

# MIAMI-DADE TPO TRANSPORTATION PERFORMANCE TRENDS IN MIAMI-DADE COUNTY



Miami-Dade Transportation  
Planning Organization

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# Introduction

## THE MIAMI-DADE TRANSPORTATION PLANNING ORGANIZATION

The Miami-Dade Transportation Planning Organization (TPO) plays a critical role in supporting safe, equitable, and efficient transportation in Miami-Dade County. The TPO matches local transportation projects with federal funding, facilitating federally-mandated transportation planning requirements, and prioritizing projects with the greatest safety and mobility benefits.

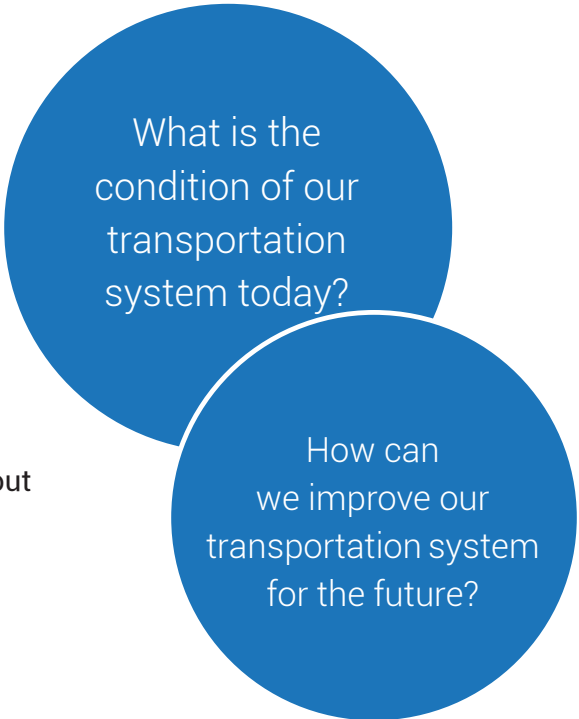
## ASSESSING THE SYSTEM

By assessing the different transportation modes in Miami-Dade County, this Transportation Performance report gives planners, city officials, and the public a birds' eye view of how the county's State Highway and public transit system measures up against established performance targets and goals.

Measuring performance through system-wide data enables better planning and more strategic funding prioritization in the future. Taking stock of current conditions provides a snapshot of Miami-Dade's interconnected transportation system in the context of the county's larger demographic and movement patterns. A macro-level perspective combined with data-driven performance measures helps our planning partners decide where and how state and federal funding should be spent to improve and grow a safe, efficient, and multimodal transportation system in Miami-Dade County.

This report also documents the TPO's implementation of federally required performance monitoring and target-setting practices. A living document, the report is reviewed annually and updated to provide a vital link between the TPO's Long-Range Transportation Plan (LRTP), the shorter-term Transportation Improvement Program (TIP), and the TPO's annual List of Program Priorities (LOPP). The report, LRTP, TIP, and prioritization processes work together to identify mobility issues and align them with federal, state, and local goals and objectives as well as funding opportunities.

Ultimately, this report helps illuminate the big picture today so that safety and mobility can be improved throughout Miami-Dade County tomorrow.



What is the  
condition of our  
transportation  
system today?

How can  
we improve our  
transportation system  
for the future?

# Factors Affecting Mobility

There are many factors affecting mobility in Miami-Dade County, including some that are directly related to the transportation system and its operation and others that are external, with no direct relationship to transportation. This section of the report highlights some of those factors, illustrating the interrelationships between some of the factors. Vehicle traffic related metrics are reported for the State Highway System only in this and subsequent sections of the report.

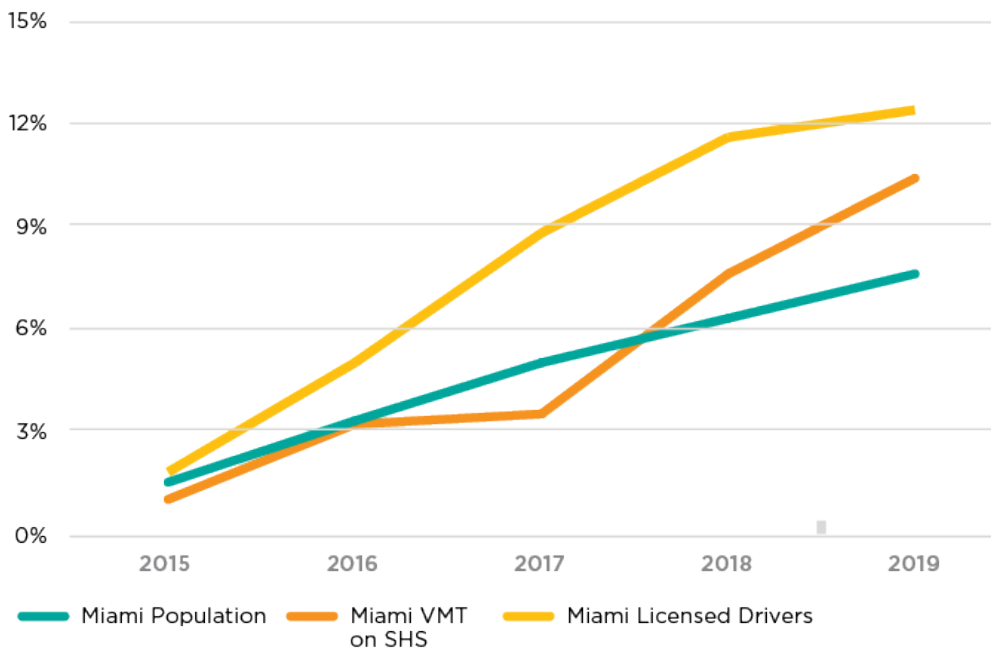
## MIAMI-DADE FACTORS AFFECTING MOBILITY

- Population, Vehicle Miles Traveled (VMT), and licensed drivers
- Gross Domestic Product (GDP) and VMT
- Transportation Network Companies (TNCs)
- Reductions in Transit Ridership
- Streamlined Fixed Route Bus Service
- Local Micromobility Services
- State Highway System Condition
- Increases in Telecommuting

## VEHICLE MILES TRAVELED (VMT) AND LICENSED DRIVERS GROW FASTER THAN POPULATION

Miami-Dade's population has seen annual increases of approximately 1.6 percent between 2014 and 2019, while the number of licensed drivers has increased by 2.5 percent and VMT by just over 2.0 percent over the same period. This is a trend that reflects the continued growth of residential development in the fringe areas of the county, leading to more miles driven on a per capita basis.

FIGURE 1. DAILY VMT, POPULATION, AND LICENSED DRIVERS



Sources: FDOT Transportation Data and Analytics Office - Public Road Mileage and Travel Report

The Florida Department of Highway Safety and Motor Vehicles – Driver and Vehicle Reports & Statistics

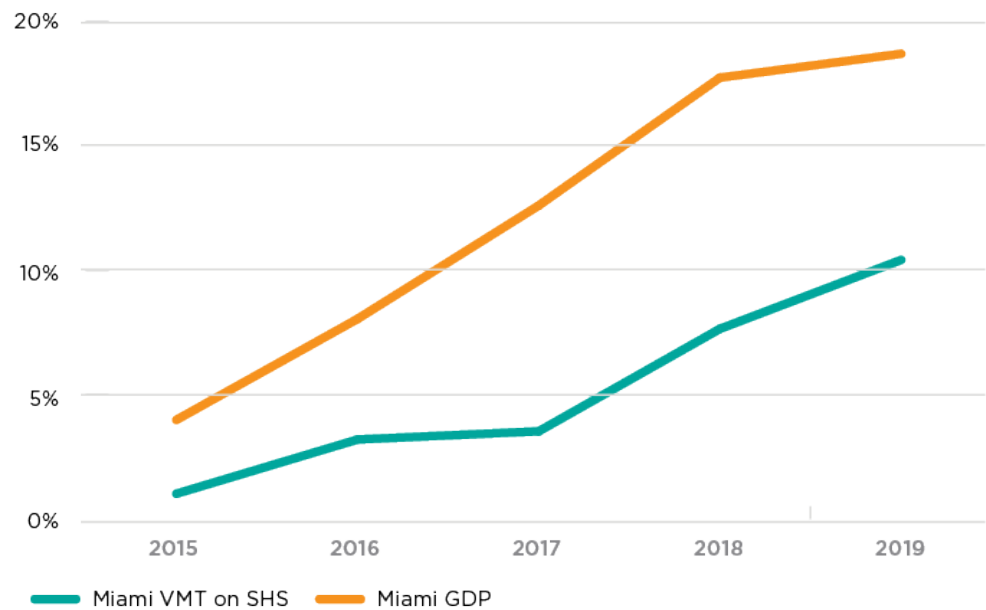
University of Florida's Bureau of Economic and Business Research (BEBR) - Florida Estimates of Population



## GROSS DOMESTIC PRODUCT (GDP) AND VMT HAVE CONTINUED TO GROW SINCE 2015

Miami-Dade's GDP has grown at an annualized rate of 4 percent since 2015, adding considerable demand to the transportation system. VMT has also grown steadily, although at a lower annualized rate of 2 percent, compared to GDP.

FIGURE 2. VMT AND GDP



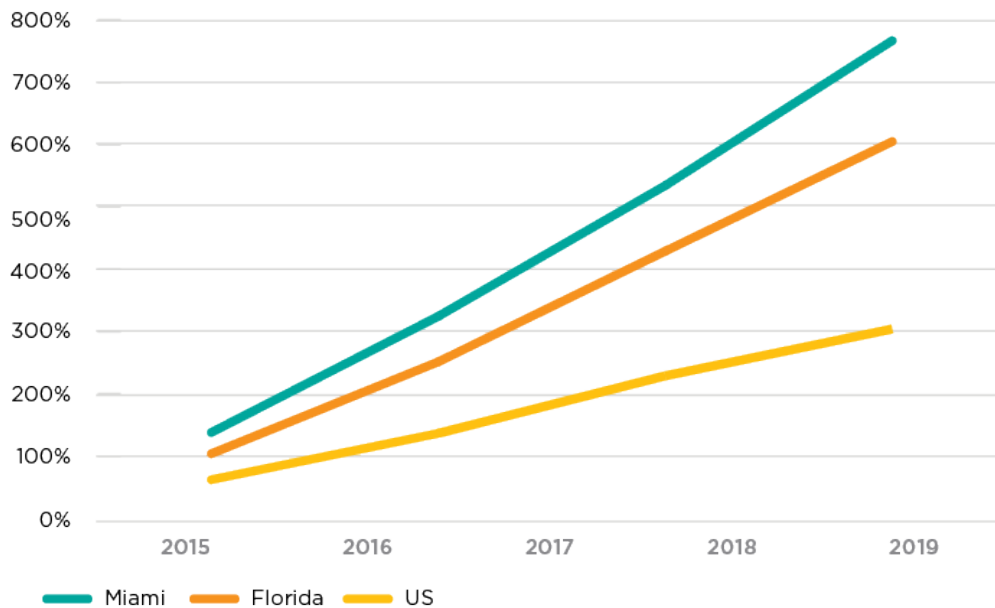
Sources: *FDOT Transportation Data and Analytics Office - Public Road Mileage and Travel Report*

*U.S. Bureau of Economic Analysis – Gross Domestic Product (GDP) by county*

## TRANSPORTATION NETWORK COMPANIES (TNCS) DOMINATE GROWTH IN SELF-EMPLOYED TAXI SERVICES

Since the advent of TNCs like Uber and Lyft in 2009 and 2012, respectively, the growth of this transportation “mode” has exploded. Growth in Miami-Dade County of more than 200% between 2014 and 2018 surpassed statewide and nationwide growth by a considerable margin. The data in Figure 3 represents growth in total number of TNC drivers. While difficult to distinguish TNC growth in overall traffic, it indubitably accounts for a significant portion.

FIGURE 3. SELF-EMPLOYED TAXI AND LIMOUSINE SERVICES

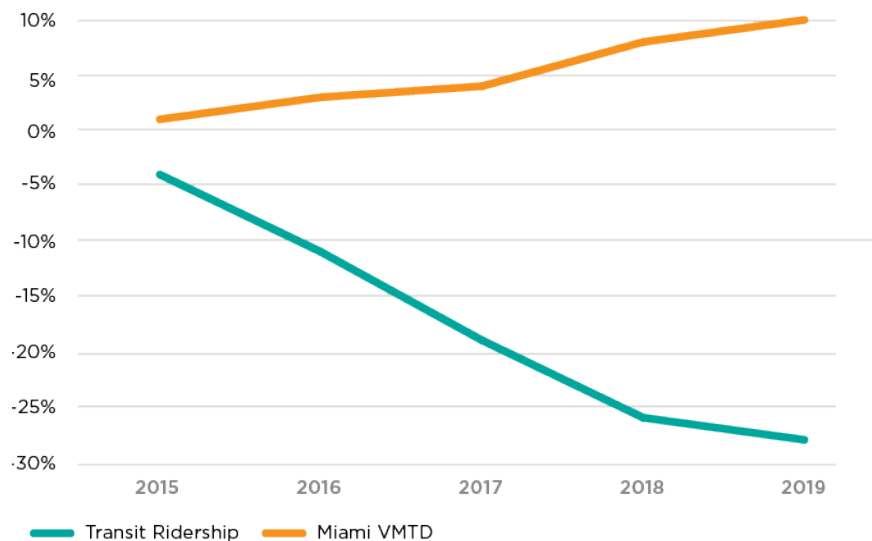


Source: U.S. Census Bureau – Non-Employer Statistics, taxi and limousine service (NAICS 4853) sector

## TRANSIT RIDERSHIP HAS DECLINED STEADILY

The growth in TNCs is very closely correlated to declines in transit ridership in recent years, particularly bus ridership. Other factors, including continued low density suburban expansion and gentrification of urban core areas of Miami-Dade County, have contributed to this trend.<sup>1</sup>

FIGURE 4. TRANSIT RIDERSHIP AND VMT



Sources: FDOT Transportation Data and Analytics Office - Public Road Mileage and Travel Report

Federal Transit Administration National Transit Database

## MIAMI-DADE'S FIXED ROUTE BUS SYSTEM IS UNDERGOING AN OVERHAUL

Since 2018, Miami-Dade County has been working toward a re-envisioned bus system that provides faster, more accessible service to customers. The Better Bus Network project proposes high frequency, streamlined service focused on major corridors, increasing access to jobs, low-income people, and Miami-Dade residents as a whole. The new system will offer a more competitive travel option than current bus service, maximizing utility for residents and visitors and ultimately, ridership. Miami-Dade County expects to fully implement the system changes in the coming year.

<sup>1</sup> Bus Ridership Was in Trouble Long Before COVID-19, Study Finds ([govtech.com](https://govtech.com))

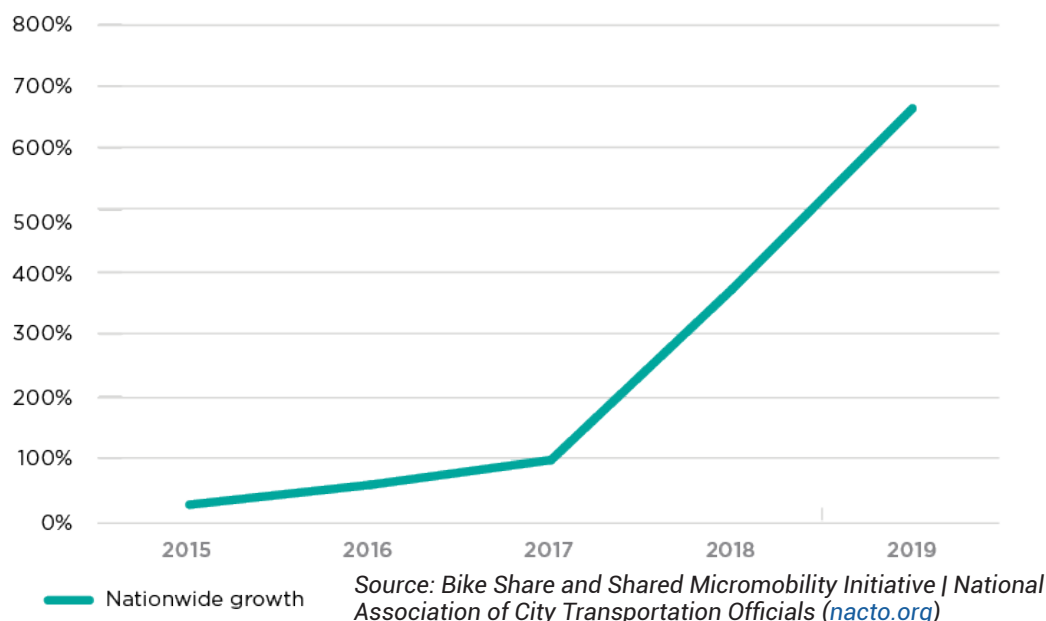
Benefits of the Better Bus Network, relative to existing bus service, include<sup>2</sup>:

- The average county resident could reach 36% more jobs in 45 minutes or less.
- The average person in poverty could reach 32% more jobs in one hour or less.
- Almost 353,000 additional county residents would be within ¼ mile of a bus route that arrives every 15 minutes or less.
- Residents in Little Haiti can reach nearly 20,000 more jobs and opportunities in 45 minutes or less.
- 216,000 more people can reach Coconut Grove in 45 minutes or less.
- From Liberty Square, you could reach 97,000 more jobs in 45 minutes or less.
- 32,000 more people can reach West Kendall Baptist Hospital in 45 minutes or less.

## SHARED MICROMOBILITY HAS GROWN MASSIVELY SINCE 2014

The shared micromobility phenomenon, which includes bicycles, E-bicycles, scooters, and other small, lightweight wheeled mechanisms, has exploded in recent years, providing an alternative mode of travel for short trips in urban areas. Nationwide data on the growth of micromobility indicates a more than 600% increase in trips using this mode since 2014. While data specific to Miami-Dade is not available, several municipalities currently feature micromobility programs, with approximately 34 square miles, or 2% of the total area of the total county land area having access to this mode.

FIGURE 5. NATIONWIDE GROWTH IN MICROMOBILITY



<sup>2</sup> Source: Final Better Bus Network and Resilience Plan - <https://www.miamidade.gov/transit/library/better-bus-network-resilience-plan.pdf>

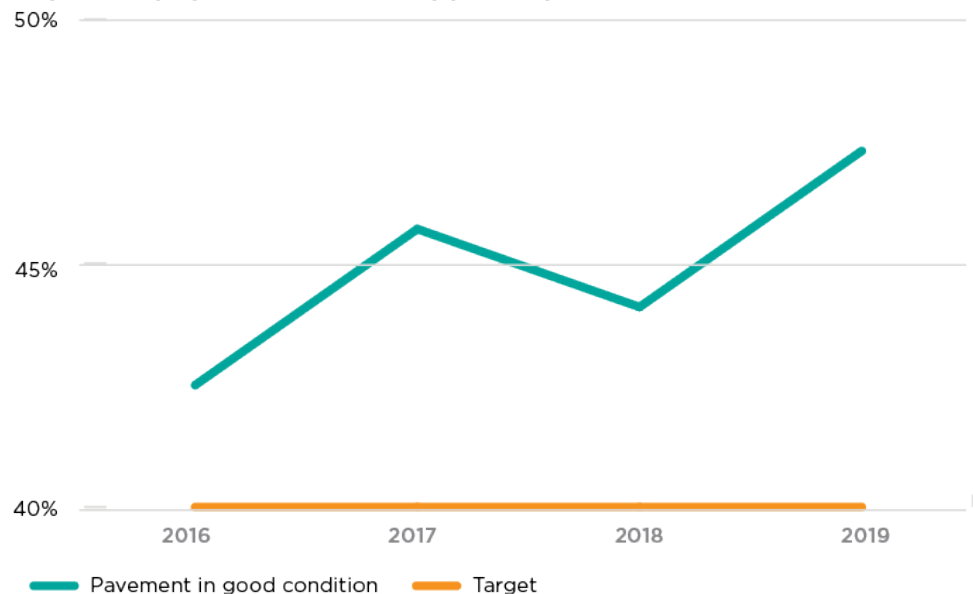
## STATE HIGHWAY PAVEMENT CONDITION EXCEEDS TARGETS

Pavement condition is critical to the safe and efficient movement of vehicles on the county's roadways. FDOT set targets of 60 percent for Interstate pavement in good condition and 40 percent for Non-Interstate roadway pavement in good condition. Miami-Dade roadways have consistently achieved these targets, with limited exceptions.

FIGURE 6. MIAMI-DADE COUNTY INTERSTATE PAVEMENT CONDITION



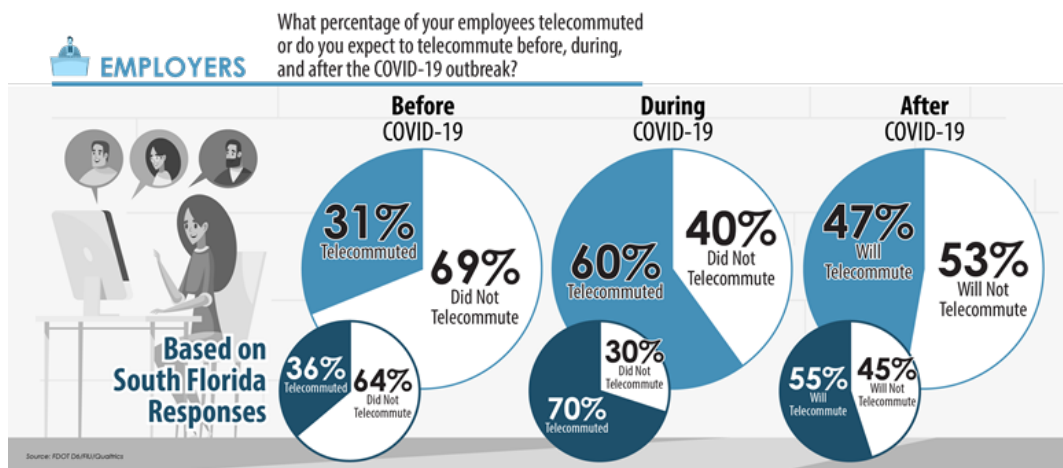
FIGURE 7. MIAMI-DADE NON-INTERSTATE NATIONAL HIGHWAY SYSTEM PAVEMENT CONDITION



Source: FDOT State Materials Office  
FDOT Office of Maintenance

## TELECOMMUTING TREND MAY SUSTAIN BEYOND PANDEMIC

Telecommuting, or working from home, expanded dramatically at the beginning of the COVID-19 pandemic reducing overall traffic by as much as 10% as of September 2020, even after most businesses had reopened. According to survey data collected by FDOT as part of a telecommuting study completed by the TPO<sup>3</sup>, telecommuting doubled during the pandemic, and is expected to sustain at more than 50 percent higher than pre-pandemic levels. According to former FDOT District 6 Secretary Jim Wolfe, the 10% reduction in traffic has resulted in significant reductions in traffic congestion.



Source: Miami-Dade TPO Telecommute Study

<sup>3</sup> <http://miamidadetpo.org/library/studies/mdtpo-telecommute-study-final-report-2021-01.pdf>

# Performance -Based Planning

Real  
improvements  
require good  
measurements.

## PERFORMANCE-BASED PLANNING & PROGRAMMING

Performance-based planning and programming helps ensure state departments of transportation as well as metropolitan and transportation planning organizations work toward local, state, and national goals. By measuring progress toward established goals, county agencies can be nimble, quickly identifying the parts of the transportation network that are functioning well and what parts need more support.

