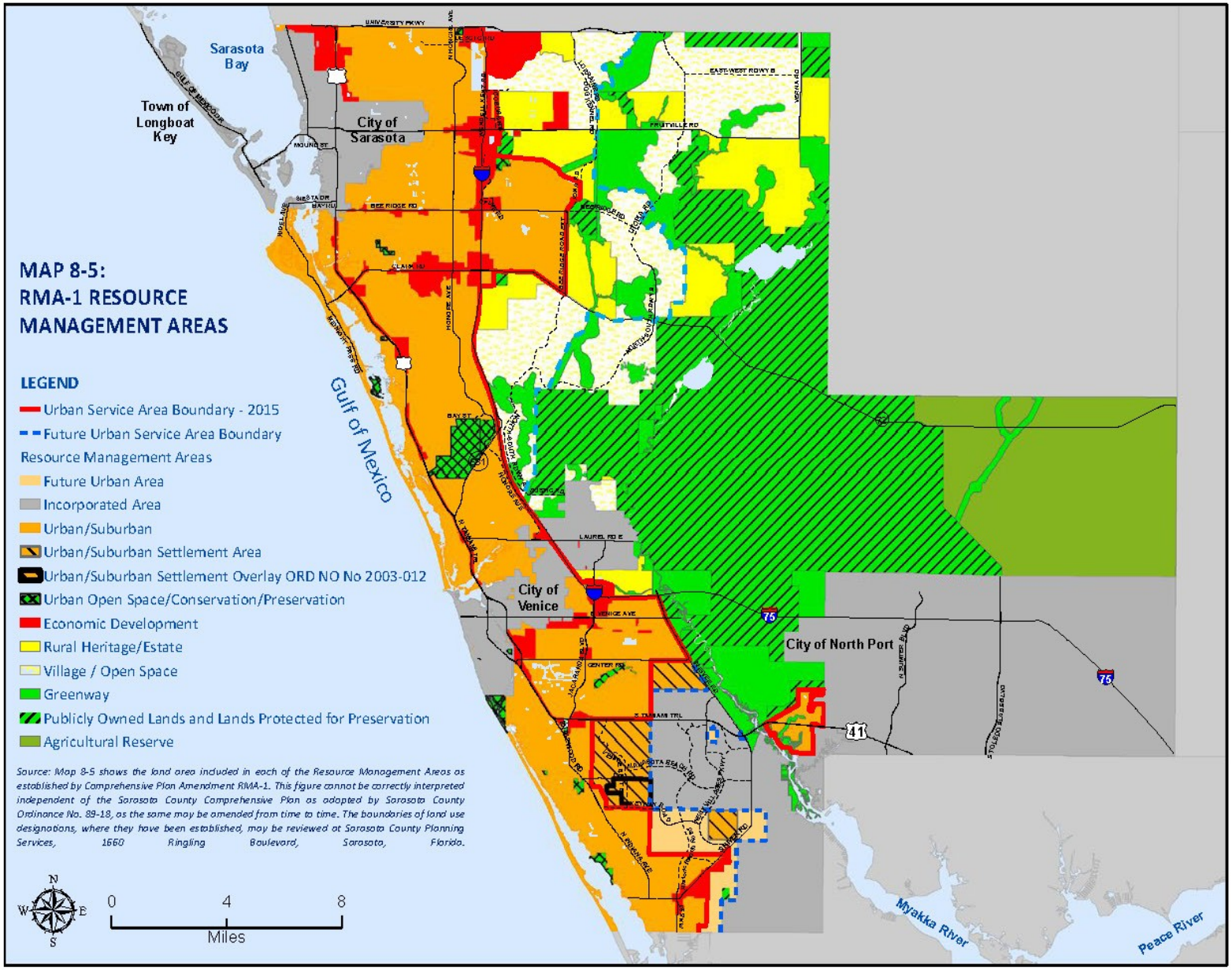
Source: Manatee County

Map 4-3: Sarasota County Future Land Use



Source: Sarasota County Comprehensive Plan 2016

Map 4-4: Sarasota County Resource Management Areas



Source: Sarasota County Comprehensive Plan 2016

5.0 TECHNOLOGY AND INNOVATION

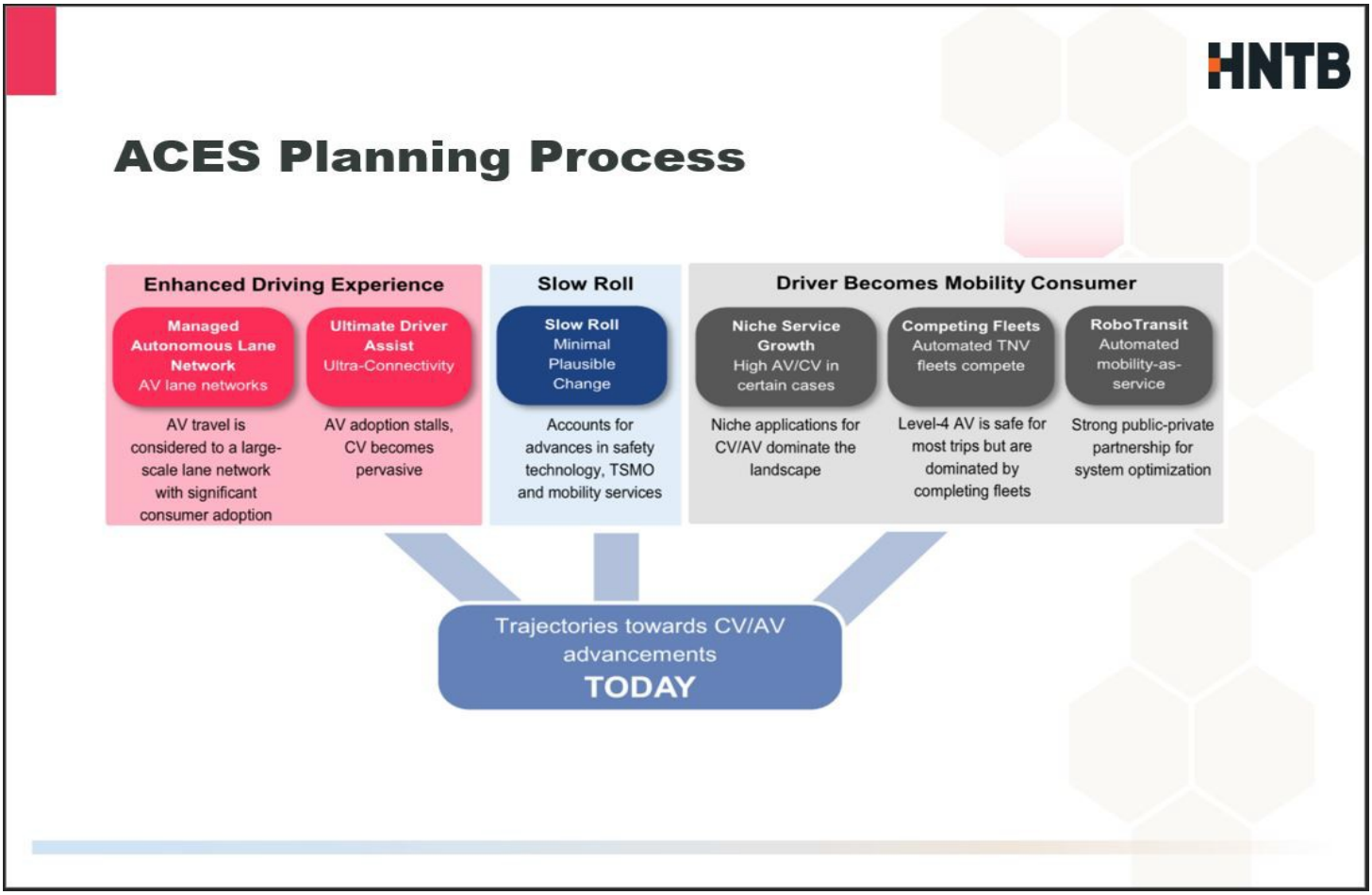
ACES

The ACES acronym stands for a collection of technological innovations occurring in vehicles that fall into the categories of:

- Automated - vehicle guiding itself with little or no human input
- Connected - vehicles linking to other devices to improve safety and/or efficiency
- Electric – vehicles using one or more electric motors for propulsion
- Shared-use – vehicles used and not necessarily owned by more than one person or organization[24]

Different scenarios for adopting these technologies are shown in Figure 5-1, based on information from the January 28, 2019 TransForum conference.

Figure 5-1: ACES Scenarios



Source: Ben Walker, HNTB (January 28, 2019) Preparing for ACES: Automated/Electric/Connected/Shared-Use Vehicles, TransForum conference presentation; Venice, FL. Available at: https://www.mympo.org/m/mandates/lrtp/transform-tomorrow.

[24] Ben Walker, HNTB (January 28, 2019) Preparing for ACES: Automated/Electric/Connected/Shared-Use Vehicles, TransForum conference presentation; Venice, FL. Available at: https://www.mympo.org/m/mandates/lrtp/transform-tomorrow.

HNTB's 2019 TransForum presentation on ACES summarized many of the opportunities and challenges associated with these different scenarios.[25] Enhanced Driving Experience scenarios include managed autonomous vehicle lane networks that would require significant market penetration of autonomous vehicles and good coverage but wouldn't necessarily require vehicle to vehicle communication. The Ultimate Driver Assist scenario relies more heavily on connected vehicles, which could potentially reduce accidents, allow for better and more efficient use of roadway and parking infrastructure, and improve timeliness of transit and travel.

Under the Slow Roll scenario, vehicle ownership and usage maintain current trends with incremental advances in such improvements as connected vehicles, safety, and congestion management. This approach may include Transportation Systems Management and Operations (TSMO) improvements.

The Driver Becomes Mobility Consumer scenarios incorporate the shared vehicle approaches. This approach may occur through niche markets/providers that may adopt significant levels of autonomous or connected vehicle technology. Shared vehicle companies may also become predominant providers with autonomous vehicles, with or without a heavy emphasis on connected vehicles. These approaches have the potential to impact size and location of parking spaces, attainable density, design of streetscape and building entrances. With scenarios adopting all the available technologies, there may be the repurposing of garages and elimination of need for signs and signals. These approaches can improve safety and efficient use of infrastructure. They may also lead to more vehicles, higher speeds, higher vehicle miles traveled, and more zero-occupant trips.

Considerations to keep in mind with the application of these technologies include:

- equity in adoption
- the potential need for heightened engagement and new/more complex ways of communicating
- the cost not only to implement the technology, but also to maintain it
- the expansion of data collection and uses, in conjunction with the consideration of data privacy and security
- the potential need for pilot projects to gather locally meaningful data
- the need for more charging infrastructure with the increasing use of electric vehicles in any scenario
- opportunities to increase safety, although transitioning to partial automation may increase risks associated with distracted driving
- the possibility of reduced transit demand but better transit service provision
- the potential role for MPOs as "mobility managers" during the adoption of ACES technologies
- potential reductions in revenues from parking, traffic violations, or fuel tax
- increased opportunities for performance-based planning

FDOT, District 1 highlights several more specific potential applications of connected vehicle technology for consideration:[26]

- Traffic signal change warning
- Approaching emergency vehicle warning
- Blind spot warnings
- Forward collision warnings

[25] Ben Walker, HNTB (January 28, 2019) Preparing for ACES: Automated/Electric/Connected/Shared-Use Vehicles, TransForum conference presentation; Venice, FL. Available at: https://www.mympo.org/m/mandates/lrtp/transform-tomorrow.