The Miami-Dade TPO has adopted performance measures that align with those set by the United States Department of Transportation (USDOT) and the Florida Department of Transportation (FDOT).

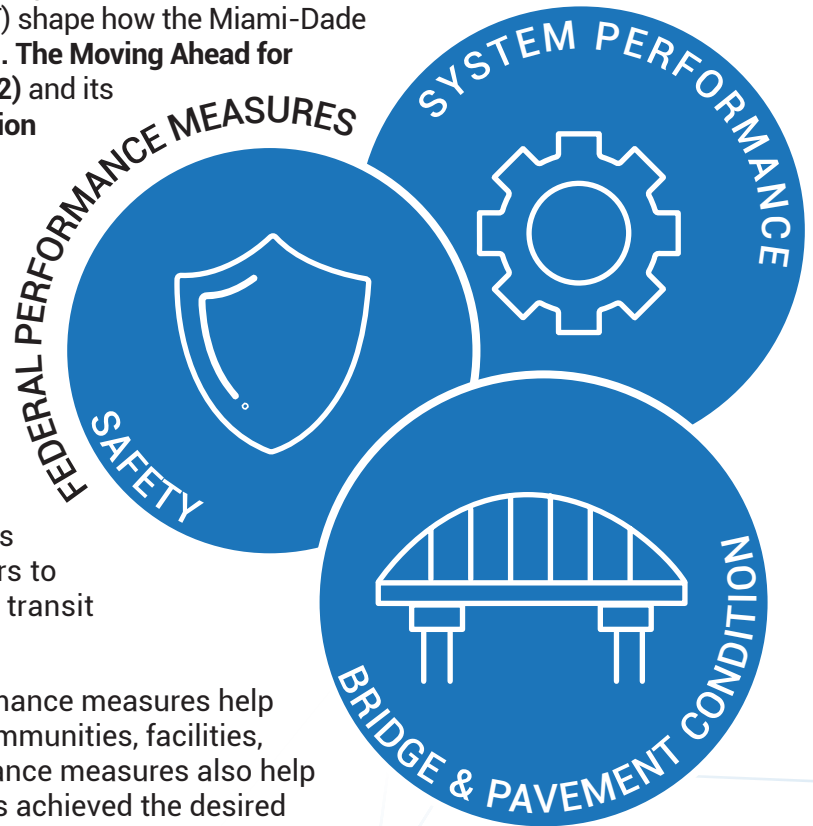


## FEDERAL PERFORMANCE MEASURES

Two successive transportation bills passed by Congress and administered by the US Department of Transportation (USDOT) shape how the Miami-Dade TPO sets and reviews its performance measures. **The Moving Ahead for Progress in the 21st Century (MAP-21) Act (2012)** and its successor, **Fixing America's Surface Transportation (FAST) Act (2015)**, require metropolitan/transportation planning organizations to incorporate performance goals, measures, and targets as they identify improvements and projects for their communities.

Federal standards require setting targets and reporting performance in three key areas: safety, bridge and pavement condition, and system reliability. FDOT and Florida's MPOs must work together to set performance targets for these areas as well as coordinate with public transportation providers to set targets for transit asset management and transit safety.

In addition to system-level monitoring, performance measures help prioritize limited financial resources for the communities, facilities, and improvements that need it most. Performance measures also help determine whether project decisions or actions achieved the desired outcome. In long-range planning efforts, performance measures can help flag instances when decision makers should change course or try another alternative. Federal regulations require roadway performance tracking and target setting for National Highway System roadways only. The data represented in the maps and figures in the Transportation System Performance section of this report include the entire State Highway System, unless otherwise noted.





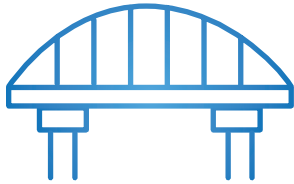
*Even one traffic death  
or severe injury is one  
too many,*

## Safety (PM1)

The USDOT requires States and MPOs to set annual performance measures that work toward fostering safe transportation systems for everyone. Because even one traffic death or severe injury is one too many, FDOT has adopted a target of zero for all federal safety performance measures, which include:

- Number of fatalities
- Rate of fatalities
- Number of serious injuries
- Rate of serious injuries
- Number of non-motorized fatalities
- Number of non-motorized serious injuries.

The TPO has chosen to adopt FDOT's targets but is considering setting its own targets in the future.



*A critical component  
of a safe, efficient,  
and multimodal  
transportation system*

## Bridge & Pavement Condition (PM2)

Bridges and pavement are critical components of a safe, efficient, and multimodal transportation system. FDOT sets targets for bridge and pavement condition, and Florida MPOs can elect to use FDOT standards or set their own local targets. The Miami-Dade TPO has adopted FDOT's targets.

The USDOT requires bridge and pavement condition targets for the following systems and elements:

### Interstate System Pavement

- Percentage of pavement in good condition
- Percentage of pavement in poor condition

### Pavement on the Non-Interstate National Highway System

- Percentage of pavement in good condition
- Percentage of pavement in poor condition

### Bridges on the National Highway System

- Percentage of bridges in good condition
- Percentage of bridges in poor condition

## System Performance (PM3)

Measuring how smoothly a transportation system functions and the emissions it generates demonstrates how people experience moving through the network and its impact on the environment. The USDOT requires setting performance measures for non-recurring traffic congestion and, in areas that do not meet federal National Ambient Air Quality Standards (NAAQS), on-road mobile source emissions. Non-recurring traffic congestion comes from unexpected events like crashes, stalled vehicles, construction, or bad weather. The environmental requirements look for nitrogen dioxide, carbon monoxide, volatile organic compounds, and particulate matter harmful to human and environmental health above certain thresholds.

USDOT mandates targets be set for:

### National Highway Performance Program

- Level of Travel Time Reliability (LOTTR) or the percent of person-miles on the Interstate system that are reliable.
- Percent of person-miles on the non-interstate NHS that are reliable

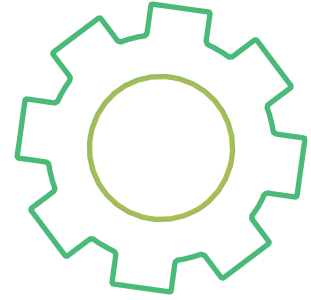
### National Highway Freight Program (NHFP)

- Truck Travel Time Reliability Index (TTR)

### Congestion Mitigation and Air Quality Improvement Program (CMAQ)

- Annual hours of peak hour excessive delay per capita (PHED)
- Percent of non-single occupant vehicle travel (Non-SOV)
- Cumulative 2-year and 4-year reduction of on-road mobile source emissions, including NO<sub>x</sub>, VOC, CO, PM<sub>10</sub>, and PM 2.5) for CMAQ-funded projects.

Coastal winds help keep Florida's air quality good, and since the entire state has air quality attainment status, the CMAQ-related performance measures do not apply for FDOT or the Miami-Dade TPO.



*Non-recurring traffic congestion comes from unexpected events like crashes, stalled vehicles, construction, or bad weather, leading to travel time reliability issues.*

## Transit Asset Management (TAM)

Keeping transit moving efficiently and safely requires keeping the system in good working order. The Federal Transit Administration (FTA) requires public transportation providers to develop and implement transit asset management (TAM) plans. The FTA also sets repair standards and the performance measures for rolling stock, infrastructure, and facilities.

Required annual TAM measures include percentages of the following:

- Non-revenue, support-service, and maintenance vehicles that have met or exceed their useful life benchmark.
- Revenue vehicles within a particular asset class that have either met or exceeded their useful life benchmark.
- Track segments with performance restrictions (anything that disrupts service, like crashes, mechanical malfunctions, etc.).
- Facilities within an asset class rated below condition 3 on the Transit Economic Requirements Model (TERM) scale.

## Public Transportation Agency Safety Plan (PTASP)

Public transportation must be safe for all users. The FTA requires public transportation providers to develop and implement public transportation agency safety (PTASP) plans. Providers' PTASP plans must include the performance measures outlined by the National Public Transportation Safety Plan and set targets based on data reported to the National Transit Database.

The FTA's annual required measures include the following:

- Total number of reportable fatalities and rate per total vehicle revenue miles by mode.
- Total number of reportable injuries and rate per total vehicle revenue miles by mode.
- Total number of reportable safety events and rate per total vehicle revenue miles by mode.
- System reliability via the mean distance between major mechanical failures by mode.



## COLLECTING & INTERPRETING DATA

A clear picture of Miami-Dade's transportation system requires collecting and maintaining accurate and appropriate data. Data for this report came from the TPO's planning partners, including FDOT and the University of Florida. Safety data came from Signal Four Analytics developed by the University of Florida. Pavement condition and bridge data came from the FDOT Roadway Characteristics Inventory (RCI) and the FHA's National Bridge Inventory. System-performance data came from FDOT's Regional Integrated Transportation Information System (RITIS) Massive Data Downloader, including travel-time data from HERE Technologies the National Performance Research Data Set (NPMRDS), and INRIX. FDOT's RCI also provided vital posted speed data that was used to help determine congestion levels.

Using a  
Data-Driven  
Approach  
to Improve  
Performance

By overlaying these data sources, the Miami-Dade TPO can take a step back and examine the county holistically. The big picture reveals which segments of the road system have higher crash rates, which areas see more congestion, which roads are reliable, and whether there are sufficient bicycle and pedestrian facilities. Applying performance measures to the dataset identifies safety, condition, reliability, congestion, and transit issues and ultimately supports finding and funding growth in the right direction.

## COVID-19 IN MIAMI-DADE COUNTY

Effects of the COVID-19 pandemic have rippled through the Miami-Dade community. Since March 2020, at least 1 in 4 county residents have contracted COVID-19; and from March 2020–August 2021, the county had reported more than 620,000 cases and 6,472 deaths.<sup>1</sup>

### Tourism

COVID dramatically depressed the county's once thriving tourism industry. Reduced hotel bookings and tourist attraction closures greatly reduced economic activity in the region. In 2020, 7.9 million overnight and 3.7 day-tripping visitors came to the Greater Miami area—a 52 percent decrease from the previous year.<sup>2</sup>

### Work

A Miami-Dade TPO survey of telecommuting in South Florida found that during the pandemic, the number of employees telecommuting to work each day rose from 8 percent to 28 percent. More than three-quarters of employers reported having a telecommuting policy, and 70% of college students were taking their courses online.<sup>3</sup>

<sup>1</sup> New York Times, <https://www.nytimes.com/interactive/2021/us/miami-dade-florida-covid-cases.html>; accessed 9/1/2021

<sup>2</sup> [https://www.miamiandbeaches.com/getmedia/004b3094-e2a5-49a0-bd64-d583c43546f8/Visitor\\_Industry\\_Overview\\_FY\\_2020.pdf.aspx](https://www.miamiandbeaches.com/getmedia/004b3094-e2a5-49a0-bd64-d583c43546f8/Visitor_Industry_Overview_FY_2020.pdf.aspx)

<sup>3</sup> Miami-Dade TPO Telecommute Study, 47. <http://www.miamidadetpo.org/library/studies/mdtpo-telecommute-study-final-report-2021-01.pdf>

## Measuring Miles Traveled



**Vehicle miles traveled (VMT)** shows heavily trafficked routes and indicates major roadways. Measuring VMT helps determine whether a road is large enough to support its current and future use as well as provides a critical layer to crash studies. Mapping lower VMT may indicate a more walkable and bikeable area or help identify areas where facility improvements could help support more pedestrian- and cycle-friendly infrastructure.



**Person miles traveled (PMT)** is similar to VMT but instead accounts for vehicle occupancy, helping reveal the actual number of people using a roadway, rather than just the vehicle demand.



**Truck miles traveled** reveals high-use trucking routes, helping inform how future decisions about infrastructure or facility improvements might impact or benefit freight.

## Traffic

Restrictions and an unprecedented increase in telecommuting meant COVID-19 also changed how drivers in Miami-Dade and throughout Florida traveled.<sup>4</sup> Average daily volumes on I-195 in Miami-Dade County fell by more than 66% in 2020, relative to 2019. Major roadways connecting to job clusters like downtown Miami also saw significant declines in traffic. Traffic on SR 112 and SR 878, for example, declined by approximately 30%.<sup>5</sup>

## Trips

The pandemic also shaped where people traveled. Grocery store trips increased by more than 10% in March 2020 and fell back to pre-pandemic levels just before non-essential businesses closed. Trips to transit stations, work, parks, and grocery stores plummeted to low points early April 2020. However, by late April, trips were on the rebound, but they stayed well below pre-pandemic levels through December 2020<sup>6</sup>.

## Transit

COVID-19 caused a sharp drop in transit travel nationwide. In early 2020, Miami-Dade transit ridership hovered just under 7 million users per month. During April and May 2020, monthly transit ridership fell to around 2 million users. In early April 2020, trips to transit stops had declined by nearly 70%.<sup>7</sup>

## Accounting for COVID-19 Data

While travel levels have rebounded significantly during spring and summer 2021, such unprecedented changes to travel and traffic in 2020 would inaccurately skew the typical system-wide mobility patterns in Miami-Dade County. To account for this disparity and to provide the clearest snapshot of the system, this report uses pre-pandemic data over the five-year period from 2015-2019.

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4 Ibid, 9.

5 Ibid, 43.

6 Ibid, 47.

7 Ibid, 47.



# Miami-Dade County Today and Tomorrow

Miami-Dade  
County is  
growing,  
and the  
transportation  
system will  
need to grow  
with it.

## GROWTH

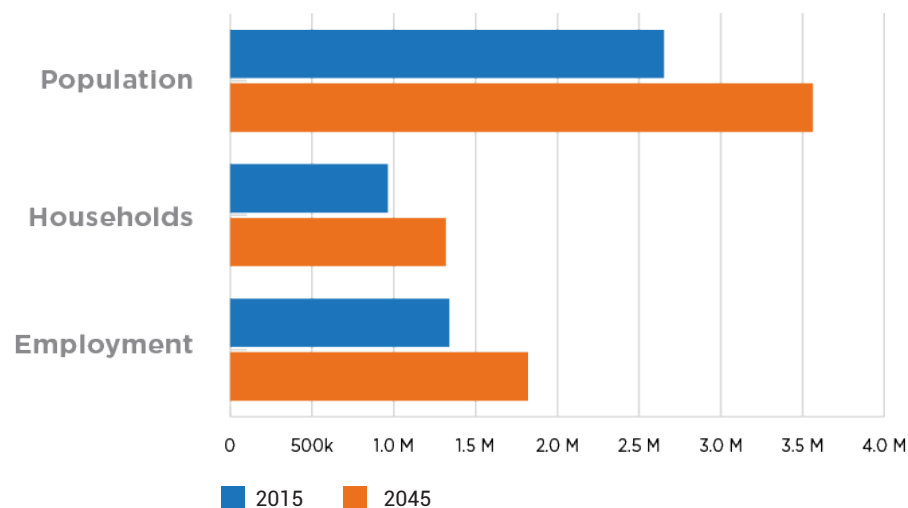
By 2045, Miami-Dade County is projected to have a population of more than 3.5 million people, an annual growth rate of more than 1 percent each year starting in 2015. Employment and households are likewise projected to expand over this period, reaching more than 1.3 million households and 1.8 million jobs.



Source: Census profile: Miami-Dade County, FL

<https://censusreporter.org/profiles/05000US12086-miami-dade-county-fl/>

FIGURE 8. MIAMI-DADE COUNTY PROJECTED GROWTH



MEAN TRAVEL TIME TO  
WORK IN (2015-2019)  
**30+ Minutes**

**20%**

DO NOT HAVE ACCESS TO  
A BROADBAND INTERNET  
CONNECTION

**20%**  
UNDER  
18

**17%**  
65 & OLDER

NEARLY  
**54%**  
BORN OUTSIDE OF THE US

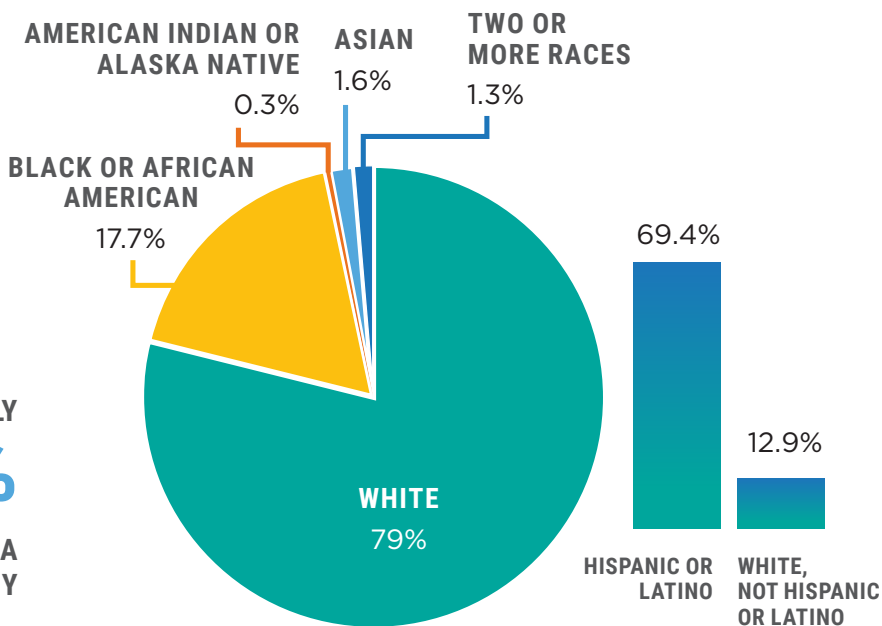
NEARLY  
**75%**  
SPEAK LANGUAGE OTHER  
THAN ENGLISH AT HOME

**15%** EXPERIENCES  
POVERTY

NEARLY  
**20%**  
DO NOT  
HAVE HEALTH  
INSURANCE

NEARLY  
**9%**  
HAVE A  
DISABILITY

### Race/Ethnicity





## ECONOMY

In 2019, visitors spent more than **\$17.8 million**. During the pandemic in 2020, that number **DECLINED BY 56%** to just over **\$7.9 million**.<sup>8</sup>



**27%** of Miami-Dade County commuters spend **45 MINUTES OR MORE TRAVELING** to work every day.

More than **75%** of Miami-Dade's workforce **DRIVES ALONE** to work.<sup>10</sup>

Tourism, the hospitality industry, and real estate development are three key drivers of Miami-Dade's economy. Millions of people visit Miami-Dade County each year to sun themselves on Atlantic beaches, stroll the art deco facades along South Beach, and explore the county's unmatched wildlife and nightlife. Visitors also come to visit the dozens of museums and art galleries or attend concerts or theatre productions.

Miami-Dade's location between the Atlantic coast and Biscayne National Park and Everglades National Park, offers unmatched natural beauty for residents and visitors. However, these unique ecosystems also limit the amount of land available for development. This premium on real estate is another vital part of the local economy. This report will help guide the future transportation improvements necessary for providing visitors a safe and enjoyable access to all that Miami-Dade County has to offer.

## EMPLOYMENT

More than 170,000 people in Miami-Dade County work in health care or other social assistance fields. Other top sectors include retail and trade; accommodation and food service; construction; transportation and utilities; as well as finance, insurance, and real estate.

Driving alone in a car is by far the most popular way to travel to work in Miami-Dade County. However, as the county's population grows, solo-driver commuters will increase congestion on the county's roadways. The report that follows summarizes congestion and other performance measures and identifies the most problematic segments of the State Highway System in Miami-Dade County.<sup>9</sup>

<sup>8</sup> Source: [https://www.miamidandbeaches.com/getmedia/004b3094-e2a5-49a0-bd64-d583c43546f8/Visitor\\_Industry\\_Overview\\_FY\\_2020.pdf.aspx](https://www.miamidandbeaches.com/getmedia/004b3094-e2a5-49a0-bd64-d583c43546f8/Visitor_Industry_Overview_FY_2020.pdf.aspx)

<sup>9</sup> Miami Matters, "2021 Demographics—Employment." [http://www.miamidadematters.org/demographicdata?id=414&sectionId=939#sectionPiece\\_385](http://www.miamidadematters.org/demographicdata?id=414&sectionId=939#sectionPiece_385).

<sup>10</sup> [http://www.miamidadematters.org/demographicdata?id=414&sectionId=939#sectionPiece\\_385](http://www.miamidadematters.org/demographicdata?id=414&sectionId=939#sectionPiece_385)

## INCOME & HOUSING

Since 2010, housing in Miami-Dade County has grown by nearly 11 percent to more than one million units. The county's limited land and prime coastal location helps drive property values.

Just under 30 percent of Miami-Dade households earn less than \$35,000 each year. Nearly 10 percent of families in Miami-Dade are experiencing poverty. Income and wealth inequalities affects access to transportation, which in turn can affect access to food, health care, and education. Nearly 10 percent of households in Miami-Dade County do not have access or do not own a vehicle.<sup>11</sup>

By helping the TPO's planning partners prioritize transportation projects and measure progress toward current goals, this report will assist planners to better serve all of the county's communities. With a clear picture of the county and its transportation system and use, the TPO can provide residents and visitors of Miami-Dade County with access to a safe, efficient, equitable, and multimodal transportation system.



**30%** of Miami-Dade households **earn less than \$35,000 each year.**

Nearly **10%** of households in Miami-Dade County **do not have access to a vehicle.**

<sup>11</sup> Miami Matters, "2021 Demographics—Households/Income." <http://www.miamidadematters.org/demographicdata?id=414&sectionId=936>.

# Miami-Dade's State Highways and Modal Systems

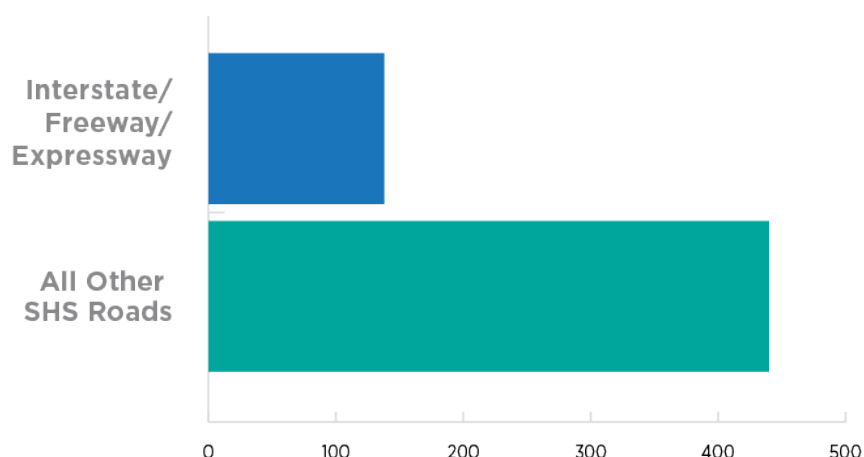
To keep  
people and  
goods moving  
safely and  
freely, the  
different  
parts of a  
transportation  
network  
must work  
together.

## ROADS

With so many residents throughout the county using personal automobile as their preferred mode of transportation, roads make up the largest portion of the county's transportation network.

The primary expressways in Miami-Dade County—I-95, I-75, Florida's Turnpike system, SR 874, and the Palmetto Expressway (SR 826) —connect commuters north to south across the region as well as to and from West Palm, Ft. Lauderdale, and other parts of Broward and Palm Beach counties. The Dolphin (SR 836) and Palmetto expressways (SR 826), SR 112, SR 924, SR 878 and the two interstate spurs (I-395 and I-195) provide east/west connections via expressways, support large traffic volumes, and provide vital access to the county's beaches. This limited access expressway system is also complemented by more than 440 miles of other major roadways making up the State Highway System (SHS) in Miami-Dade County. Figure 9 display miles by roadway type and the SHS system in the county. Due to data limitations, the performance of non-State roadways is not included in this report.