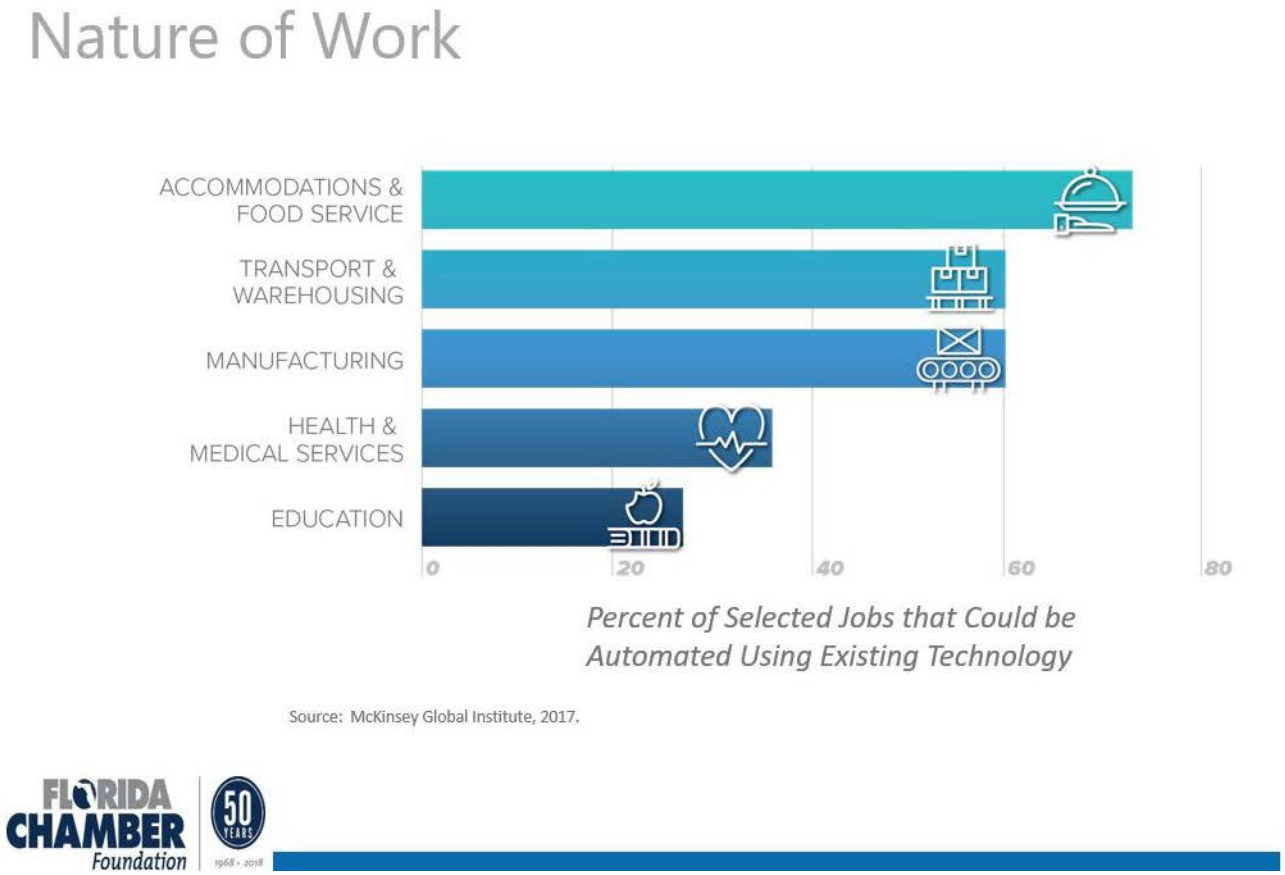
[26] Applications quoted from Wayne Gaither, Florida Department of Transportation, District 1 (2019) Florida Department of Transportation Now and the Future, TransForum conference presentation; Venice, FL. Available at: https://www.mympo.org/m/mandates/lrtp/transform-tomorrow.

- Sudden braking ahead warnings
- Do not pass warnings
- Transit or emergency vehicle signal priority
- Electronic parking and toll payments
- Commercial vehicle clearance and safety inspections
- Traffic and travel condition data to improve traveler information