FIGURE 9. CENTERLINE MILES OF SHS ROADWAYS



Source: FDOT Roadway Characteristics Inventory

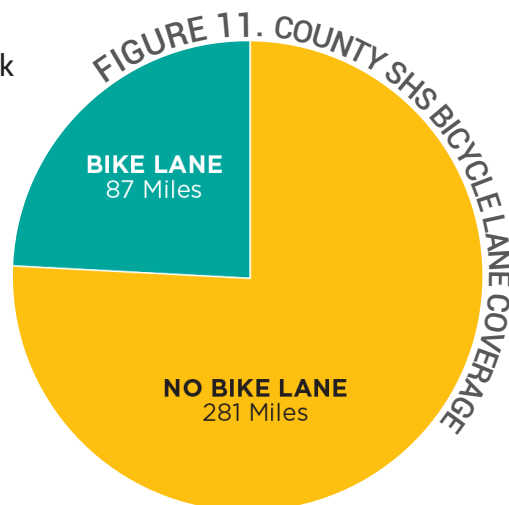
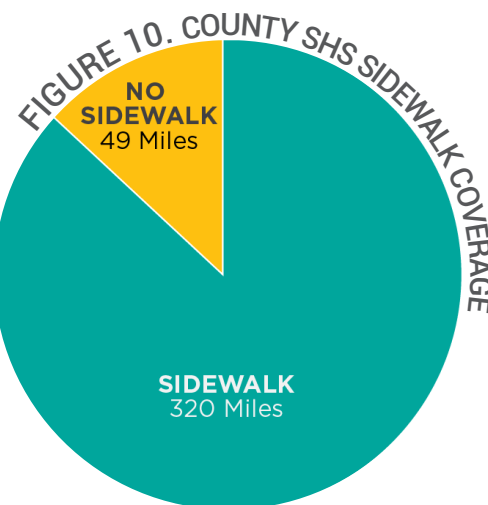
## SIDEWALKS, BICYCLE LANES, & TRAILS

### Sidewalks & Bicycle Lanes

Sidewalks and bicycle facilities encourage active transportation and a healthy, thriving community. The more people who choose to walk and bike rather than drive, the fewer solo drivers and less traffic congestion Miami-Dade will see in the future.

More than 87 percent of SHS roads in Miami-Dade's urban areas have sidewalks on at least one side of the road. As of 2021, Miami-Dade has just over 200 miles of bicycle lanes. There are also 177 miles of trails and paved paths, offering comfortable facilities for all types of cyclists. Unprotected bike lanes do not shelter riders from traffic, and these lanes are less comfortable for young, inexperienced, or more cautious riders, as documented in the Low Stress Bicycling and Network Connectivity paper published by the Mineta Transportation Institute.<sup>12</sup>

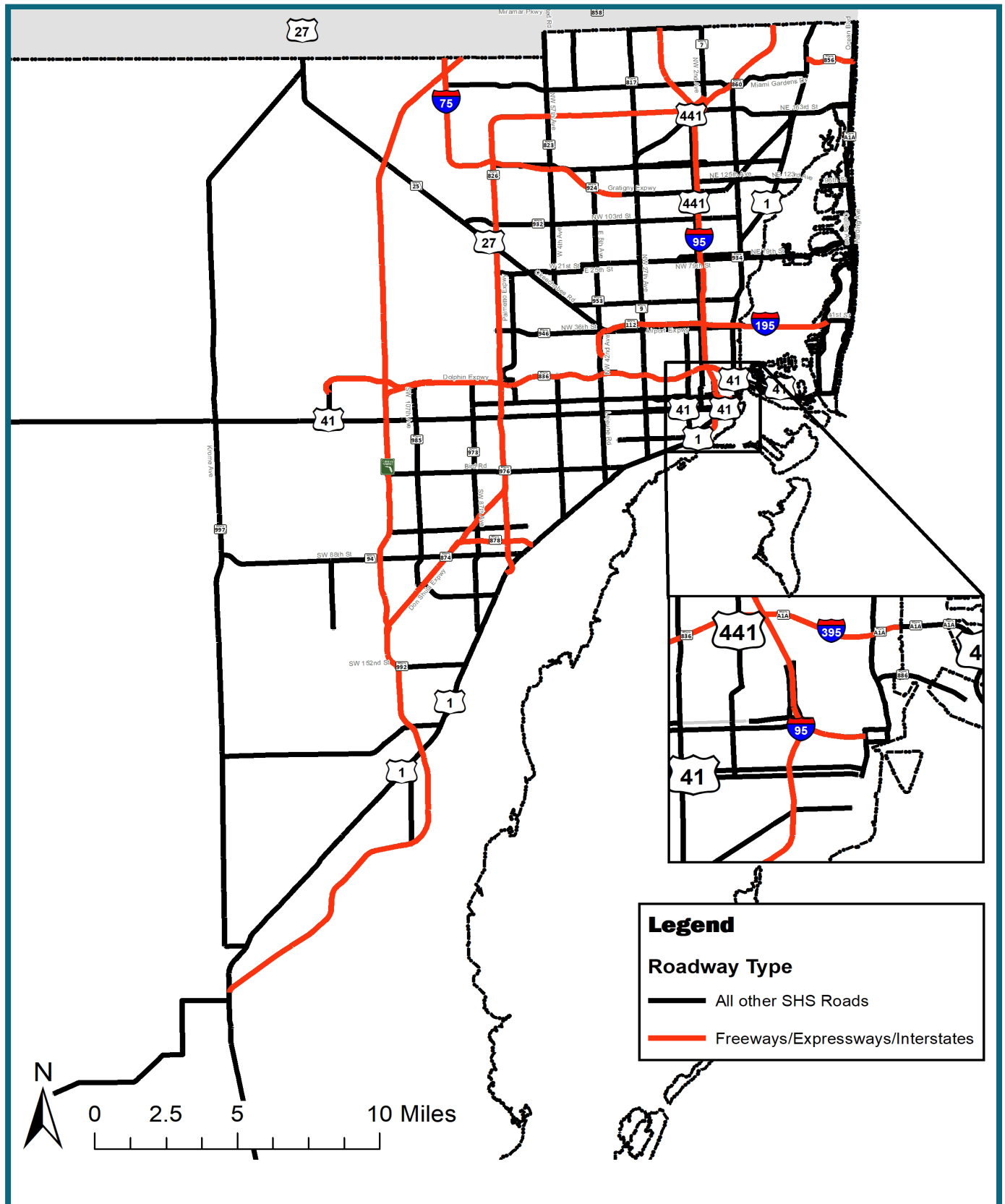
Miami-Dade's bicycle network has room to grow. Protected bike lanes—one of the safest and most comfortable bicycle facilities for all riders—make up just over 2 percent of Miami-Dade's urban bike lane miles, and more than 75 percent of urban SHS roads in Miami-Dade do not have bicycle lanes of any type.



<sup>12</sup> Low-Stress Bicycling and Network Connectivity - <https://transweb.sjsu.edu/sites/default/files/1005-low-stress-bicycling-network-connectivity.pdf>

Source: Miami-Dade TPO, April 2021

MAP 1. STATE HIGHWAY SYSTEM



Source: FDOT Roadway Characteristics Inventory

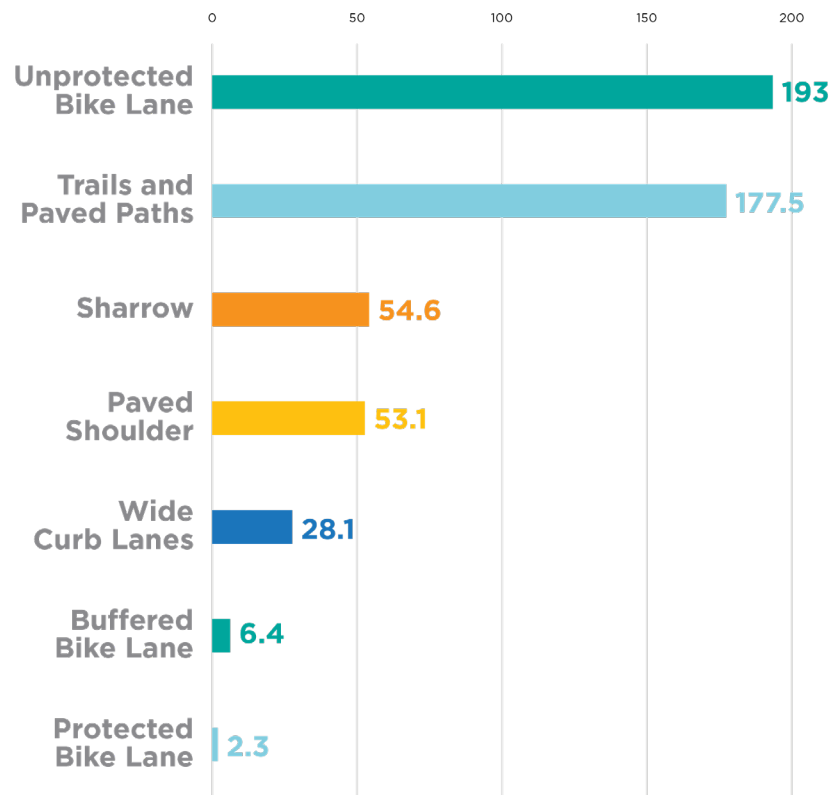


## Trails

Miami-Dade's trail system stretches over both urban and rural parts of the county. Urban trails, like the Underline, help visitors and residents traverse the city of Miami. Rural trails like the Krome Path connect those who want to explore the county's abundant parks and wildlife.

The popularity of paved paths and trails but relative lack of protected on-road bicycle facilities suggest that opportunities to improve the existing infrastructure with more protected bicycle lanes could lead to more bicycling throughout the county.

FIGURE 12. BICYCLE FACILITY MILES BY TYPE

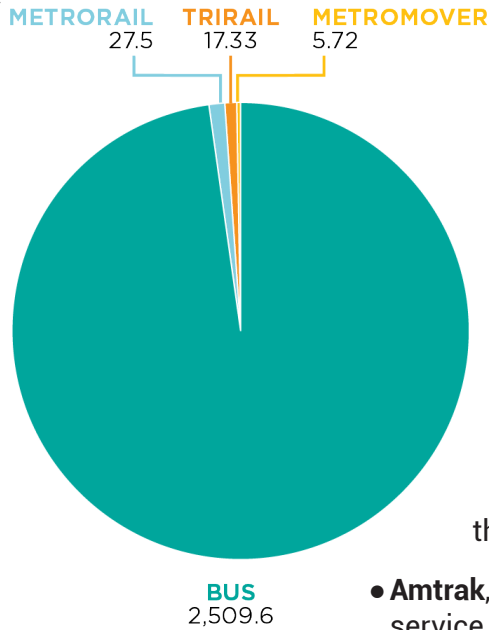


Source: Miami-Dade TPO, April 2021

## TRANSIT

Miami-Dade's transit network, which includes more than 2,000 route miles, consists primarily of bus service, with trains providing crucial connections between key destinations. Residents and visitors can choose among:

FIGURE 13. TRANSIT ROUTE MILES BY MODE



Source: Federal Transit Administration National Transit Database

- **Metrobus**, a wide-reaching bus service that connects passengers to major shopping, entertainment and cultural centers and provides service to schools and hospitals.
- **Metrorail**, a dual-track elevated rail service that connects Miami International Airport (MIA) with northwest Miami -Dade, Downtown Miami, and Kendall.
- **Metromover**, an automated people mover train that runs downtown and through the Brickell area, serving the FTX Arena, Bayside Marketplace, Miami-Dade College, and the Miami-Dade County School Board.
- **Tri-Rail**, a commuter rail that connects Miami-Dade, Broward and Palm Beach counties.
- **Brightline**, a privately-owned, high-speed rail that currently runs from Miami to West Palm Beach, with the ultimate goal of connecting PortMiami with Orlando.
- **Amtrak**, a privately-owned intercity passenger rail service that serves 46 states and 3 Canadian provinces with service to 18 Florida cities, including Miami.

Additionally, some of the county's municipalities run free trolleys and other bus routes that serve their respective local areas.

Reliable access to destinations is a key component of an equitable transportation system.

## Accessibility

A comprehensive measure of both land use organization and transportation infrastructure's connectivity, accessibility reveals how connected people are to places. Accessibility can be measured for any mode of transportation, and it can be represented as the number of jobs or other types of destinations that can be accessed from a given place.

Transit plays a critical role in connecting Miami-Dade residents and visitors to the places they need to go. Reliable access to destinations is a key component of an equitable transportation system. In Miami-Dade County, urban areas have the highest levels of transit access. Generally, the further someone gets from a city the less access to destinations via transit that person has. Mapping accessibility helps inform where connections are needed to ensure the whole region has access to jobs via transit (see Map 2). While this map doesn't show how easy or convenient the access is, knowing

where access exists helps narrow down areas where sidewalk facilities and other multimodal improvements can help provide safer and more equitable access in the future. For more on accessibility, see the bicycle and pedestrian hotspot list, which took into account a lack of bicycle and pedestrian access when scoring Miami-Dade's facility network.

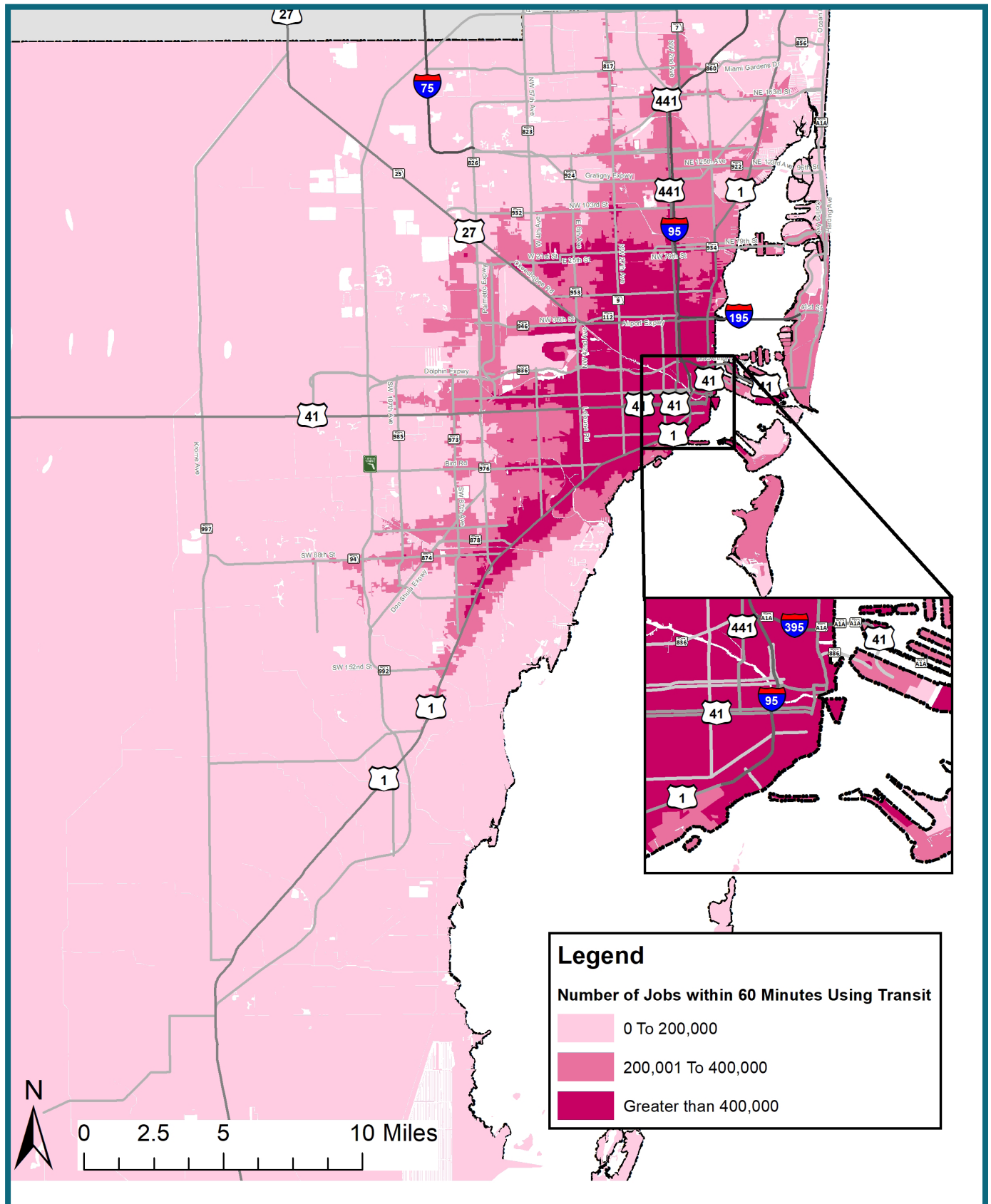
### **Miami-Dade's Most Accessible Transit Areas**

High, medium, and low accessibility is based on a relative measure that uses percentiles to rate each segment of the network relative to other segments.

This door-to-door measurement provides a reasonable estimate of locations where transit can be used for daily commutes. Despite having high transit accessibility, these segments may not provide safe crossing opportunities or bicycle and pedestrian connections—all of which are critical to a truly accessible transit network. These segments merit special attention with respect to multimodal infrastructure needs to facilitate safe and comfortable access to public transit in the respective areas.



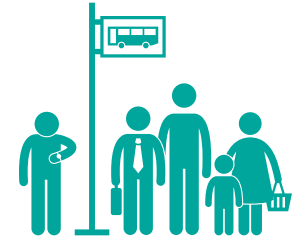
MAP 2. TRANSIT ACCESSIBILITY



Source: FDOT

## Transit Ridership

Following nationwide declines in transit use, Miami-Dade County has seen a steady downward trend in transit ridership, despite VMT remaining steady. Buses have been especially hard hit by this trend. Many transit companies are supplying the same or even more service but nevertheless seeing fewer passengers. Many factors contribute to this decline, including lower gas prices and the rise of ride-share services like Uber and Lyft. Continuing to provide first and last mile improvements like sidewalks, bicycle lanes, and Freebee transit service will help make transit more successful, and further study of these changes will help the Miami-Dade TPO continue to support thoughtful, equitable, and accessible transit.



### Average Annual Growth Rate (2015 – 2019)

METROBUS: **-7.4%**

DEMAND RESPONSE: **2.1%**

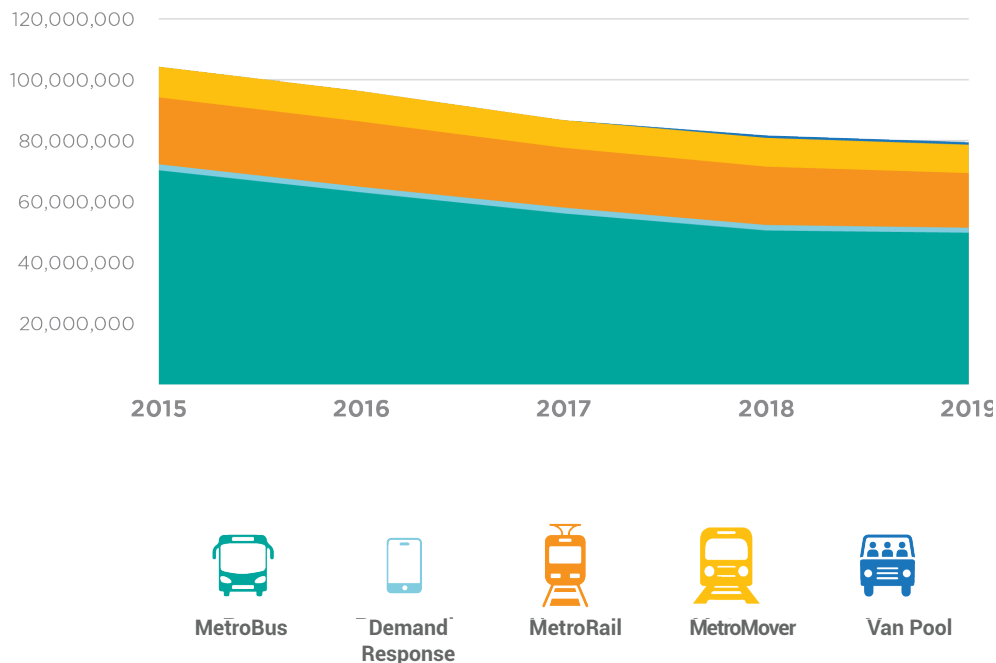
METRORAIL: **-4.4%**

METROMOVER: **-2.4%**

VAN POOL: **N/A**

Source: Federal Transit Administration National Transit Database

FIGURE 14. UNLINKED PASSENGER TRIPS BY MODE

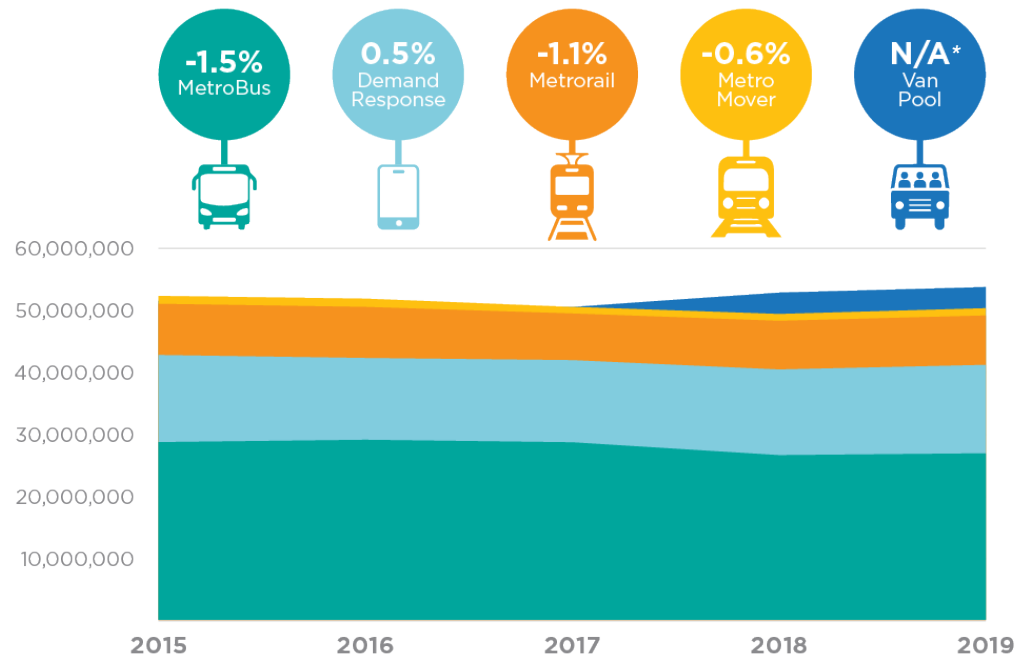


Source: Federal Transit Administration National Transit Database

## Vehicle Revenue Miles by Mode

Measuring public transit route miles illustrates a network's miles of service. However, vehicle revenue miles (VRM) better measures the levels of service provided, including service frequency and span of service. The total VRM provided in Miami-Dade over the last five years hovers just above 50 million annually, with approximately 8 million miles of heavy rail service, just under 30 million miles of bus service, and 14 million miles of demand response service. Fixed route services, like Metrobus, Metrorail, and Metromover declined by up to 1.5 percent from 2015–2019. Demand response transit services, on the other hand, increased by just under one percent, reflecting a shift toward a more efficient system that provides public transit service where it is most in demand.

FIGURE 15. ANNUAL VEHICLE REVENUE MILES BY MODE



\*Van Pool growth rate is not available due to a lack of available data prior to 2018

Source: Federal Transit Administration National Transit Database

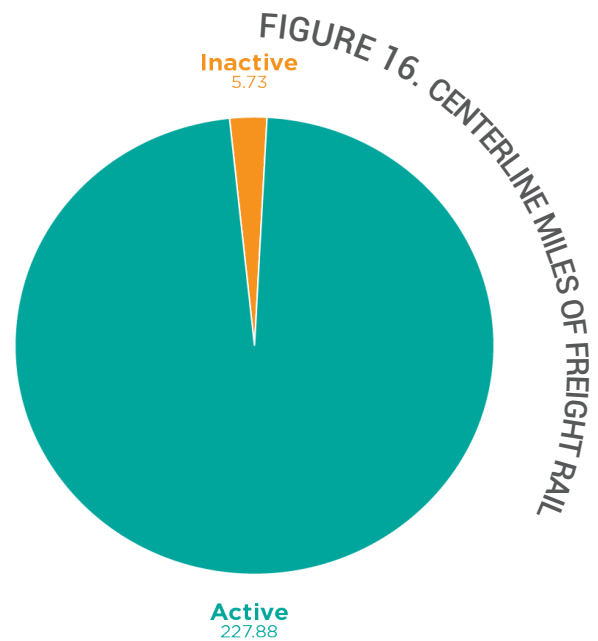
## FREIGHT RAIL

Miami-Dade County is essentially the southern anchor of two principal rail lines providing goods movement along the entire eastern seaboard. The CSX and FEC rail lines are privately owned and managed, and move goods over more than 227 miles of active lines. The county also has about 6 miles of inactive lines. The CSX line from the center of the county north into Broward and Palm Beach counties and beyond, is shared with the South Florida Regional Transportation Authority, which operates Tri-Rail commuter rail on the line. The FEC line from downtown Miami north into the neighboring counties and beyond also features passenger rail, operated by Brightline. Figure 16 and Map 3 depict the freight rail system in Miami-Dade County.

The county, FDOT, and freight railroad stakeholders in the region have responded to PortMiami expansion plans accommodating Post-Panamax mega-ships and the increased container capacity moving into and out of the Port with several improvements, including:

- Rehabilitation and connection of rail service directly to the PortMiami Intermodal Container Transfer Facility;
- Reconstruction of the FEC Port Lead;
- Reconstruction of the bascule bridge connecting PortMiami and the FEC;
- Construction of an on-port rail facility; and
- Modifications to FEC's Hialeah Rail Yard to accommodate increased traffic.

Other improvements include the South Florida Logistics Center, a 400-acre logistics complex adjacent to MIA and FDOT's plans to address safety issues at problematic railroad crossings. Other rail connectivity improvements completed recently include the Iris connection, improving interconnectivity between the CSX and FEC rail lines in Miami-Dade County. All of these rail connectivity, intermodal connectivity, capacity, and safety improvements are geared to accommodate future growth and the alleviation of impacts of freight movement on safety and roadway operations. The FEC and CSX connectivity improvements will also facilitate smoother passenger rail operations on the freight railroads, stressing the importance of transportation system-oriented improvements. The county and its planning partners have recognized the importance of the inter-connectivity across users and modes of the transportation system, finding ways to improve the system as a whole, rather than narrowly focused improvements on any particular mode.



Note: Rail includes Tri-Rail CSXT rail line.  
Excludes Metrorail and Metro Mover.

Source: Association of  
American Railroads

Source: Florida Department of Transportation



Another important focus of the CSX and FEC are to improve rail access to industrial properties, stressing another important connection of the private transportation providers and their industrial partners within the County and beyond. This collaboration is critical to both the safe and efficient movement of cargo and economic development interests in the county.

*Today, charging stations are accessible to more than 27% of SHS roadway miles.*

## ELECTRIC VEHICLES

Emerging technologies like electric vehicles (EVs) and automated and connected vehicles (AV/CVs) are increasingly common and popular. By 2045, EVs could represent up to 50 percent of vehicles in Florida, according to a 2018 paper by the Center for Urban Transportation Research in Tampa, Florida.<sup>13</sup> The predicted rise in EV and AV/CV technology on Miami-Dade's roads will have significant implications for long range planning, including both environmental benefits and infrastructure needs.

For this technology to succeed, these vehicles require access to charging stations. Currently, the county's urbanized areas have the greatest access to EV charging stations. Expanding charging access to the more suburban and rural parts of Miami-Dade would help expand the range of existing EVs and provide the necessary infrastructure for the predicted increase of EVs over the coming years.

The Map 4 depicts roadway segments with direct and indirect access to existing charging stations based on proximity.

## MICROMOBILITY

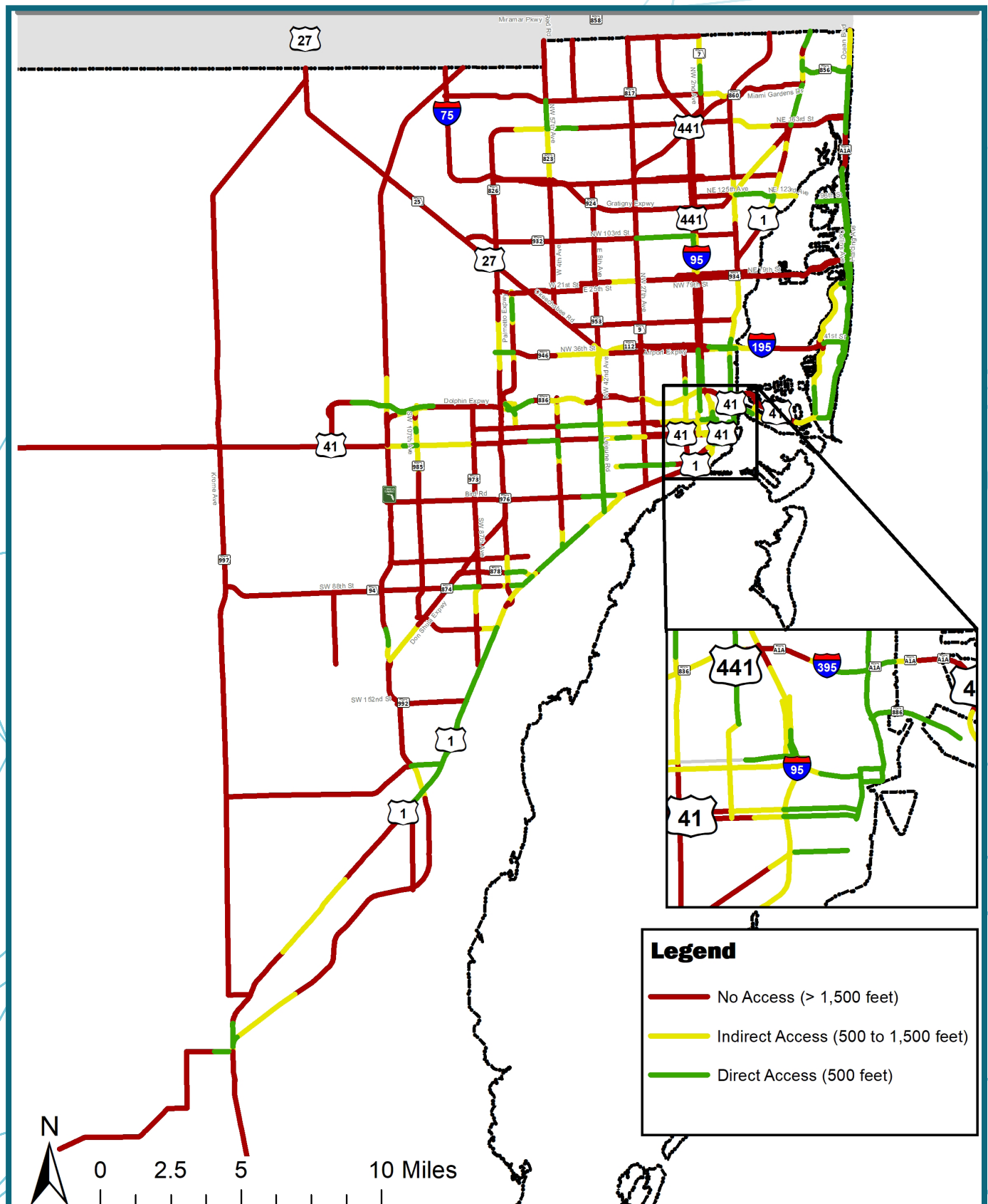
Micromobility—most notably shared scooters and e-bikes—expedite quick trips through the urban areas of the county or support the first and last parts of residents and visitors' transit journeys.

In the United States during 2019, people took 136 million trips on shared bikes, e-bikes, and scooters—a 60 percent increase from the previous year. Today only about two percent of the land area of Miami-Dade County has access to micromobility services, largely concentrated in the cities of Miami, Miami Beach, and Coral Gables. Micromobility offers significant benefits; it serves short trips and improves access to public transit. Micromobility also poses new infrastructure challenges, particularly when it comes to facility design, parking, as well as sidewalk and bike-lane use. The increasing deployment of micromobility services must be monitored and accommodated through proper planning and implementation of those infrastructure needs. Map 5 depicts the area of Miami-Dade County serviced by shared micromobility providers.

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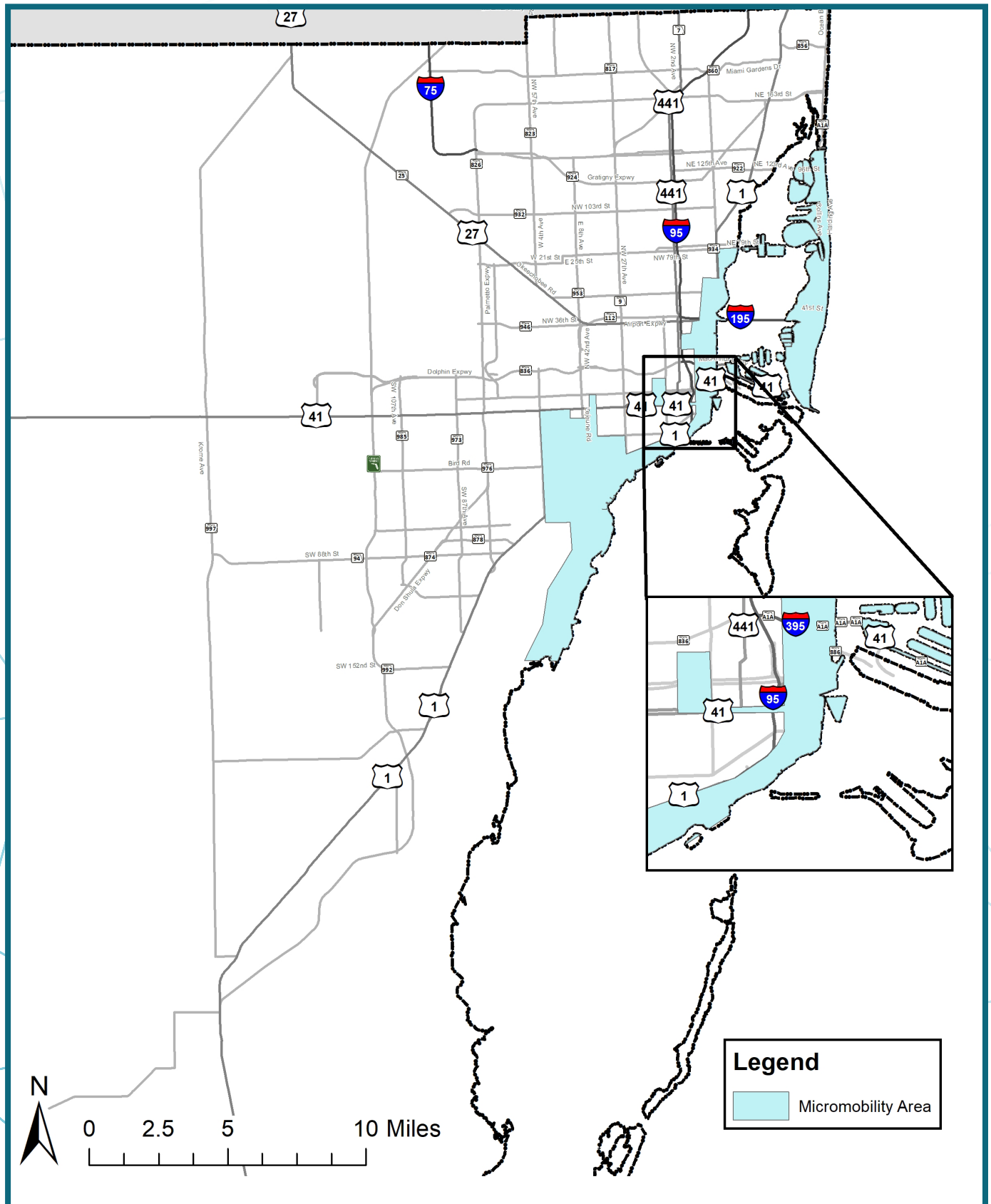
<sup>13</sup> FDOT Office of Policy Planning, "Guidance for Assessing Planning Impacts and Opportunities of Automated, Connected, Electric and Shared-Use Vehicles," 2018, [https://planhillsborough.org/wp-content/uploads/2018/07/Revised-FDOT\\_MPO\\_ACES\\_PolicyGuide\\_May-2018.pdf](https://planhillsborough.org/wp-content/uploads/2018/07/Revised-FDOT_MPO_ACES_PolicyGuide_May-2018.pdf).

MAP 4. ELECTRIC VEHICLE CHARGING STATION ACCESS



Source: U.S. Department of Energy Alternative Fuels Data Center

## MAP 5. MICROMOBILITY COVERAGE AREA



Source: Cities of Miami, Miami Beach, and Coral Gables

# Transportation System Performance

SAFETY IS  
OUR TOP  
PRIORITY



## SAFETY (PM1)

### Vision Zero

Safety is at the heart of transportation planning and infrastructure development. Both the Florida Transportation Plan (FTP) and the Florida Strategic Highway Safety Plan (SHSP) prioritize safety. The Miami-Dade TPO is committed to Vision Zero, an international movement that aims to eliminate all traffic-related serious injuries and deaths. Vision Zero understands crashes as being preventable and calls for transportation systems that protect all users. A clear picture of safety in the Miami-Dade transportation network is critical to continue working toward zero.

## Safety Conditions in Miami-Dade County

The number and rate of annual average fatalities and serious injuries helps reveal the big picture of safety conditions in Miami-Dade County. Crash data helps assess individual road segments and highlights those with high crash and fatality rates. While serious injuries have steadily declined since 2009, crash fatalities have increased significantly over the past decade.

In Miami-Dade County, average annual fatalities have been slowly increasing since 2010, even while serious injuries have been on a steady decline over the same period. This steady upward trend underscores the necessity of Vision Zero initiatives and the importance of setting rigorous performance measures.

## Bike and Pedestrian Crashes

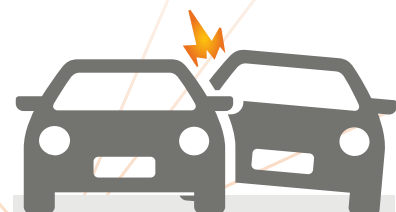
Without the protection of a vehicle, cyclists and pedestrians are more vulnerable to fatal and severe injury crashes. In Miami-Dade County, the average number of fatal and severe-injury bicycle and pedestrian crashes have trended downward, declining 2 percent in the past five years.



**1.48** FATALITIES PER  
100 MILLION VMT



**8.2** SERIOUS INJURIES  
PER 100 MILLION VMT



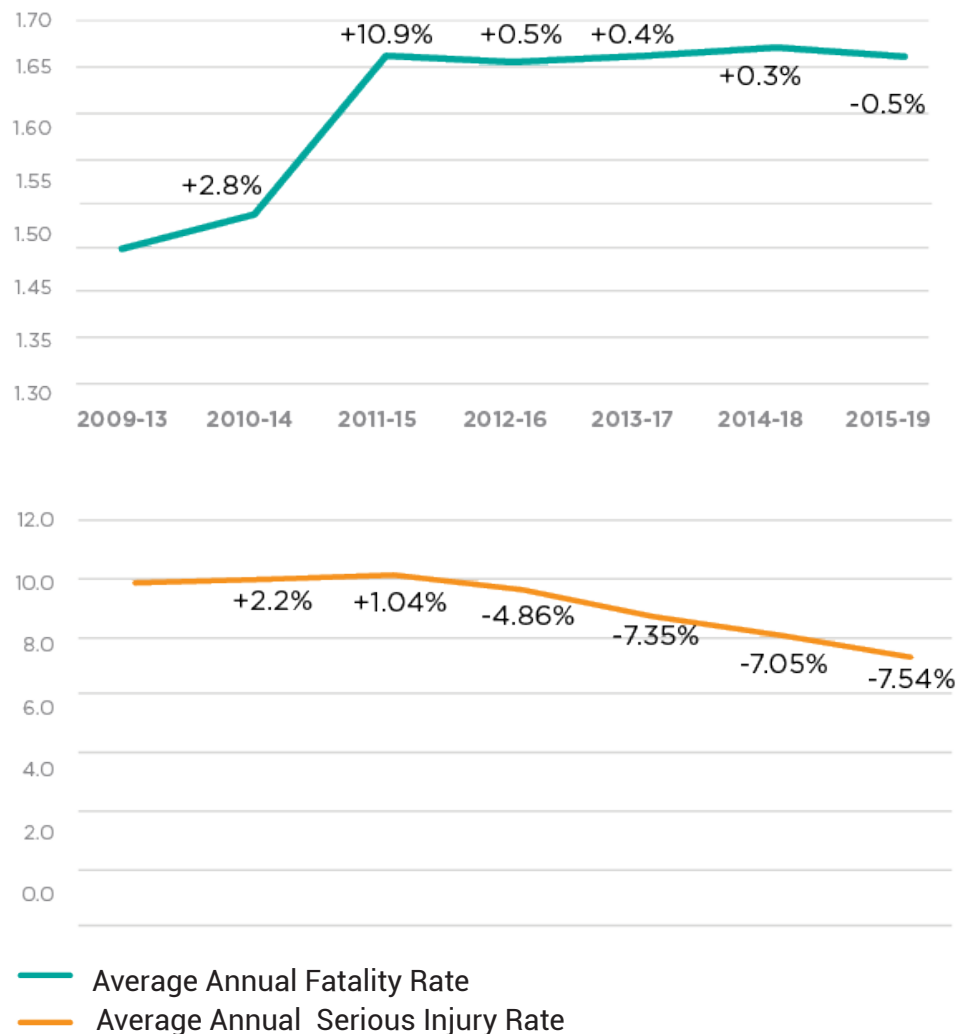
### WHERE CRASHES HAPPEN

Roadway segments with high incidence of fatal and severe injury crashes are primarily heavily trafficked arterials. With the top three crash corridors in the county, US-1 is especially notorious. Other hotspots are along key interstate/expressway segments are near interchanges.

Source: Signal Four  
Analytics - University of  
Florida GeoPlan Center

Figure 17 depicts the crash trends in Miami-Dade County in terms of rolling 5-year averages since 2009 and includes all public roadways.

FIGURE 17. ANNUAL AVERAGE SAFETY TRENDS ON SHS, 2009-2019 (WITH % CHANGE OVER TIME)



Source: Signal Four Analytics - University of Florida GeoPlan Center

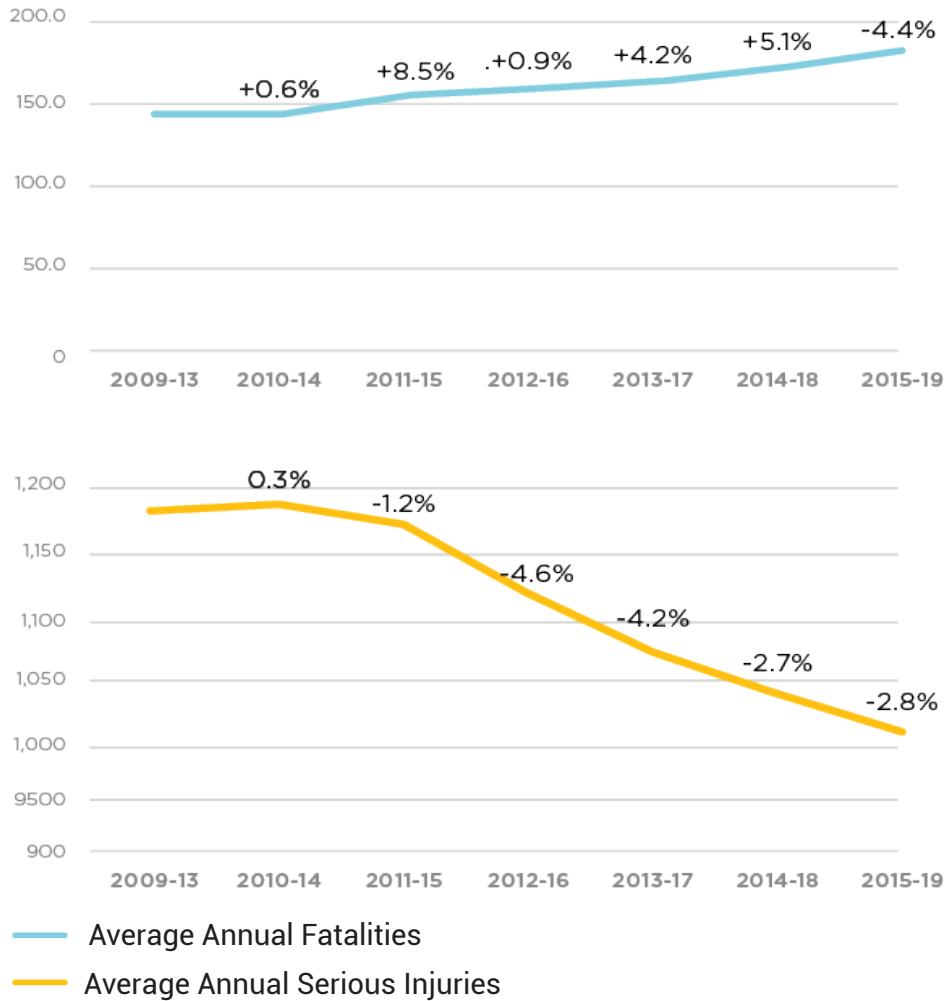
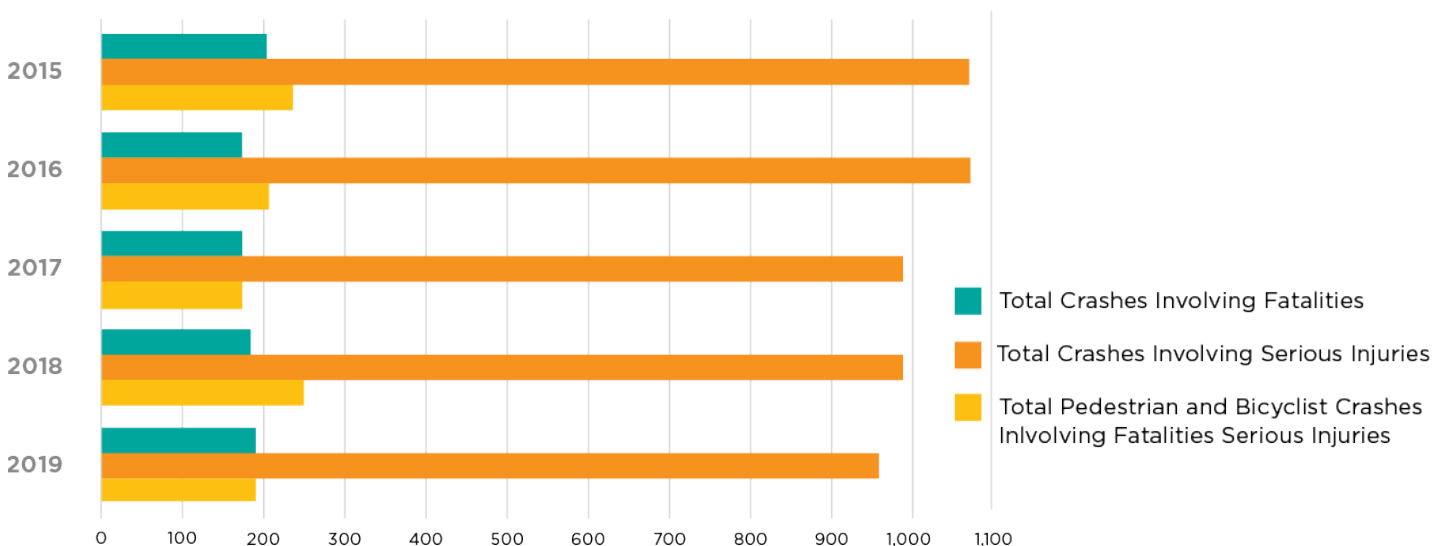