Job Automation

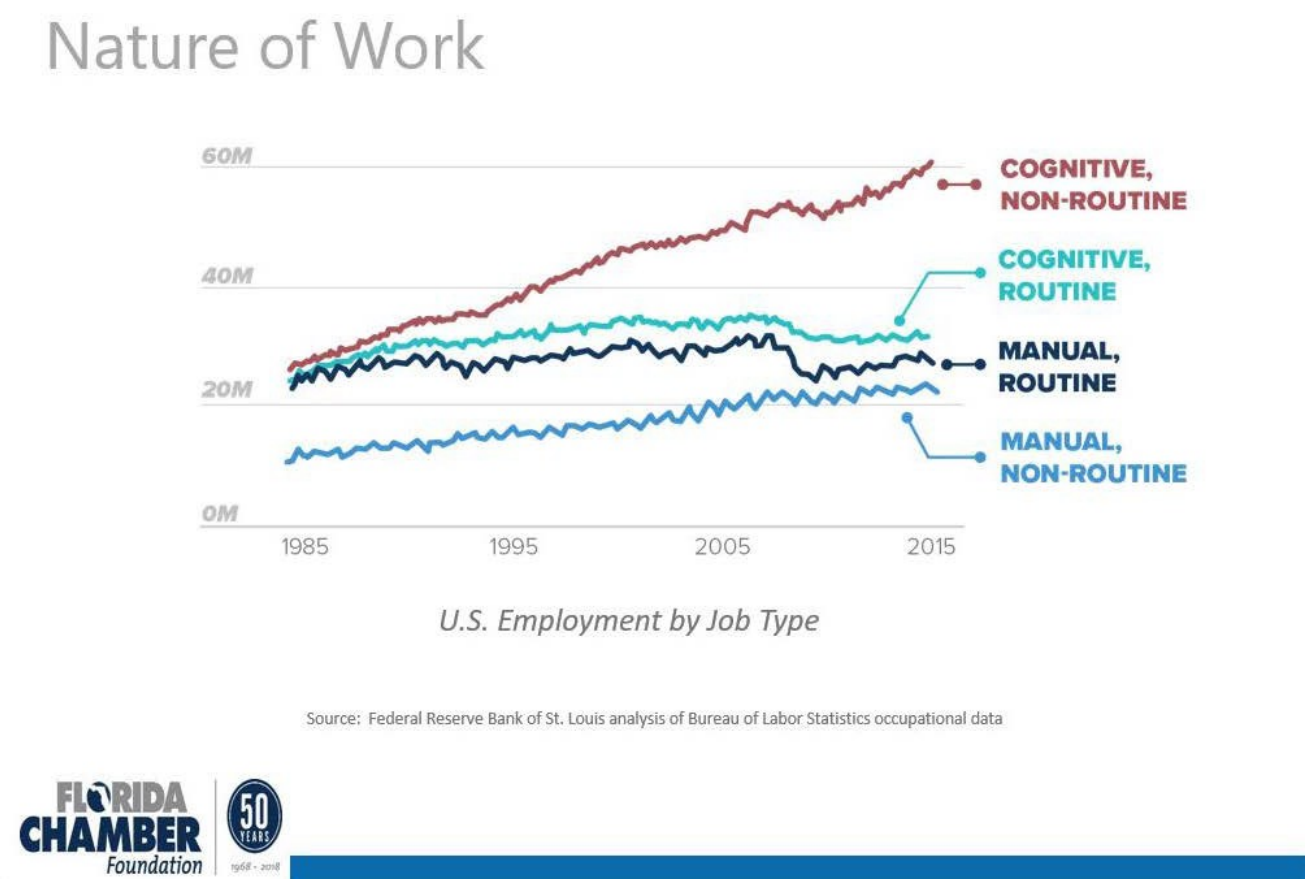
With new technology comes the ability to replace human work with that of technology. Figure 5-2 shows the percentage of jobs in selected industries that could be automated using existing technology. Note that several of the industries listed, including accommodations and food service, transport and warehousing, and health and medical services, relate directly to key economic activities mentioned for the state and/or region, such as tourism, retiree-related industries, and freight and logistics related to Port Manatee. Figure 5-3 shows how routine work, whether cognitive or manual, is stagnating in the general U.S. employment landscape, while non- routine labor has been on the rise. This non-routine work is likely generally more difficult to automate and/or outsource, as well. As a result, employment growth may be affected by the type of work the state and region can attract in terms of routine and non-routine, and whether there are workers with skills to complete non- routine work, which is likely on the rise.

Figure 5-2: Percent of Jobs in Selected Industries that Could be Automated Using Existing Technology



Source: Alice Ancona, Florida Chamber of Commerce (January 28, 2019) Preparing for Disruption and Transformation; TransForum conference presentation; Venice, FL. Available at: https://www.mympo.org/m/mandates/lrtp/transform-tomorrow.

Figure 5-3: Routine and Non-Routine Employment Trends in U.S. Economy



Source: Alice Ancona, Florida Chamber of Commerce (January 28, 2019) Preparing for Disruption and Transformation; TransForum conference presentation; Venice, FL. Available at: https://www.mympo.org/m/mandates/lrtp/transform-tomorrow.

E-Commerce

The Florida Chamber of Commerce notes that E-commerce sales are projected to quadruple over the next decade.[27] This method of virtual purchase with delivery has major implications for freight, transportation needs for delivery including the final mile, infrastructure, and retail/commercial uses. How these aspects of enabling E- commerce will change also depends on how they are integrated into other innovations, such as ACES technology discussed in a previous section. For example, automated sidewalk robots or other small autonomous vehicles may be used for E-commerce deliveries and change needs related to and uses of transportation infrastructure.

6.0 SAFETY

Safety is a consideration in identifying future transportation projects or needs. The MPO is monitoring crashes and tracking trends in five required safety measures:

- Number of fatalities
- Rate of fatalities (measured against roadway traffic volumes)
- Number of serious injuries

[27] Alice Ancona, Florida Chamber of Commerce (January 28, 2019) Preparing for Disruption and Transformation; TransForum conference presentation; Venice, FL. Available at: https://www.mympo.org/m/mandates/lrtp/transform-tomorrow.

- Rate of serious injuries (measured against roadway traffic volumes)
- Number of non-motorized (bicycle and pedestrian) fatalities and serious injuries

The following summarizes trends and key findings from the MPO 2018 Safety Assessment Report for each theme; it also includes a summary of key corridors identified for future safety improvements.

Number of Fatalities

During the time period from 2010 to 2016, fatalities trended upwards. If this trend continues, the number of fatalities in the metropolitan area would be on par with 2016 fatalities (139 annually), which are the highest in more than a decade. Additionally, the 5-year averages have steadily increased since 2013 (with a 2016 5-year average of 102), further demonstrating the continued increase in the number of annual fatalities. Based on these trends, the target established for the 2014-2018 5-year average number of fatalities is 121.

Data provided by FDOT to the MPOs indicates that fatalities have increased statewide on an annual basis starting in 2013 placing the Sarasota/Manatee MPO in a similar situation as the other MPOs and counties in Florida. Florida is also not in a unique position. Across the country, the trend of increasing fatalities and serious injuries has been found to coincide with the reversal of the economic downturn in the 2009/2010 timeframe and the recent economic improvements. As the economy improved, gas prices have stabilized, and people have returned to driving as their means of transportation, resulting in greater opportunities for conflicts and crashes.

Rate of Fatalities

Fatality rates are calculated based on traffic volumes as a means of normalizing crash severity results against roadway conditions. Expressed as crashes per 100 million vehicle miles traveled (VMT), the fatality rate provides a basis for comparing crash severity conditions across varying geographic areas or roadway conditions. Since 2010, the rate of fatalities has generally trended upwards, with the 2016 rate calculated at 1.700 and the 5-years average calculated at 1.318. With these recent increases in the number of fatalities, the rate for the Sarasota/Manatee MPO exceeded the statewide average as of 2016, circumstances that are expected to continue in the years following the study. Based on these trends, the target established for the 2014-2018 5-year average fatality rate is 1.670.

Number of Serious Injuries

The number of serious injuries remained fairly level between 2010 through 2014; between 2014 and 2016 however, the number of annual serious injuries dramatically increased (1,858 in 2016). This increase has occurred throughout Florida, and the Sarasota/Manatee MPO is one of ten MPOs with a serious injury rate higher than the statewide average. The 5-year averages have steadily increased since 2013 as well (1,136 in 2016), further demonstrating the continued rise of serious injuries in recent years. Based on these trends, the target established for the 2014-2018 5-year average number of serious injuries is 1,540.