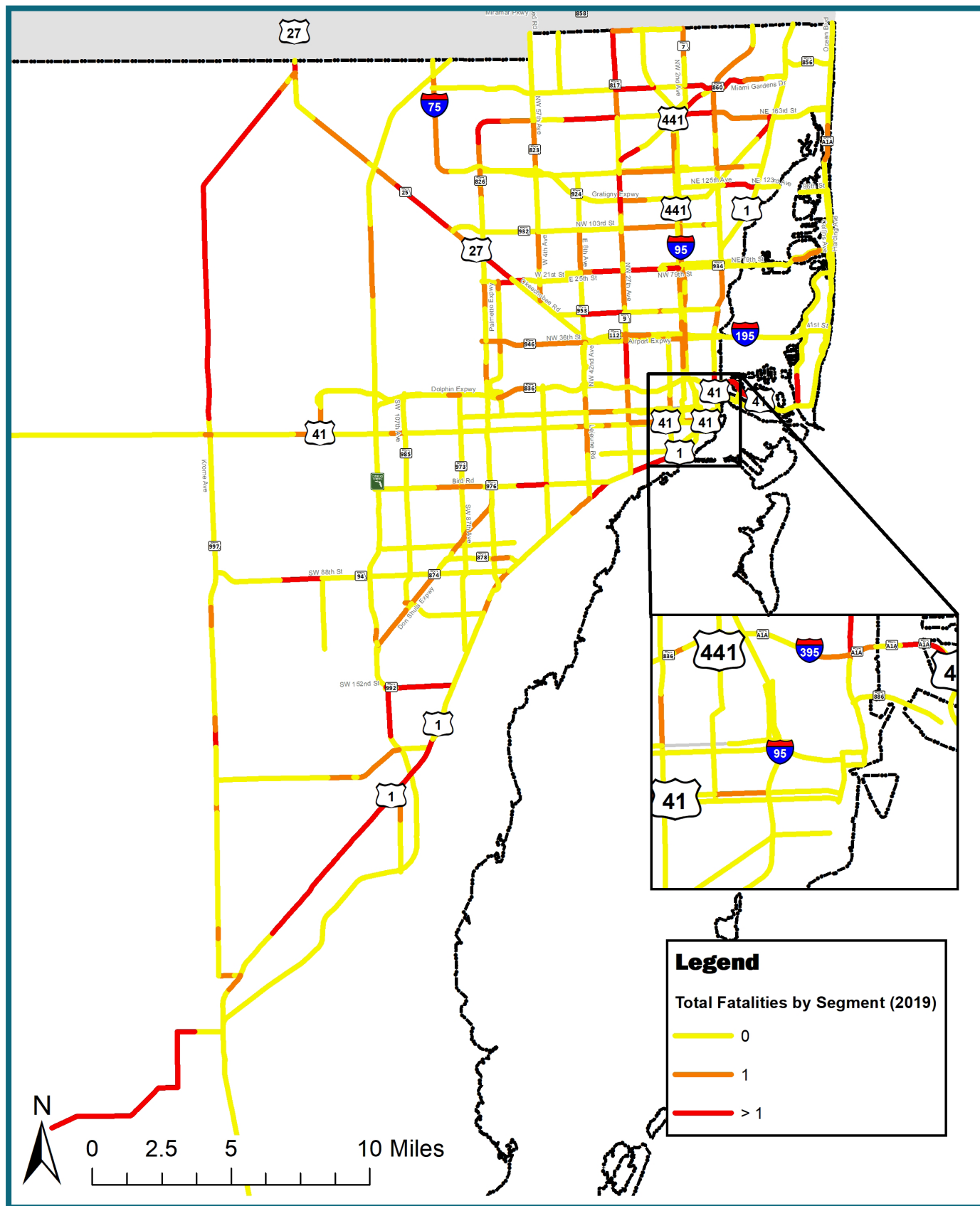
Figure 18 reports annual crash trends between 2015 and 2019 on state highways in Miami-Dade County.

FIGURE 18. SAFETY TRENDS ON ALL PUBLIC ROADS, 2015–2019



Source: Signal Four Analytics - University of Florida GeoPlan Center

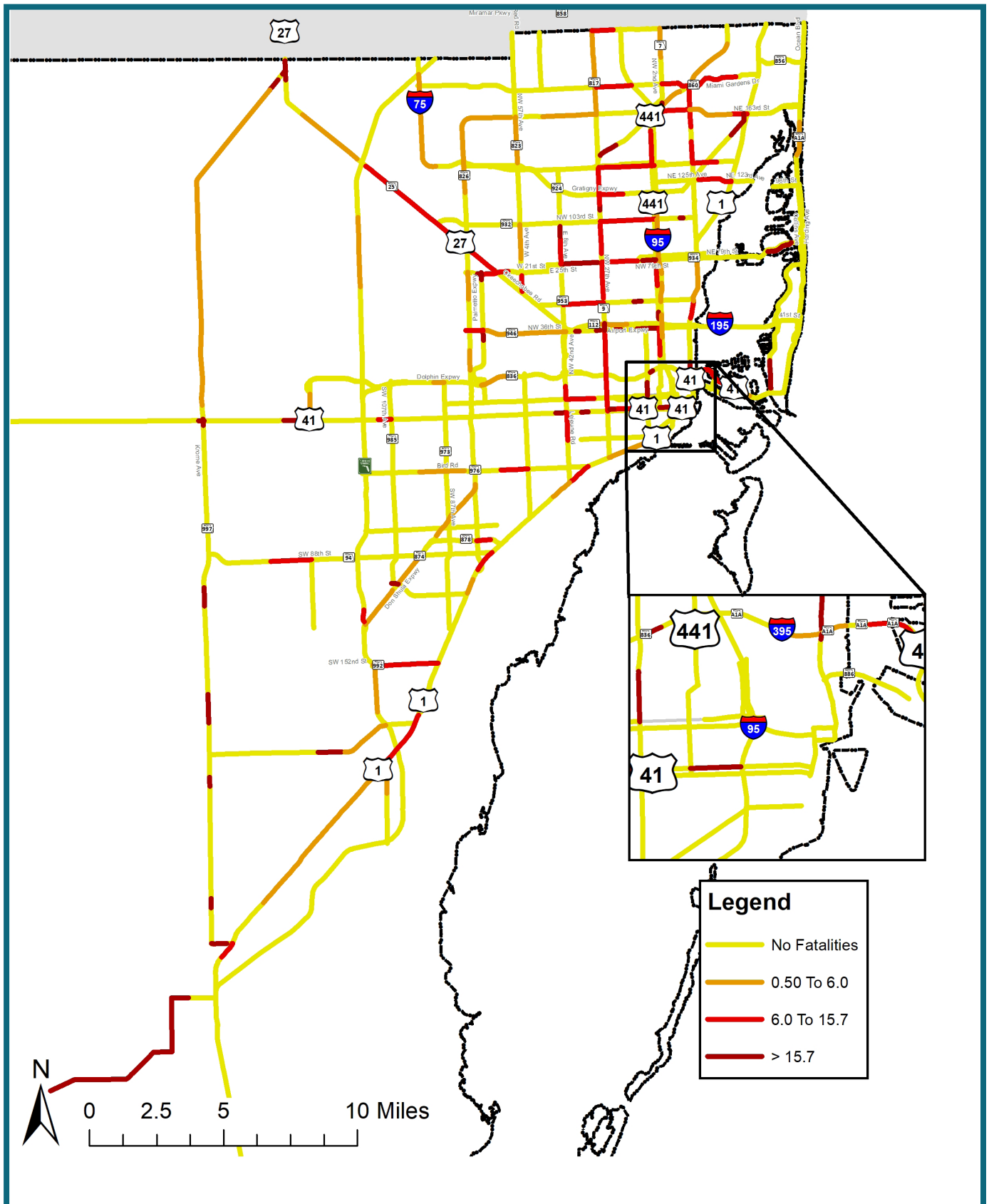
MAP 6. FATALITIES BY ROADWAY SEGMENT ON STATE ROADS, 2019



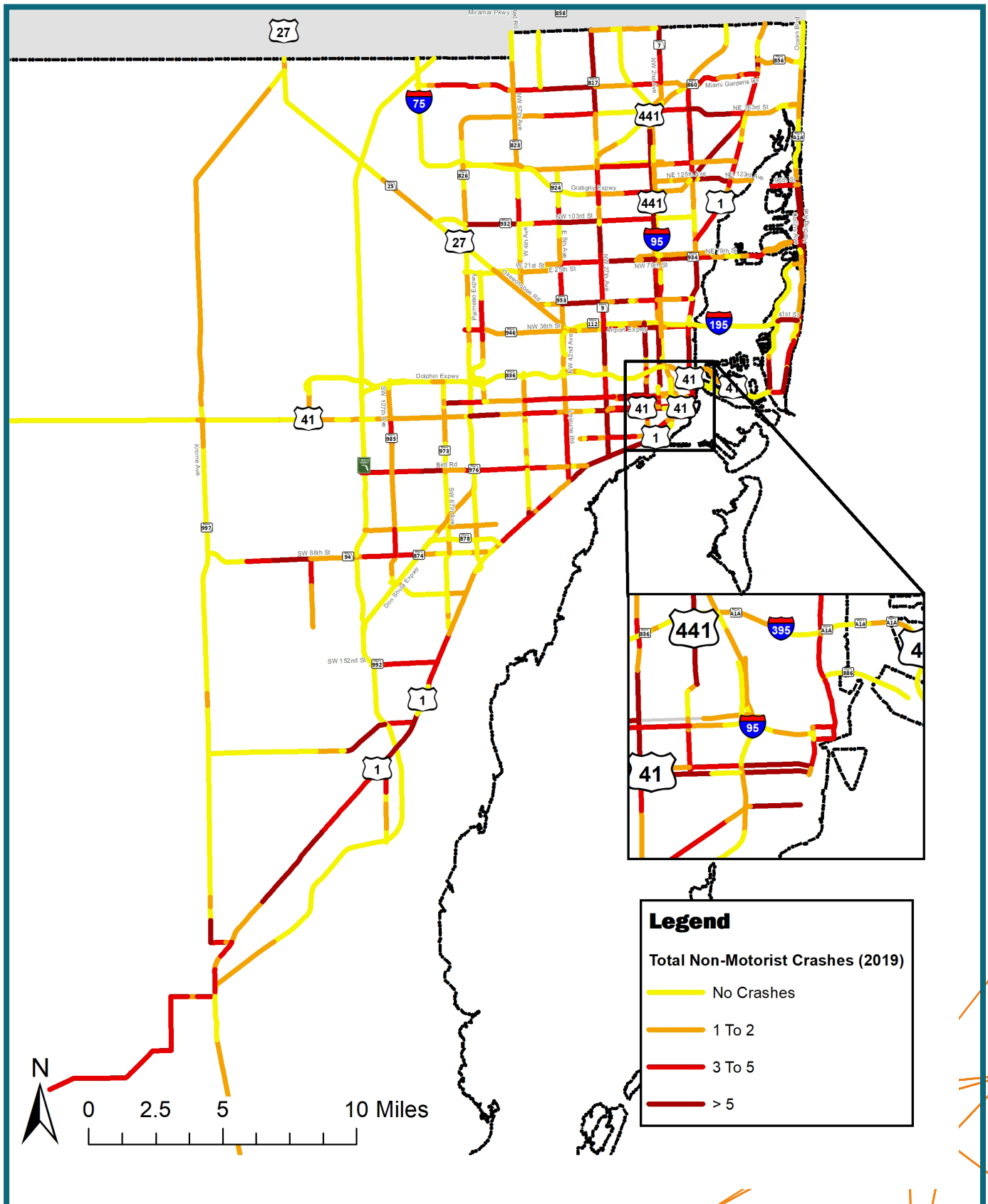
Source: Signal Four Analytics - University of Florida GeoPlan Center



MAP 7. FATALITY RATE (PER 100 MILLION VMT) BY ROADWAY SEGMENT ON STATE ROADS, 2019



MAP 8. TOTAL CRASHES INVOLVING PEDESTRIANS AND BICYCLISTS  
BY ROADWAY SEGMENTS ON STATE ROADS, 2019



## Safety Performance Measures

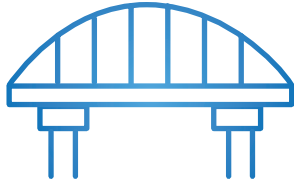
The benefit of tracking consistent performance measures over time is that it provides a baseline and ensuing trend line. Targets and performance reported in Table 1 include crash data on all public roadways in Miami-Dade County, not limited to the SHS. Table 1 summarizes the targets and trends for the safety performance measures.

TABLE 1. SAFETY TARGETS AND TRENDS

MEASURE	TARGET	ANNUAL AVERAGE
Number of Fatalities	0	302
Rate of Fatalities per 100 Million VMT	0	1.48
Number of Serious Injuries	0	1,664
Rate of Serious Injuries per 100 Million VMT	0	8.2
Number of Non-Motorized Fatalities and Serious Injuries Combined	0	427

Source: Signal Four Analytics - University of Florida GeoPlan Center





### Good

Bridges and Pavement in good condition do not need major investments and should be considered for preservation treatments, like different kinds of sealants.

### Fair

Indicates a score between good and poor according to the different criteria determined by pavement type.

### Poor

Pavement in poor condition either reflects low ride quality or structural deficiencies. need resurfacing or reconstruction. Bridges in poor condition will soon need to be replaced or be significantly reconstructed to remain safe.

### Missing

Indicates a lack of data variables that prevented accurate scoring.

## BRIDGE & PAVEMENT CONDITION (PM2)

### Condition Classifications

Proper bridge and pavement maintenance is a central part of a safe, efficient, and multimodal transportation system. In these challenging times of declining gas tax revenues due to emerging technologies and telecommuting, the cost efficiency of transportation infrastructure investments is critical. For motorists, car repair costs from aging infrastructure is equivalent to up to a \$1 tax on every gallon of gasoline sold, according to a 2017 Brookings Institution analysis.<sup>14</sup> This staggering cost represents only the cost born by roadway users. When bridge maintenance is not kept up, communities bear the tremendous cost of having to replace bridges. To prevent these resource drains, close monitoring of infrastructure condition and prioritizing necessary maintenance and repairs is vital.

### Pavement

Interstate and non-interstate pavement in Miami-Dade County is largely in good or fair condition. The miles of both interstate and non-interstate roadways in good condition has increased by nearly 5 percent since 2016. Interstate and non-interstate pavement condition improved significantly from 2017 and 2019. The charts and maps in Figures 20-22 and Maps 9-10 display system and segment pavement condition in 2019.

<sup>14</sup> Peter Olson and David Wessel, "The case for spending more on infrastructure maintenance," Brookings, 2017, <https://www.brookings.edu/blog/up-front/2017/01/31/the-case-for-spending-more-on-infrastructure-maintenance/>.

FIGURE 19. INTERSTATE PAVEMENT CONDITION TREND, 2016–2019

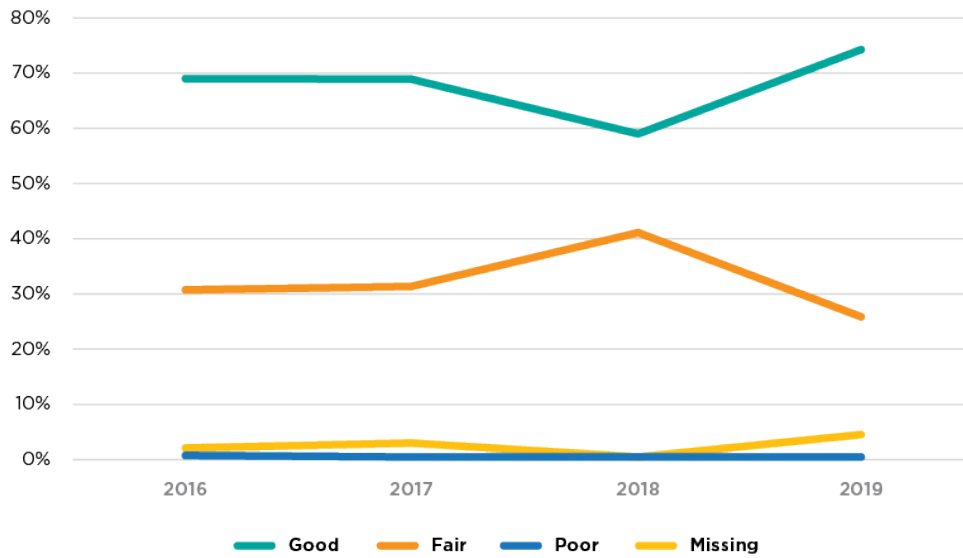
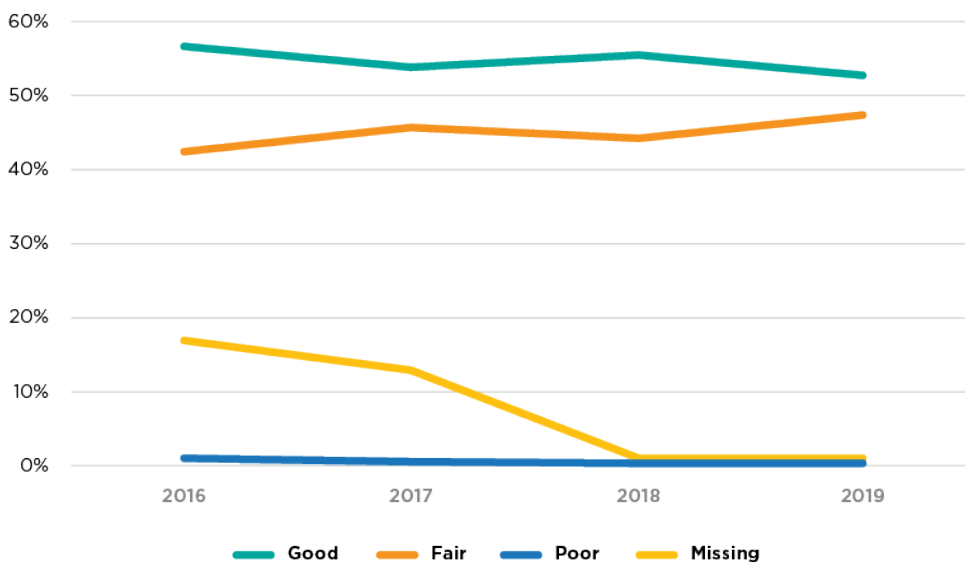


FIGURE 20. NON-INTERSTATE PAVEMENT CONDITION TREND (ON NATIONAL HIGHWAY SYSTEM), 2016-2019



Note: Good, Fair, Poor, and Missing proportions are not additive due to Missing category representing portions of other categories

Source: FDOT State Materials Office

FIGURE 21. NON-INTERSTATE PAVEMENT CONDITION, 2019

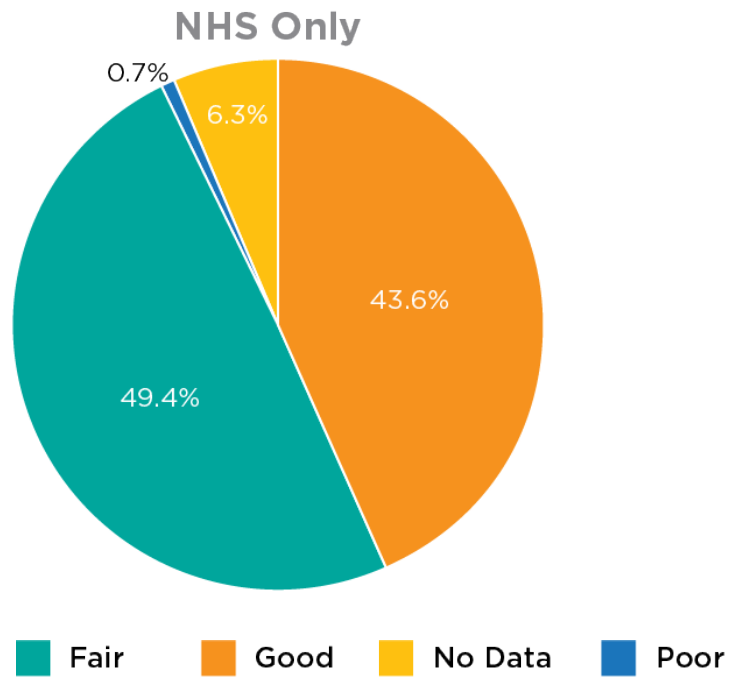
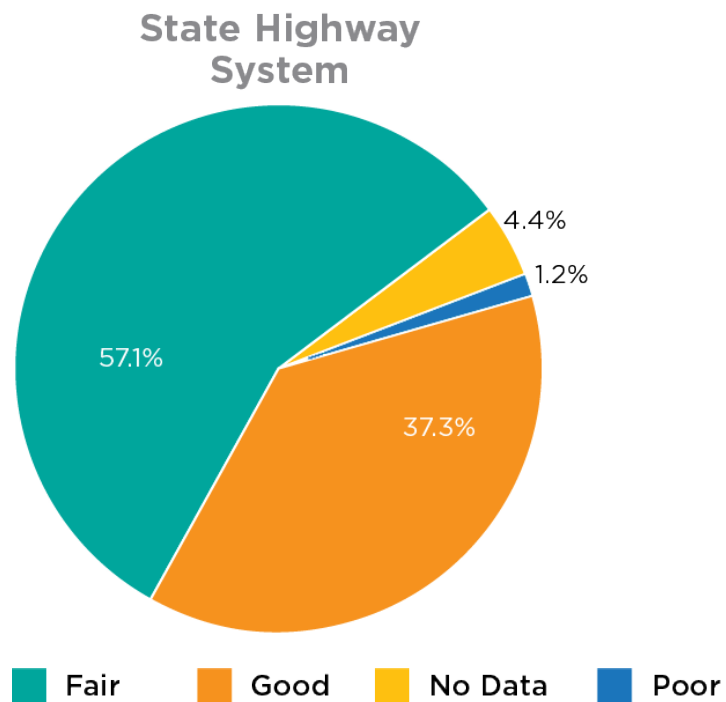
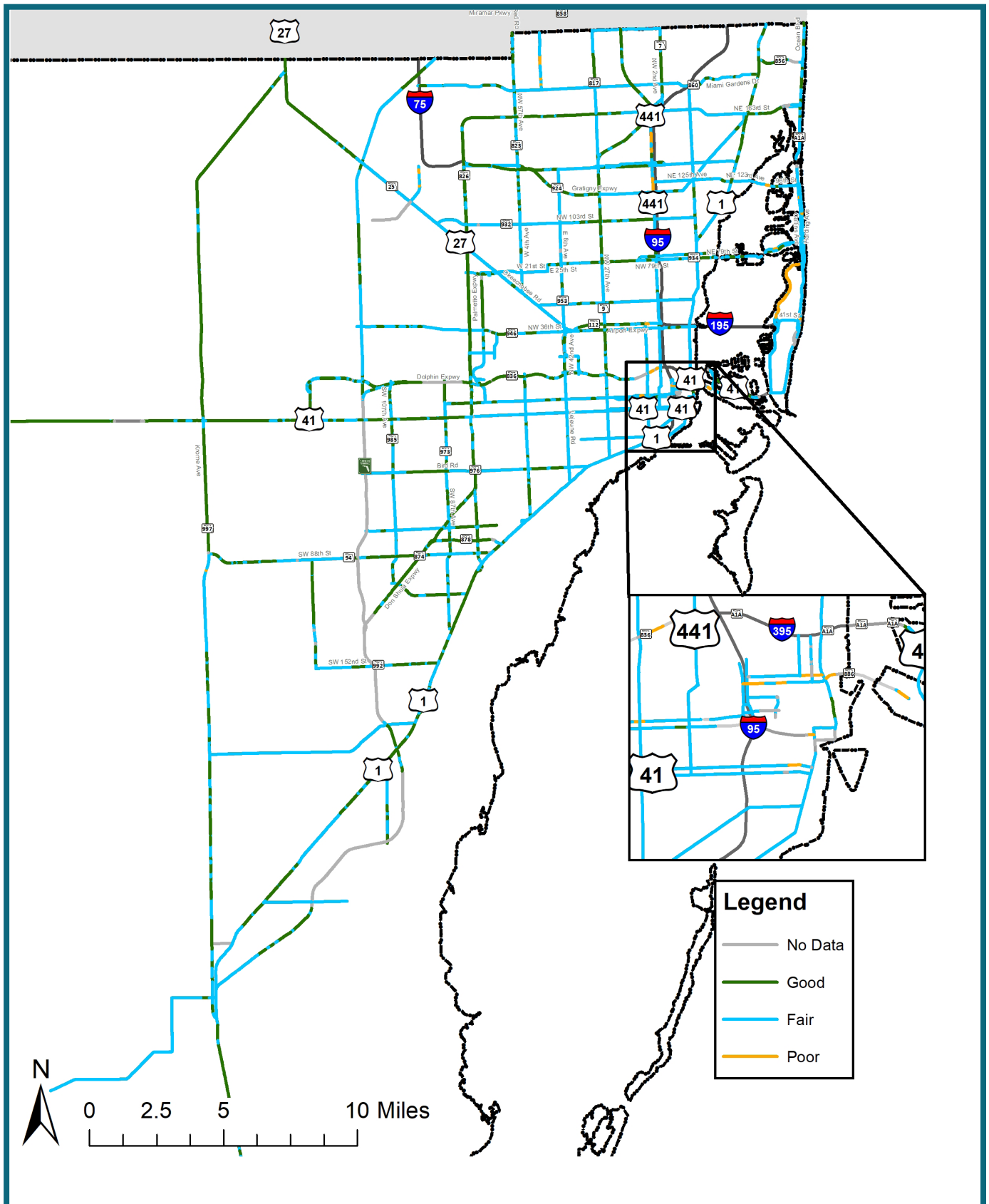


FIGURE 22. STATE HIGHWAY SYSTEM PAVEMENT CONDITION, 2019



Source: FDOT State Materials Office

MAP 9. PAVEMENT CONDITION BY STATE ROADWAY SEGMENT;  
INTERSTATE, 2019; NON-INTERSTATE, 2020




Source: FDOT State Materials Office

TABLE 2. PAVEMENT CONDITION TARGETS AND PERFORMANCE

MEASURE	TWO-YEAR TARGET (LANE MILES)	FOUR-YEAR TARGET (LANE MILES)	2019 RESULTS (LANE MILES)	
Interstate Pavements in Good Condition	Not required	60% or more	74.3%	✓
Interstate Pavements in Poor Condition	Not required	5% or less	0%	✓
Non-Interstate NHS Pavements in Good condition	40% or more	40% or more	47.3%	✓
Non-Interstate NHS Pavements in Poor Condition	5% or less	5% or less	0.1%	✓
✓ Target Met				

## Bridge Condition

**604**   
IN GOOD CONDITION (86.0%)

**95**   
IN FAIR CONDITION (13.4%)

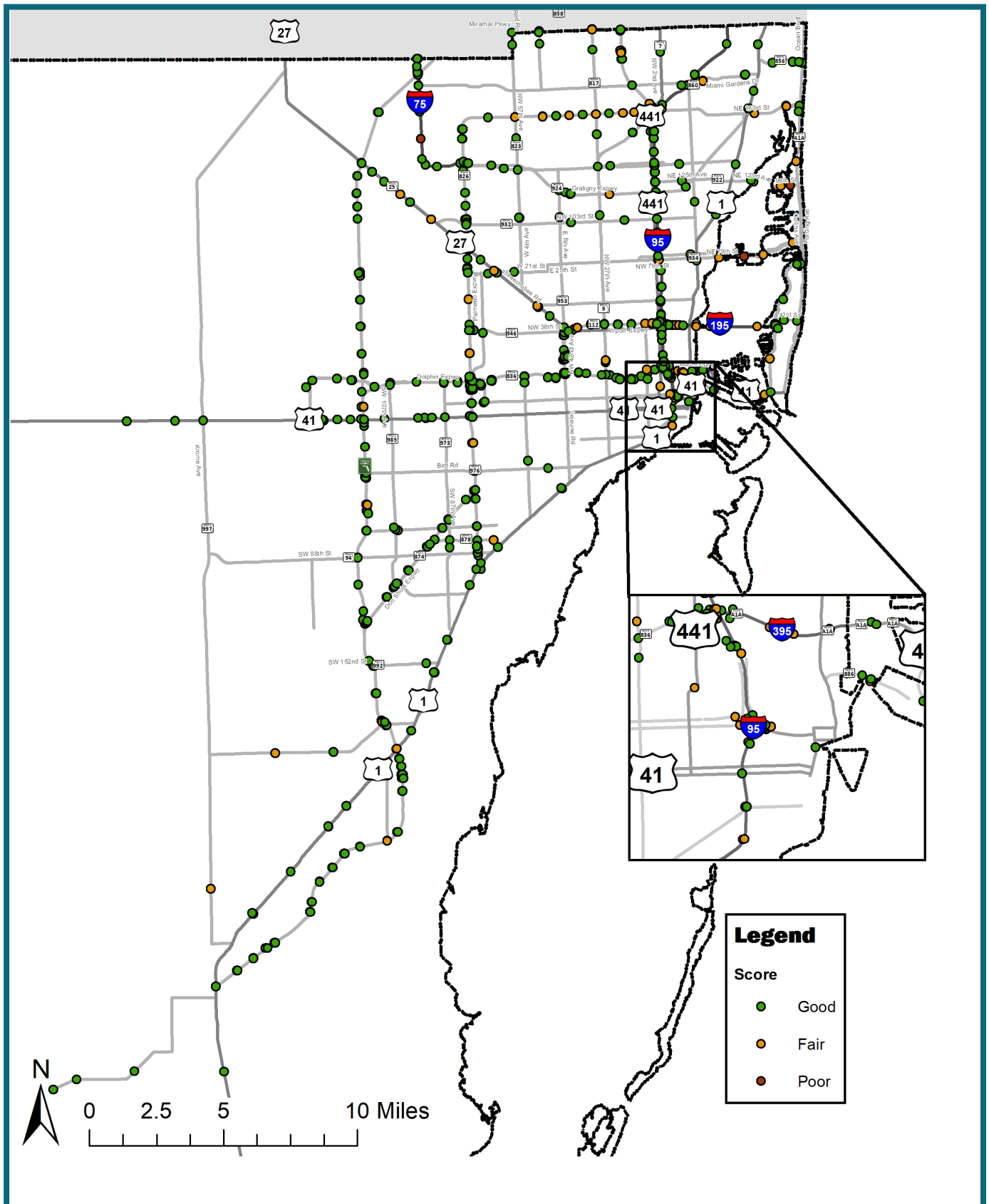
## Bridges on State Highway System

Miami-Dade's more than 700 bridges on State highways are a critical part of the coastal county's infrastructure. Keeping bridges in good condition fosters an efficient flow of people and goods through the region and provides critical support to emergency evacuations during tropical storms, hurricanes, and other natural disasters.

99% of the state highway bridges in Miami-Dade County are in good or fair condition. Map 10 displays 2019 bridge condition data by each individual bridge on State highways in Miami-Dade County.



MAP 10. BRIDGE CONDITION BY STATE HIGHWAY BRIDGE, 2019





Source: FDOT State Materials Office

## BRIDGE CONDITION PERFORMANCE MEASURES

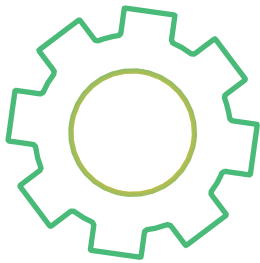
Table 3 summarizes the targets and trends for bridge condition measures.

TABLE 3. BRIDGE CONDITION TARGETS AND PERFORMANCE

MEASURE	TWO-YEAR TARGET	FOUR-YEAR TARGET	CURRENT DECK AREA
NHS Bridges in Good Condition	50% or more	50% or more	62.5% 
NHS Bridges in Poor Condition	Not required	5% or less	0.1% 



Target Met



**CONGESTION  
COST** MIAMI-DADE  
COUNTY NEARLY

**\$4.5 billion**

FROM 2015-2018.

Source: FDOT

## SYSTEM PERFORMANCE (PM3)

Traffic congestion clogs the county's roadways. It frustrates drivers, adds pollutants to the air, and cost commuters more than \$2 billion in 2020<sup>15</sup>.

While PM3 deals only with non-recurring congestion, both recurring and non-recurring traffic congestion occur and are problematic for users of the county's roadways.

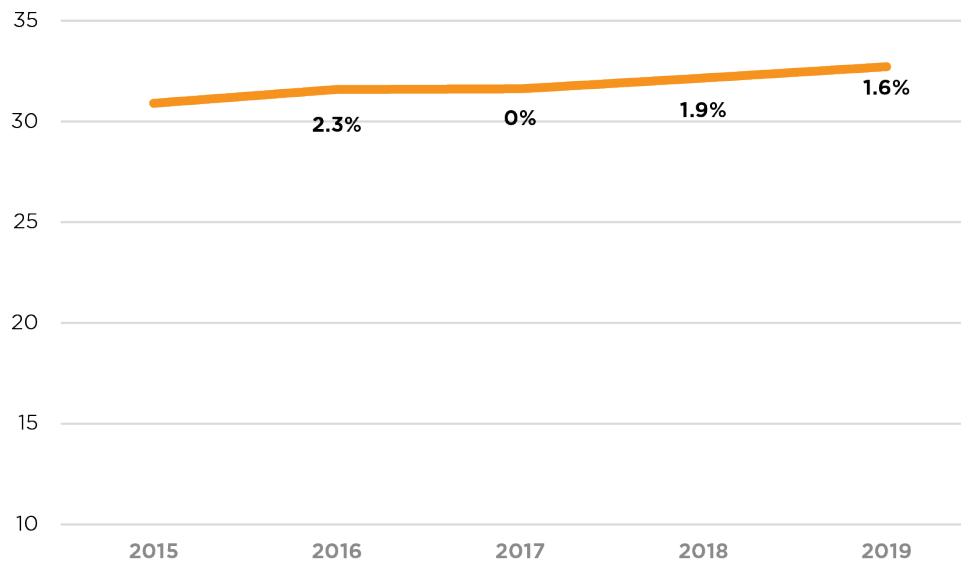
**Recurring congestion**, commonly known as rush hour traffic, is experienced on a regular basis in more or less the same locations every day. Despite increased travel time and lost productivity, recurring congestion is predictable. Motorists can rely on consistent travel times because they know that the congestion is likely to re-occur every day. Recurring congestion is a direct function of daily VMT on the county's roadways. Figures 23 and Map 11 display the VMT trend (2015 to 2019) and 2019 segment results on the SHS in Miami-Dade County.

**Non-recurring congestion** typically results from unpredictable events, including backups and slowdowns caused by bad weather, stalled vehicles, or crashes. This type of congestion is difficult to plan around and can be frustrating for travelers because it creates a reliability problem. Non-recurring congestion can be highly disruptive because people cannot rely on a particular amount of time it takes to get to work or their other destinations.

Traffic congestion in general is a function of growing demand on roadway system, which is generated by overall population growth and patterns of growth. Total Vehicle Miles Traveled (VMT) on the system is a typical measure of that demand. In Miami-Dade County, VMT has grown by almost two million on a daily basis between 2015 and 2019.

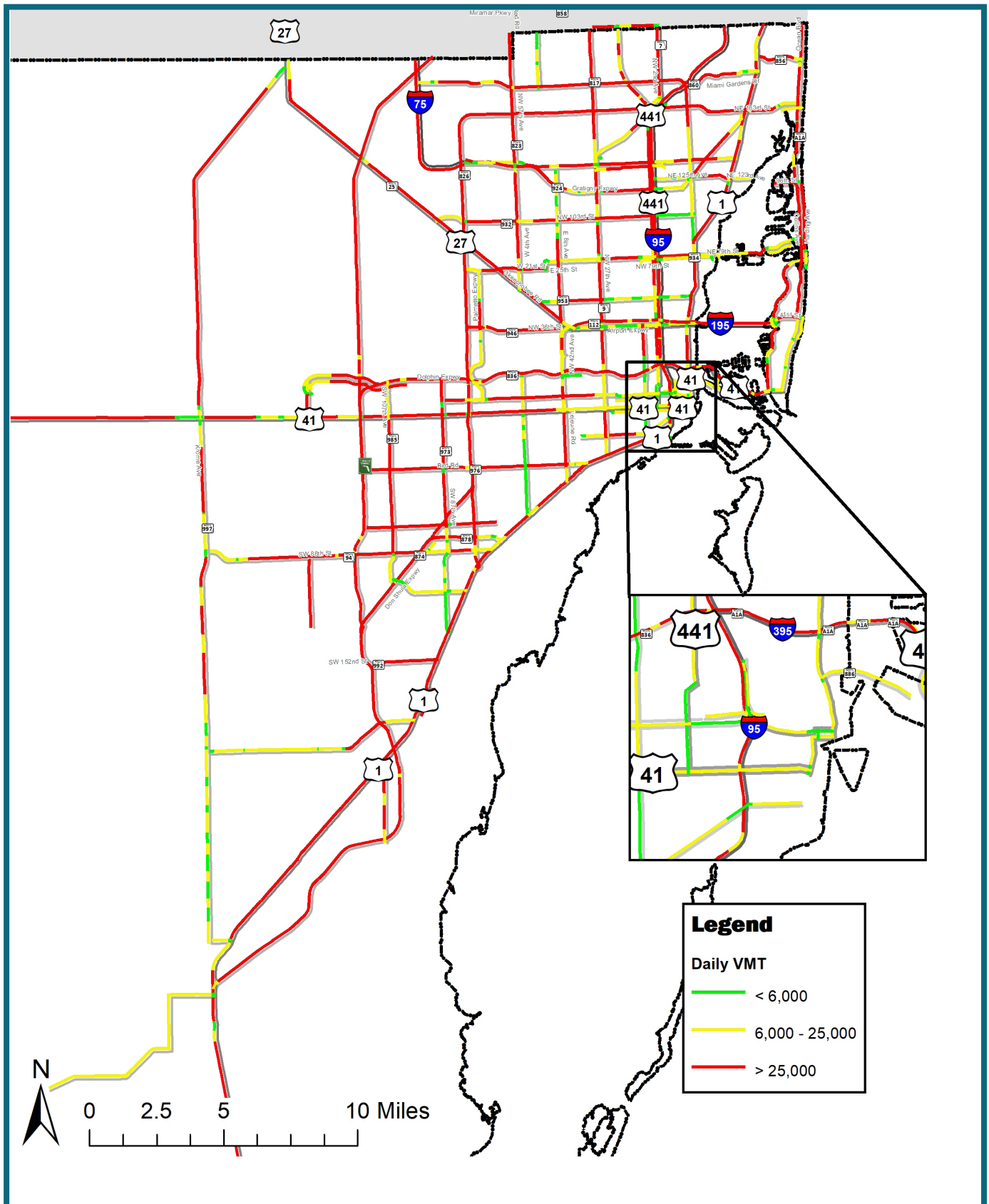
<sup>15</sup> Texas A&M Transportation Institute, Congestion Data for Your City—Urban Mobility Report—Mobility Division, <https://mobility.tamu.edu/umr/congestion-data/>.

FIGURE 23. SHS VMT TREND IN MIAMI-DADE COUNTY, 2015–2019



Sources: *FDOT – Traffic Characteristics Inventory*  
*FDOT – Roadway Characteristics Inventory*

MAP 11. DAILY VMT BY STATE ROADWAY SEGMENT, 2019



Sources: FDOT – Traffic Characteristics Inventory  
 FDOT – Roadway Characteristics Inventory

## Recurring Congestion

Recurring congestion is predictable, consistent delay. Travelers must plan around recurring congestion, knowing to expect significant delay on their way to work, the airport, to school, or anywhere else they need to go. Recurring congestion measures include:

- **Vehicle hours of delay**, which spots congested areas using observed travel time on a given segment relative to uncongested travel time. This perspective highlights the segments with the highest daily volumes and those that operate overcapacity on a daily basis. In Miami-Dade County, these segments are the Dolphin and Palmetto expressways as well as I-95 (see Figure 24).
- **Percent miles heavily congested**, which represents segments operating at overcapacity per FDOT's level of service standards as a total percent of the roadway network (see Figure 25).
- **Person hours of delay**, which accounts for vehicle occupancy by tracking the amount of time people spend on a given segment of road. Person hours of delay combines peak hours delay and off-peak delay to highlight both high-volume, limited-access roadways as well as lower-volume roadways with greater destination access (see Map 12).

In Miami-Dade County, congestion is concentrated in urban areas. Major arterials as well as interstate and expressway segments that connect suburban residential areas to urban Miami-Dade County experience the most congestion and delay. Congestion in Miami-Dade has generally increased from 2015 to 2019. Such an increase is not unexpected, due to the county's significant growth. In the more recent period since 2017 however, congestion has remained about the same or decreased slightly.

FIGURE 24. DAILY VEHICLE HOURS OF DELAY ON SHS

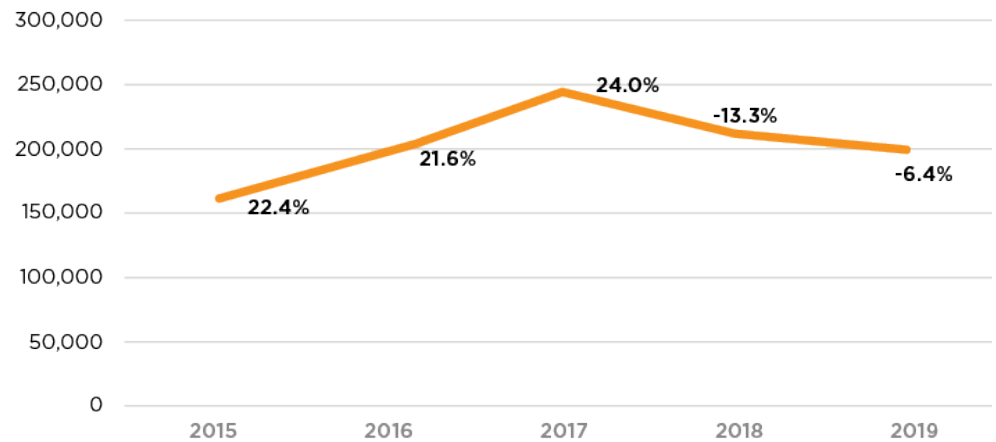
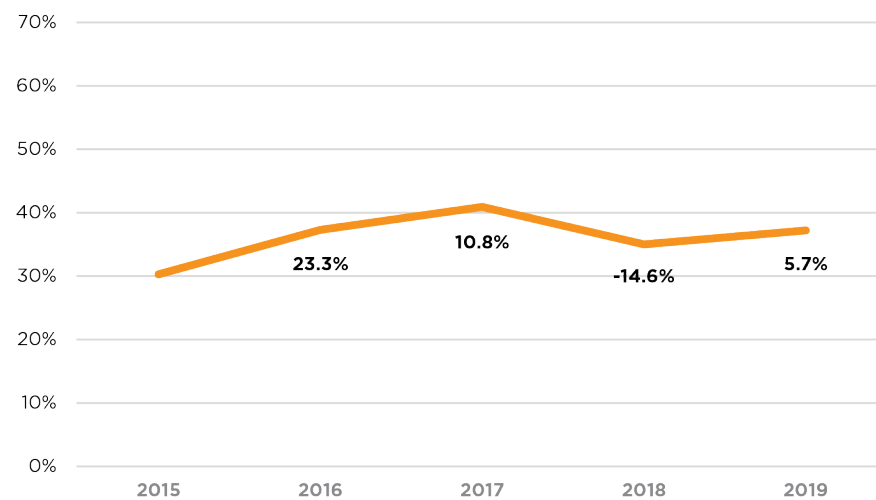
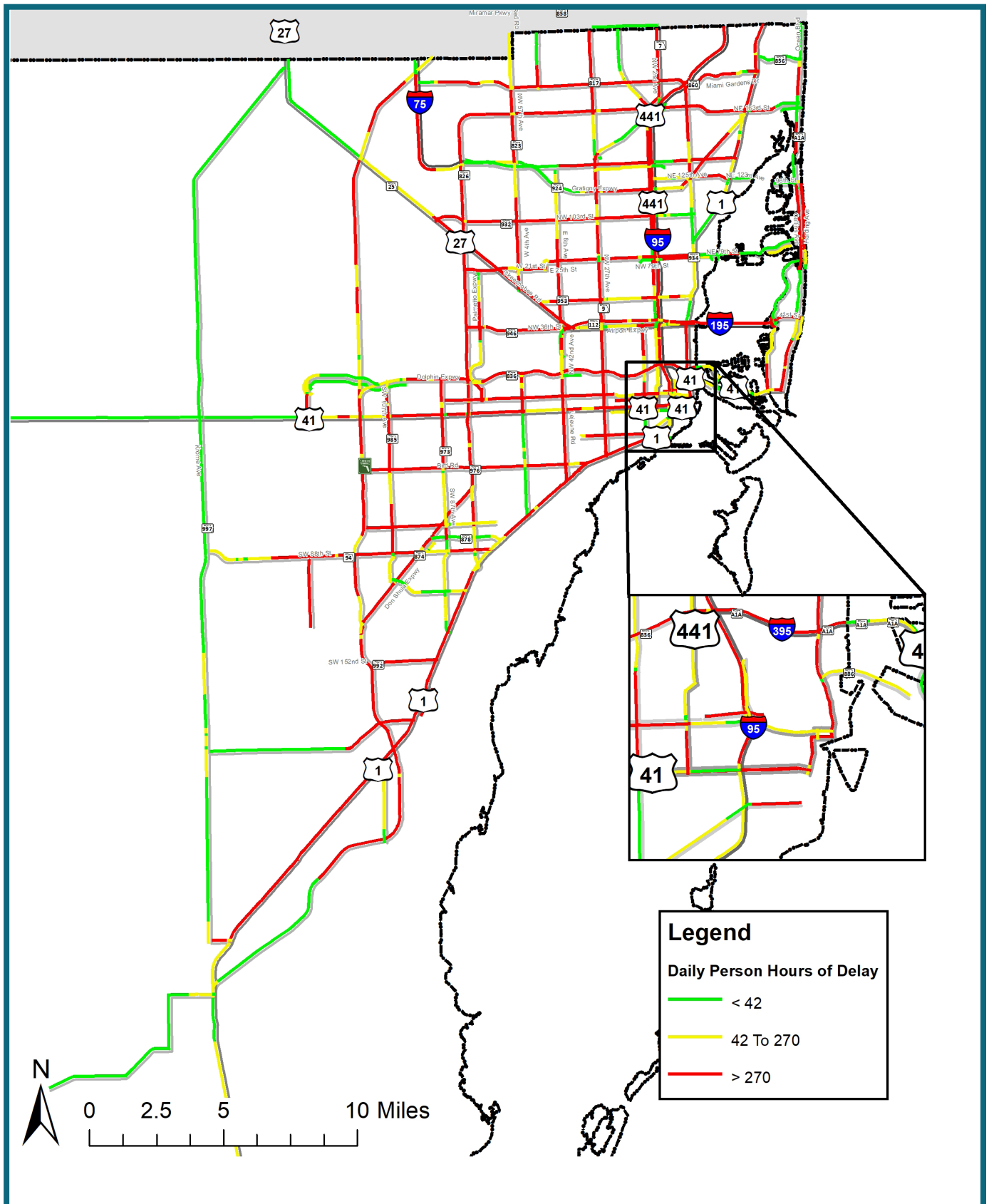


FIGURE 25. PERCENT MILES HEAVILY CONGESTED ON SHS



Source: FDOT – Traffic Characteristics Inventory  
HERE Technologies – Travel Time Data

MAP 12. DAILY PERSON HOURS OF DELAY BY STATE ROADWAY SEGMENT, 2019



Source: FDOT – Traffic Characteristics Inventory  
HERE Technologies – Travel Time Data

*Reliability is often expressed as a percentage of **person-miles** to account for different modes of travel; this percentage captures all who use the system, whether they go by car, truck, or bus.*

### Non-Recurring Congestion & Reliability

Non-recurring congestion is measured in terms of travel time variability, also known as reliability. Good travel-time reliability is important because it helps users accurately predict how long their trips will take. A reliable transportation system helps parents to pick up their children from school on time, business travelers get to the airport on time, and truck drivers to maximize their delivery schedules.