Rate of Serious Injuries

Serious injury rates are calculated using the same methodology described previously for the fatality rate. The rate of serious injuries increased steadily between 2013 and 2016 (22.721 in 2016, with a 5-year average of 14.568). The steep increase in the rate of serious injury crashes occurred during a time when travel or VMT was increasing as well. Based on these trends, the target established for the 2014-2018 5-year average serious injury rate is 19.366.

Number of Non-Motorized Fatalities and Serious Injuries

Fatalities and serious injury crashes involving non-motorized vehicles (bicyclists and pedestrians) represent a subset of the fatality and serious injury crashes. Like the fatality and serious injury performance measures, the

non-motorized crashes have increased in recent years with the expectation that these crashes could continue to increase (214 in 2016, with a 5-year average of 168). Based on these trends, the target established for the 2014-2018 5-year average number of non-motorized fatalities and serious injuries is 199.

High Priority Crash Locations and Mitigation Strategies

Table 6-1 and Map 6-1 show the top 20 high priority crash locations determined by a desktop review from the Safety Assessment Report. Strategies suggested to mitigate for crashes include those related to:

- Addition of traffic signal backplates
- Traffic signal head placement and visibility
- Flashing yellow or red arrows
- Access management
- Street and intersection lighting
- Sidewalk connections
- Signage
- Delineation of edge lines and curbs
- Left-turn traffic control for signalized intersections
- Street name signs
- Pedestrian crossings
- High visibility crosswalks
- Reduction of left-turn conflict intersections
- Route shield markings at major freeway junctions
- Use of highly retroreflective marking material

Additionally, the following four locations were recommended for roads safety audit field reviews. These reviews were completed, and projects added to the 2018 and 2019 project priorities.

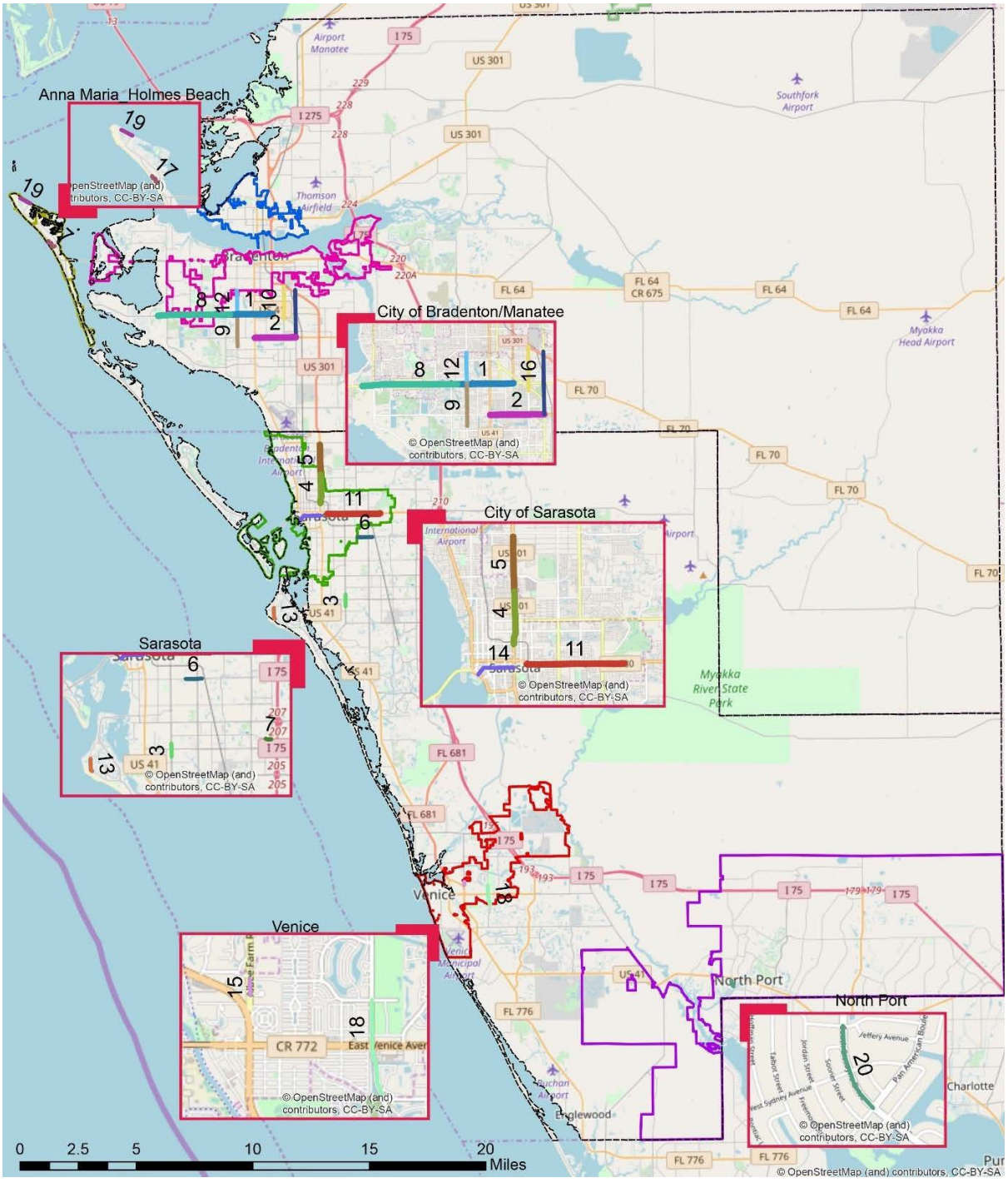
- 44th Ave W / Cortez Road from 82nd Ave West to 1st Ave West
- 53rd Ave West (SR 70) from 14th St West (US 41) to 15th St East
- Washington Blvd (US 301) from 10th St to Desoto Rd
- Fruitville Rd (SR 780) from Lime Ave to Beneva Rd