Two key measures for a transportation network's reliability include:

- Interstate and non-interstate level of travel time reliability (LOTTR), which scores reliability on the interstate or non-interstate state highway system (SHS).
- Truck travel time reliability (TTTR) index, which measures freight performance by scoring reliability for truck traffic.

Both LOTTR and TTTR score reliability by comparing the longer travel times experienced on a roadway to the most-common travel time on the road during particular periods (e.g., the morning commute). The ratio of these two values—specifically the 80th and 50th percentile travel times, respectively—provided the measure of variability for the LOTTR. For example, if the ratio is 2.0, it means that there are times when the travel time on the particular roadway are double the median, or typical, travel time on that roadway. Scores equal to or under 1.5 are considered reliable. The TTTR ratio is very similar to the LOTTR, differing only in the value of the numerator, which for TTTR is the 95th percentile rather than the 80th.

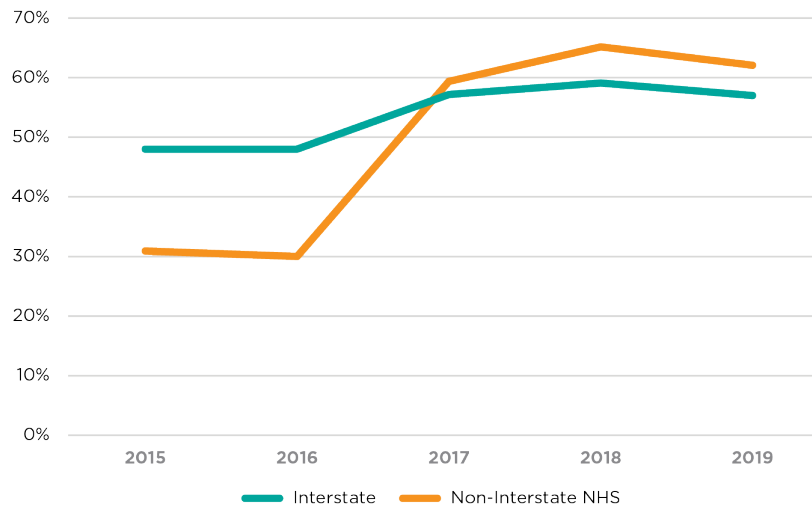
### Interstate & Non-Interstate Level of Travel Time Reliability (LOTTR)

In Miami-Dade County, reliability is variable, particularly along the east-west interstate connections, which are impacted by daily commutes and peak tourist season.

While interstate performance has remained about the same, Miami-Dade County has significantly improved non-interstate SHS reliability during the past five years. This shift could be due to a change in data sources. Moving forward, reliability should be continually monitored with a consistent data source. In 2019, 62 percent of person-miles traveled on the non-interstate SHS system were reliable; this marks a dramatic increase from 2016, when only 30 percent of person-miles were reliable. This rapid improvement surpassed FDOT targets for the county (see Map 14).



FIGURE 26. TREND IN PERCENT PERSON MILES TRAVELED ON SHS THAT ARE RELIABLE

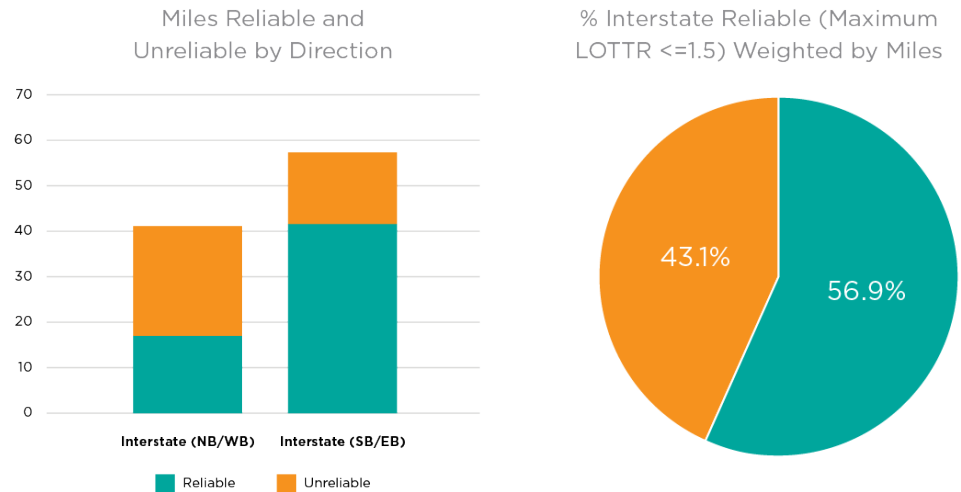


Source: HERE Technologies – Travel Time Data

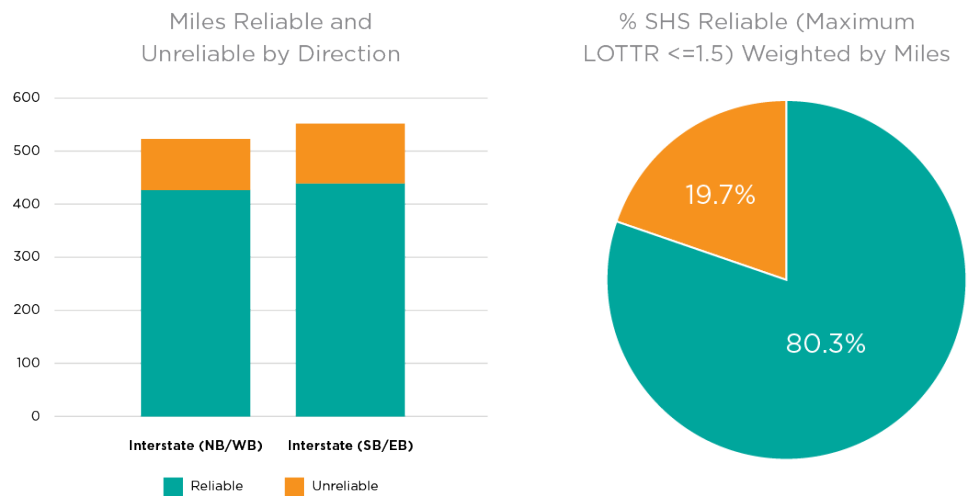
However, there is a significant difference in reliability between the interstate and non-interstate systems. More than 40 percent of interstate roads were unreliable in 2019 in Miami-Dade County—a percentage more than 20 percent higher than the portion of unreliable non-interstate roads. The under performing segments include sections of the Florida Turnpike and the Dolphin and Palmetto Expressways. Generally, the most unreliable segments are near interchanges with another highway or major arterial. The MacArthur Causeway—one of the main connections from Miami to Miami Beach—is also especially unreliable. This roadway is currently under construction to improve its performance.

FIGURE 27. PERCENT PERSON MILES TRAVELED THAT ARE RELIABLE IN 2019

### Interstate Reliability

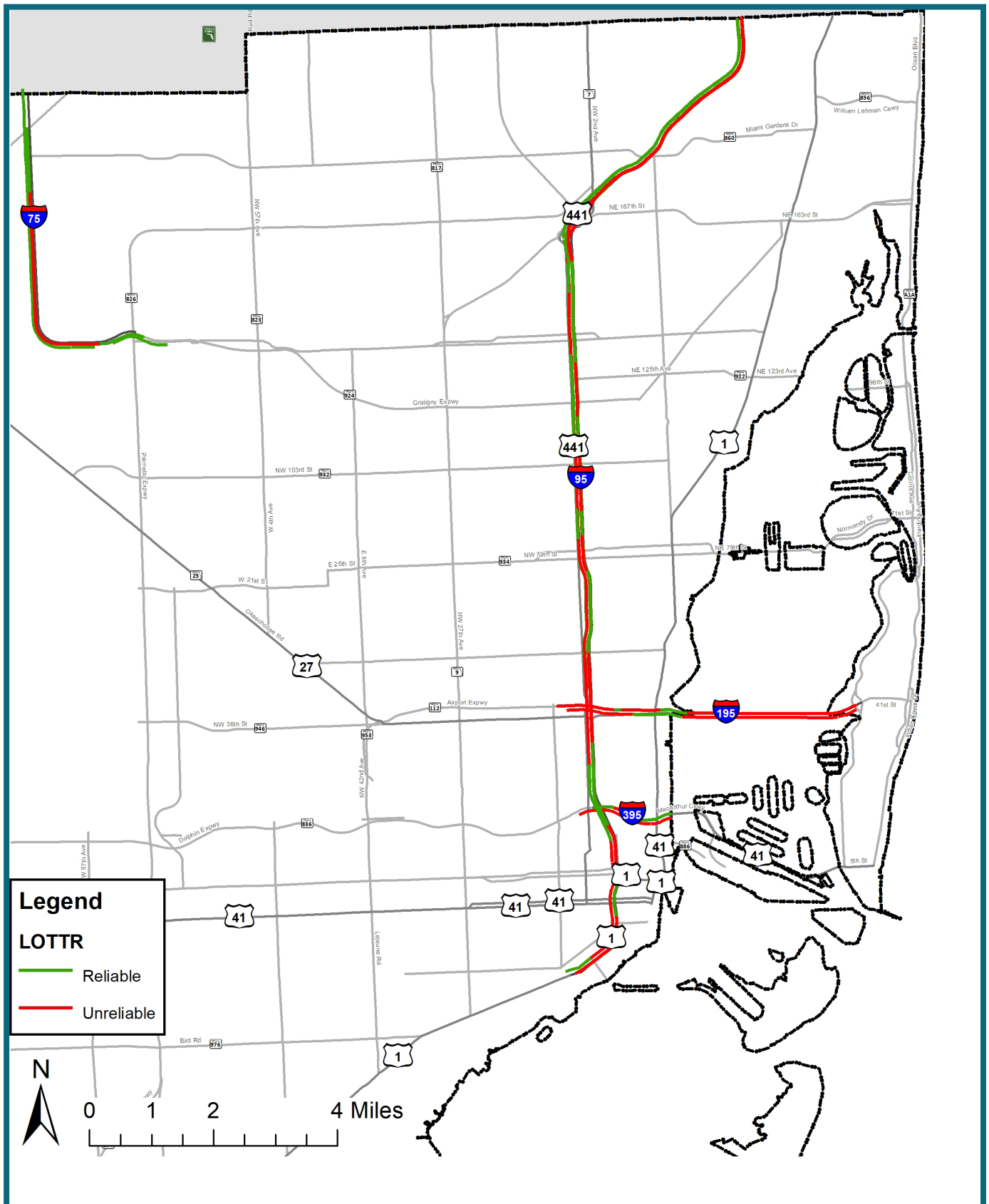


### Non-Interstate SHS Reliability



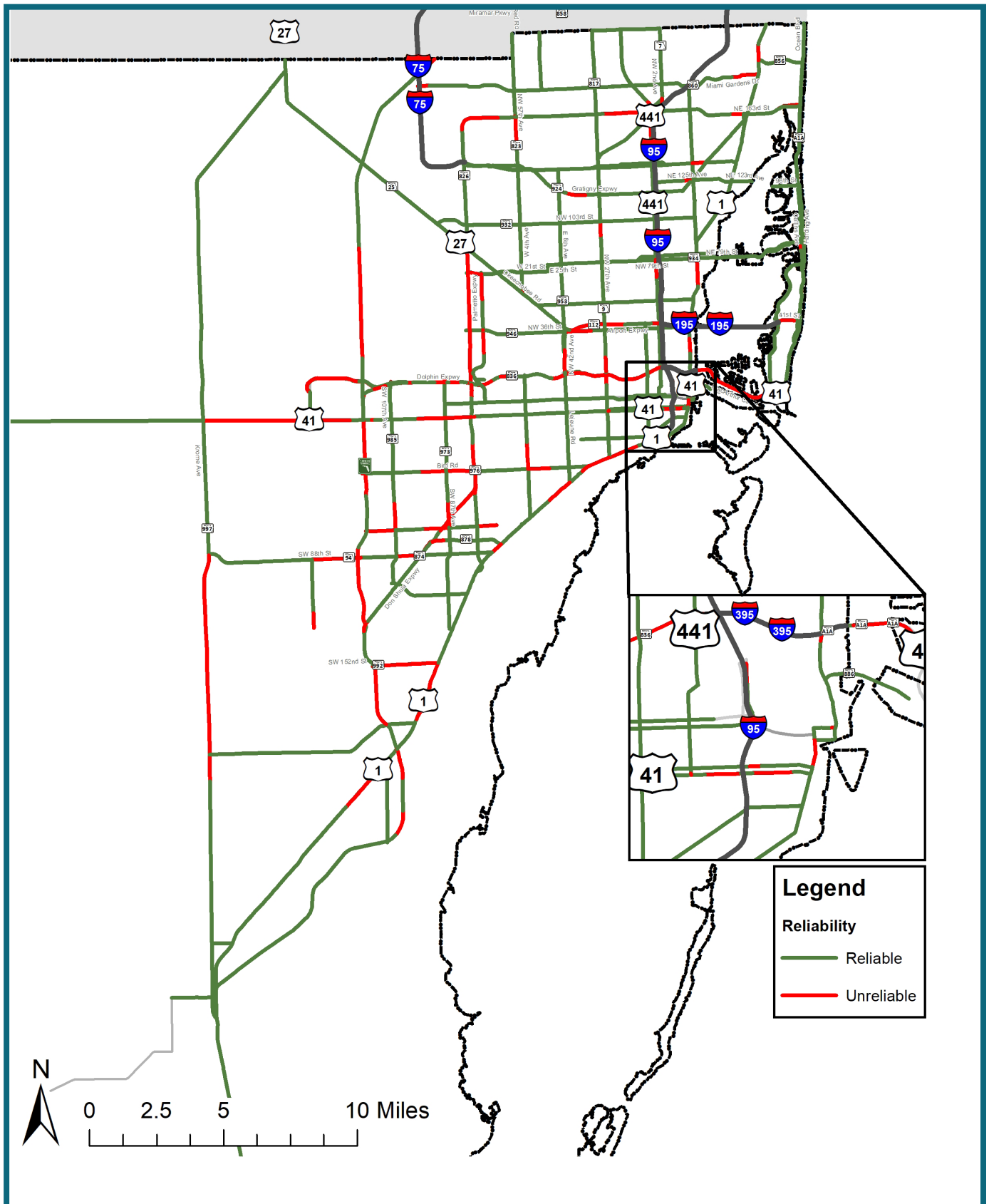
Source: HERE Technologies – Travel Time Data

MAP 13. INTERSTATE LOTTR BY ROADWAY SEGMENT, 2019



Source: HERE Technologies – Travel Time Data

MAP 14. NON-INTERSTATE LOTTR BY STATE ROADWAY SEGMENT, 2019



Source: HERE Technologies – Travel Time Data

### Freight Reliability (TTTR)

Since 2015, Miami-Dade County's interstate TTTR index has improved from 4.56 to 3.08. Throughout the county, TTTR remains high and over the 2.0 reliable threshold and FDOT targets for Miami-Dade County. TTTR is depicted by roadway segment in Map 16.

FIGURE 28. SHS TRUCK TRAVEL TIME RELIABILITY INDEX, 2015-2019

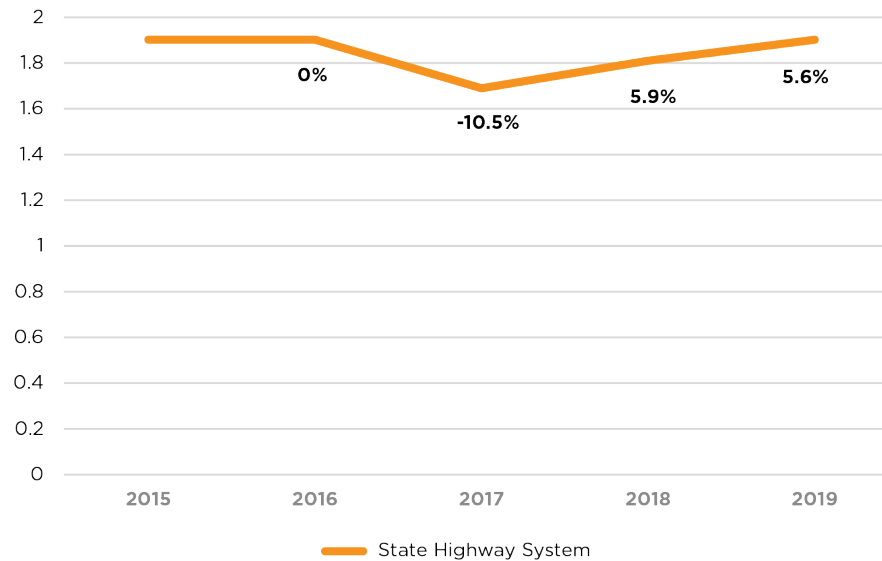
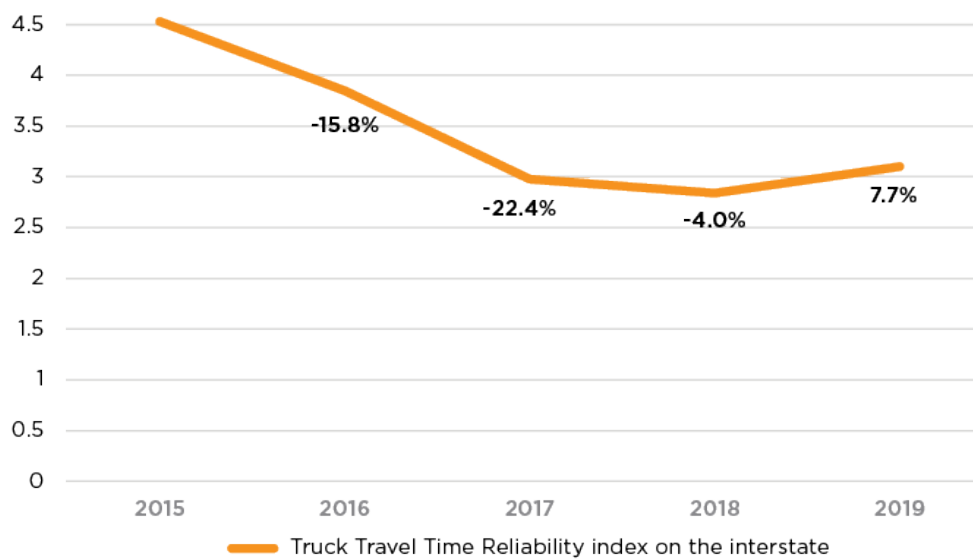
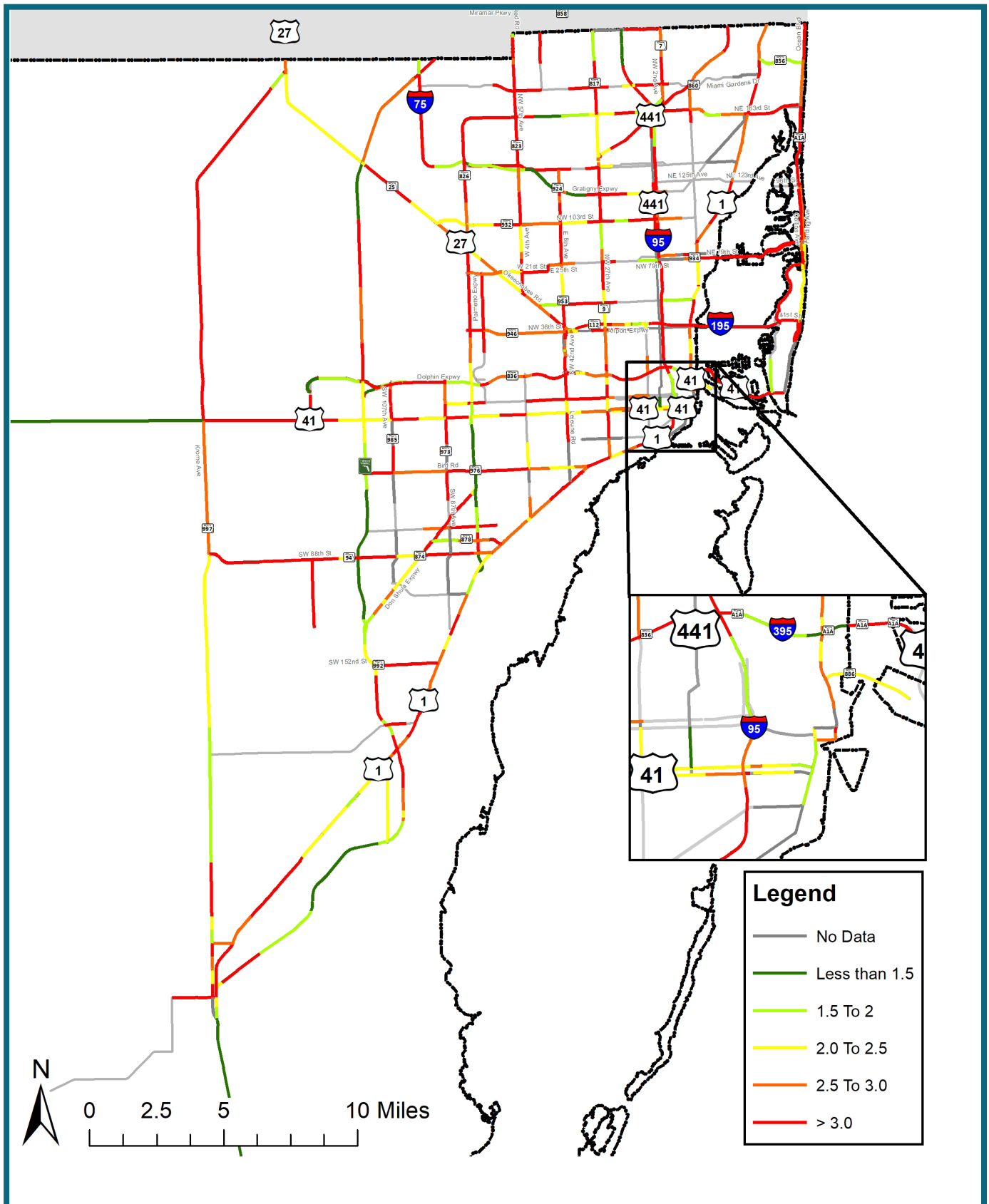


FIGURE 29. INTERSTATE TRUCK TRAVEL TIME RELIABILITY INDEX, 2015-2019



Source: HERE Technologies – Travel Time Data




MAP 15. TRUCK TRAVEL TIME RELIABILITY (TTTR) ON SHS



Source: HERE Technologies – Travel Time Data

Table 4 reports systemwide reliability targets and 2019 performance results.