Table 6-1: Top 20 High Priority Crash Locations

Location No.	Jurisdiction	ON STREET	FROM	TO
1	Manatee County	Cortez Rd/44th Ave W	Calm Harbor St	1st St W
2	Manatee County	SR 70/53rd Ave	US 41/ 14th St W	301 Blvd/15th St E
3	Sarasota County	Swift Rd	Parma St	Grand Cayman
4	City of Sarasota	US 301/Washington Blvd	10th St	30th St
5	City of Sarasota / Sarasota County	US 301/Washington Blvd	30th St	Before Desoto Rd
6	Sarasota County	Bahia Vista St	Carter Ave	Grand Blvd
7	Sarasota County	Wilkinson Rd	Atwood Cay Cir	Cattleman Rd
8	Manatee County	Cortez Rd/44th Ave W	82nd St W	30th St W
9	Manatee County	26th St W	56th Ave	Cortez Rd/44th Ave W
10	Manatee County	9th St E	Twin Oaks Blvd	US 301
11	City of Sarasota	SR 780/Fruitville Rd	School Ave	Bearded Oaks Dr
12	Manatee County	26th Street W	Cortez Rd/44th Ave W	26th Ave W
13	Sarasota County	Ocean Blvd/Beach Rd	Tenacity Ln	Hour Glass Way
14	City of Sarasota	Main St	Bayfront Dr	US 301/ Washington Blvd
15	Venice	Albee Farm Rd	Bay Breeze Health and Rehab Center Drwy	W. Lucaya Ave
16	Manatee County	15th St E (301 Blvd E)	SR 70 (53rd Ave)	26th Ave E
17	Holmes Beach	Gulf Dr	58th St	Holmes Blvd
18	Venice	Pinebrook Rd	Hatchett Creek Rd	Lucaya Ave
19	Anna Maria	N. Bay Blvd	Pine Ave	Poinsettia Rd
20	North Port	S. Biscayne Blvd	E Hyde Park Ave	Pan American Blvd

Source: Sarasota/Manatee MPO, 2018 Safety Assessment Report; Note: The locations listed on this table are not in rank order.

Map 6-1: Top 20 High Priority Crash Locations



Source: Sarasota/Manatee MPO, 2018 Safety Assessment Report