TABLE 4. RELIABILITY TARGETS AND PERFORMANCE

MEASURE	FOUR-YEAR TARGET	2019 RESULTS
Person-miles traveled on the interstate that are reliable	70% or more	57% 
Person-miles traveled on the non-interstate NHS that are reliable	50% or more	62% 
Truck travel time ratio (TTR) on the interstate	2.00 or less	3.08 



Target Met



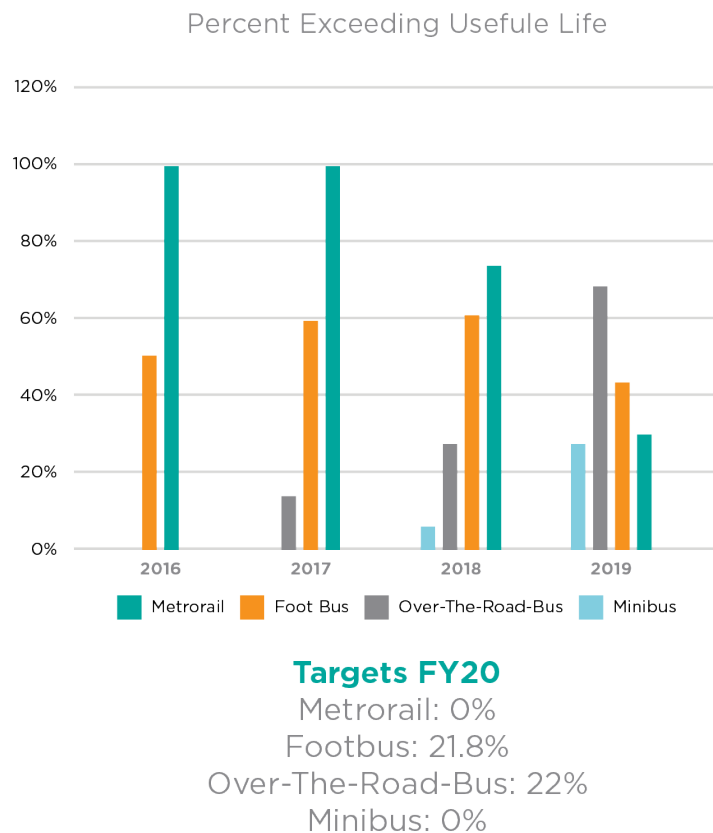
Target Not Met



## TRANSIT ASSET MANAGEMENT (TAM)

Supporting a safe, accessible, and reliable transportation network requires keeping public transit vehicles in good working order. Tracking the percent of vehicles that exceed their useful life helps to identify levels of funding necessary to replace or repair vehicles. Since 2016, Metrorail has made considerable investments in improving the condition of its fleet. However, non-revenue vehicles—those not used to carry passengers like maintenance vehicles—that have exceeded their useful life have remained relatively high. The number of maintenance facilities, including things like parking structures, fueling stations, transfer centers, has also remained the same from 2018 through fiscal year 2020 (see Figures 30-33). Tables 5 through 8 report the TPO's TAM targets and 2019 performance within each of the respective categories.

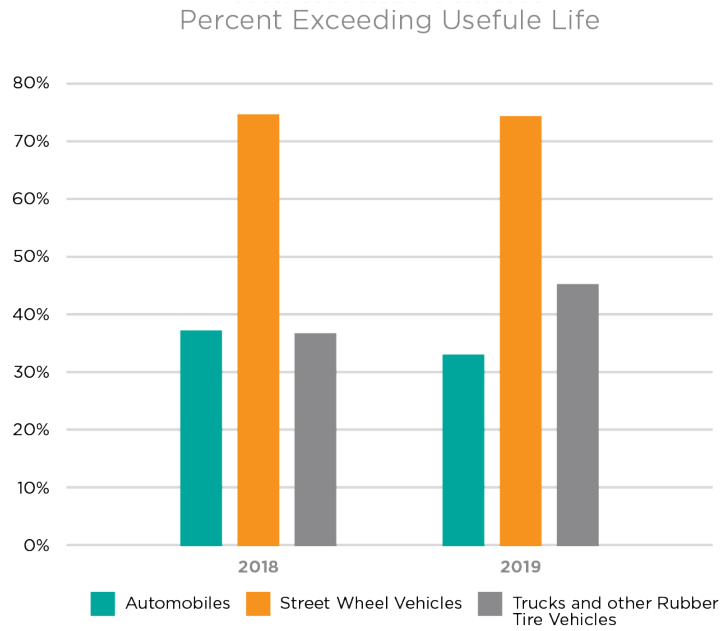
**FIGURE 30. TRANSIT ASSETS CONDITION SINCE 2018: REVENUE VEHICLES**



Source: Federal Transit Administration National Transit Database



FIGURE 31. TRANSIT ASSETS CONDITION SINCE 2018: NON -REVENUE VEHICLES



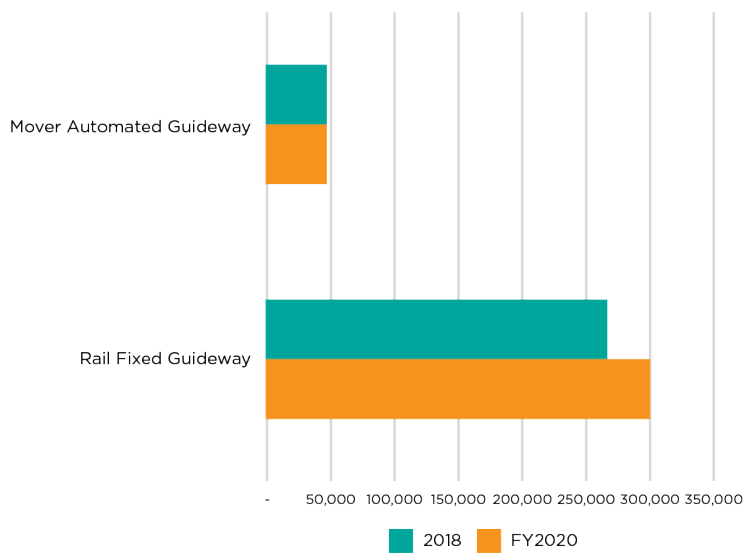
**Targets FY20**

Automobiles: 0%

Street Wheel Vehicles: 21.8%

Trucks and other Rubber Tire Vehicles: 22%

FIGURE 32. TRANSIT ASSETS CONDITION SINCE 2018: TRACK LENGTH BY TYPE (FEET)



**% Performance Restrictions:**

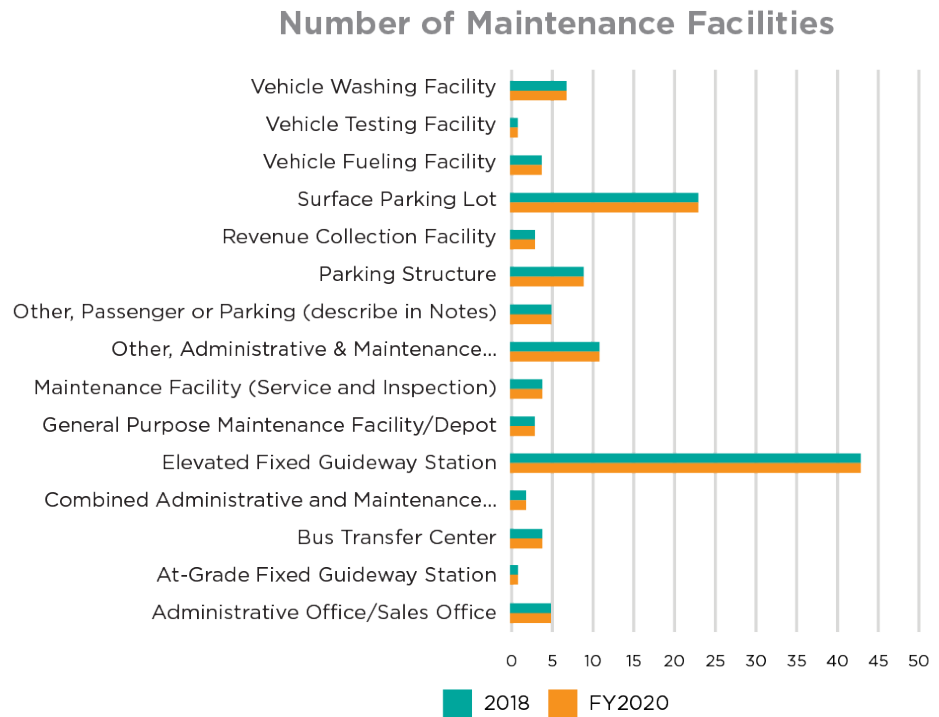
2018: 0% - (Both Tracks)

FY2020: 6.36% - Rail Fixed Guideway

FY2020: 0% - Mover Guideway

DPTW FY2021 Target - 0% (Both Tracks)

FIGURE 33. TRANSIT ASSETS CONDITION SINCE 2018:  
NUMBER OF MAINTENANCE FACILITIES



**Number of Facilities <3 TERM:**

0 in 2018 and FY2020

DPTW FY2021 Target - 0%

### Transit Asset Management Performance Measures

TABLE 5. PERCENT OF REVENUE VEHICLES BY ASSET CLASS THAT HAVE MET OR EXCEEDED THEIR USEFUL LIFE BENCHMARK

TRANSIT SERVICE	ONE-YEAR TARGET	CURRENT (2019)	
Bus	54% or less	43%	✓
Mini-Bus	0%	27%	✗
Metrorail	23% or less	30%	✗
Metro Mover	0%	0%	✓

TABLE 6. PERCENT OF EQUIPMENT OR NON-REVENUE VEHICLES BY ASSET CLASS THAT HAVE MET OR EXCEEDED THEIR USEFUL LIFE BENCHMARK

TYPE	ONE-YEAR TARGET	CURRENT (2019)	
Automobile	40% or less	34%	✓
Steel Wheel Vehicles	71% or less	75%	✗
Trucks & Other Rubber Tire Vehicles	55% or less	46%	✓

TABLE 7. PERCENT OF TRACK SEGMENTS WITH PERFORMANCE RESTRICTIONS

TYPE	ONE-YEAR TARGET	CURRENT (2019)	
Rail Fixed Guideway	0%	6.36%	✗
Mover Automated Guideway	0%	0%	✓

TABLE 8. PERCENTAGE OF ASSETS WITH CONDITION RATING BELOW 3.0 ON THE FTA TRANSIT ECONOMIC REQUIREMENTS MODEL (TERM) SCALE

CLASSIFICATION	ONE-YEAR TARGET	CURRENT (2020)	
Maintenance & Administrative	0%	0%	✓
Passenger & Parking	0%	0%	✓

Source: NTD, 2021; Miami-Dade County Department of Transportation and Public Works (DTPW), 2020



Target Met



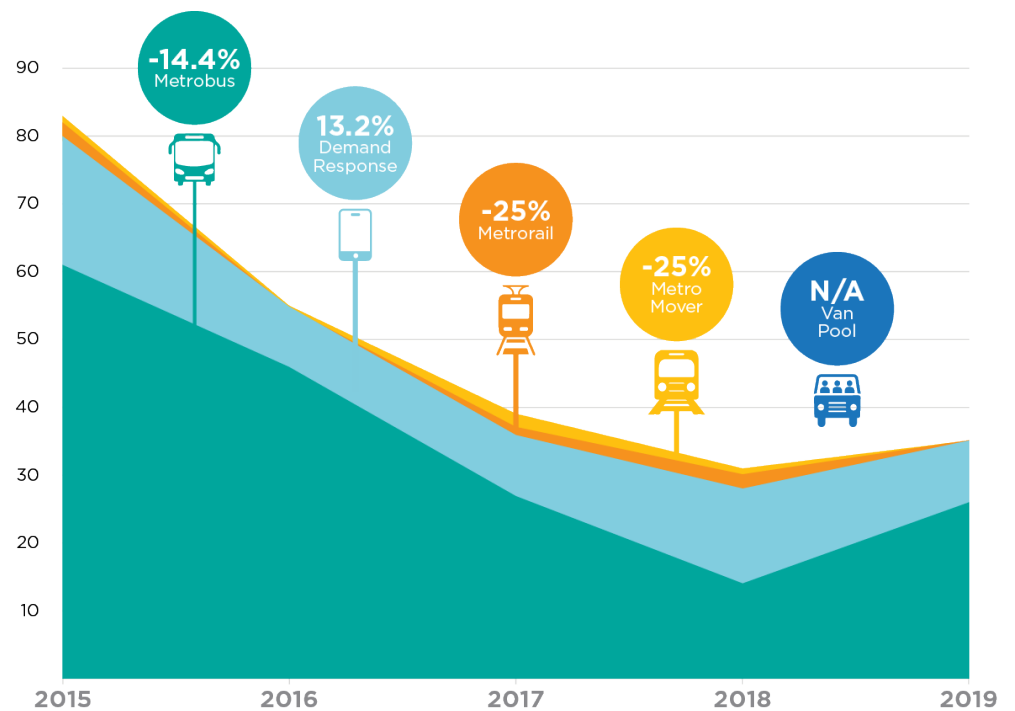
Target Not Met

## PUBLIC TRANSPORTATION AGENCY SAFETY PLAN (PTASP)

The Miami-Dade TPO holds safety as its highest transit priority. Overall in the county, total collisions by mode have declined, particularly for buses, from 2015–2019. Injuries on Metrobus have decreased from 126 in 2015 to 49 in 2019.

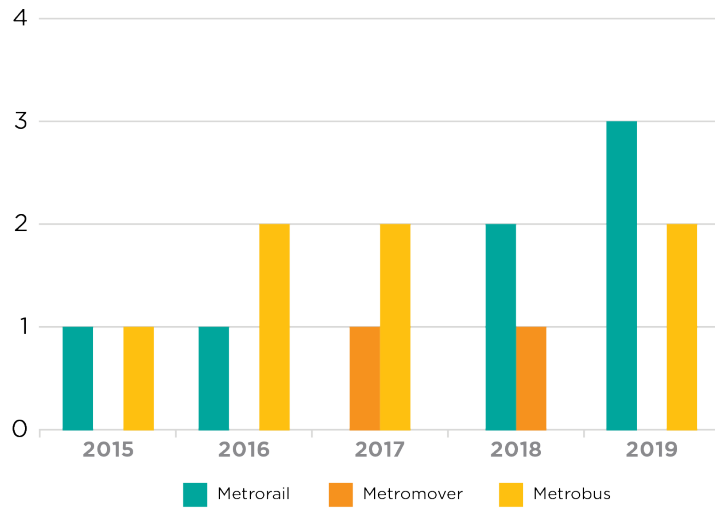
Even one death or severe injury is one too many. Nevertheless, an accurate understanding of the data is vital to make needed improvements, and it's important to note that an apparent spike in fatality rate from Metromover over the past five years reflects a single fatality over a relatively small portion of the transit network (see Figures 34–38).

FIGURE 34. COLLISIONS ON PUBLIC TRANSIT VEHICLES BY MODE



Source: Federal Transit Administration National Transit Database

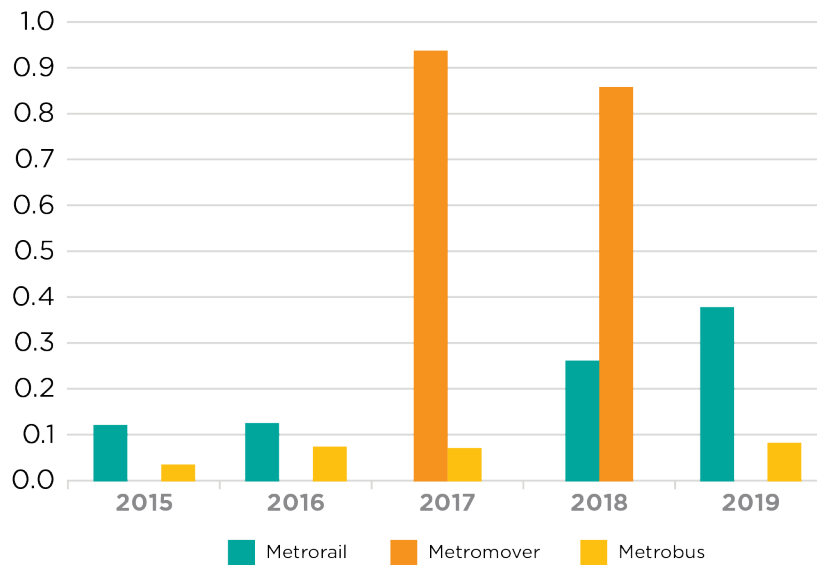
FIGURE 35. FATALITIES ON PUBLIC TRANSIT VEHICLES BY MODE



**DTPW Targets (3/18/21)**

Metrorail: 3  
Metromover: 2  
Metrobus: 5

FIGURE 36. FATALITIES PER 100 MILLION VRM ON PUBLIC TRANSIT VEHICLES BY MODE



**DTPW Targets (3/18/21)**

Metrorail: 0.33  
Metromover: 1.67  
Metrobus: 0.18

*Note: Years with no data indicate no fatalities for the respective mode in the respective year*

Sources: Federal Transit Administration National Transit Database  
Miami-Dade Department of Transportation and Public Works

FIGURE 37. INJURIES ON PUBLIC TRANSIT VEHICLES BY MODE (AND ANNUAL % CHANGE)

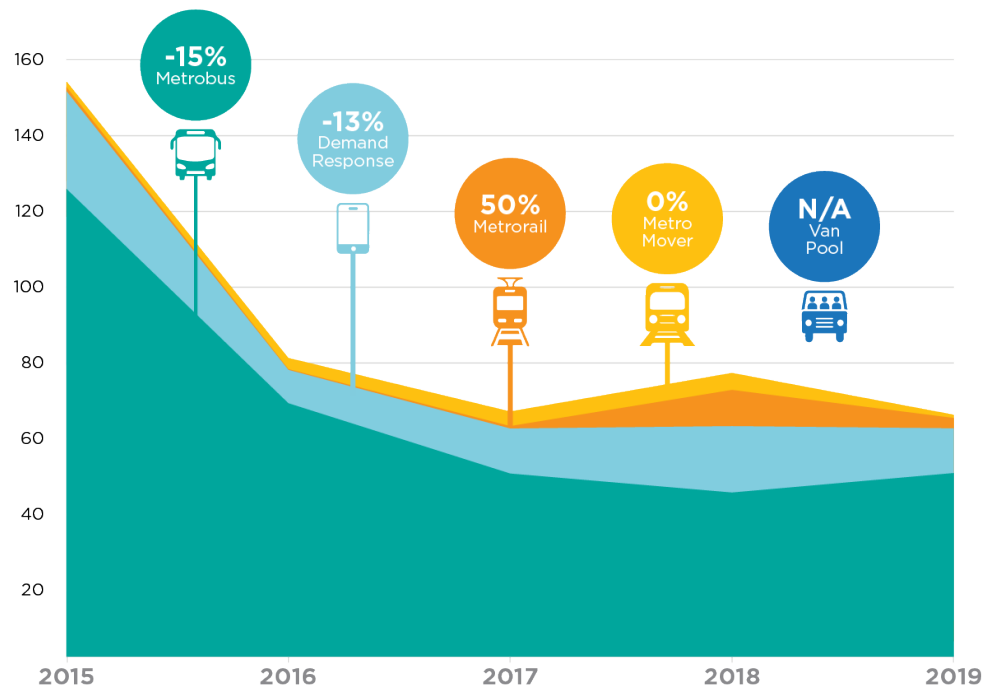
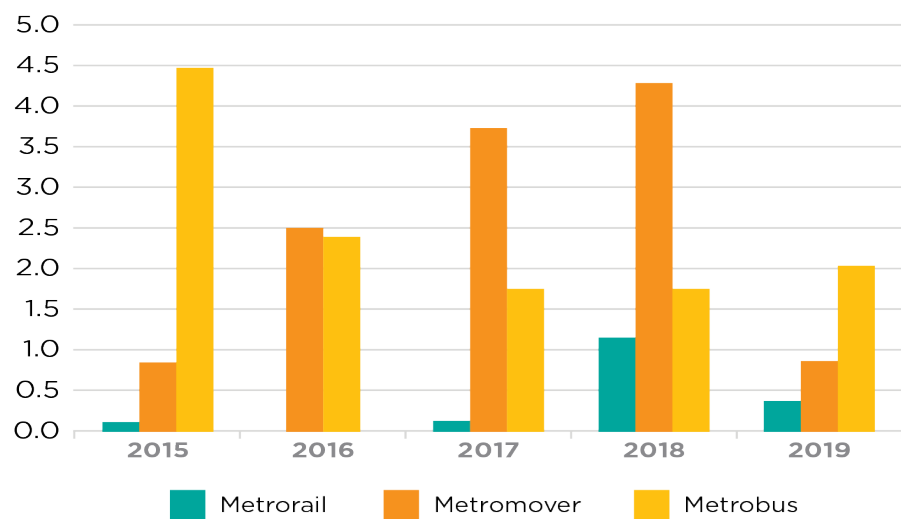


FIGURE 38. INJURIES PER 100 MILLION VRM ON PUBLIC TRANSIT VEHICLES BY MODE



#### DTPW Targets (3/18/21)

Metrorail: 1.45  
 Metromover: 0.78  
 Metrobus: 1.64

Source: Federal Transit Administration National Transit Database

## Major Events & Failures

In addition to traditional safety measures like crashes, fatalities and injuries, other public transportation safety measures include the number of major events and failures, including vehicle breakdowns, train track failures, and other disruptions in service caused by equipment failures. Figures 39-42 depict system performance regarding these measures.

FIGURE 39. MAJOR EVENTS

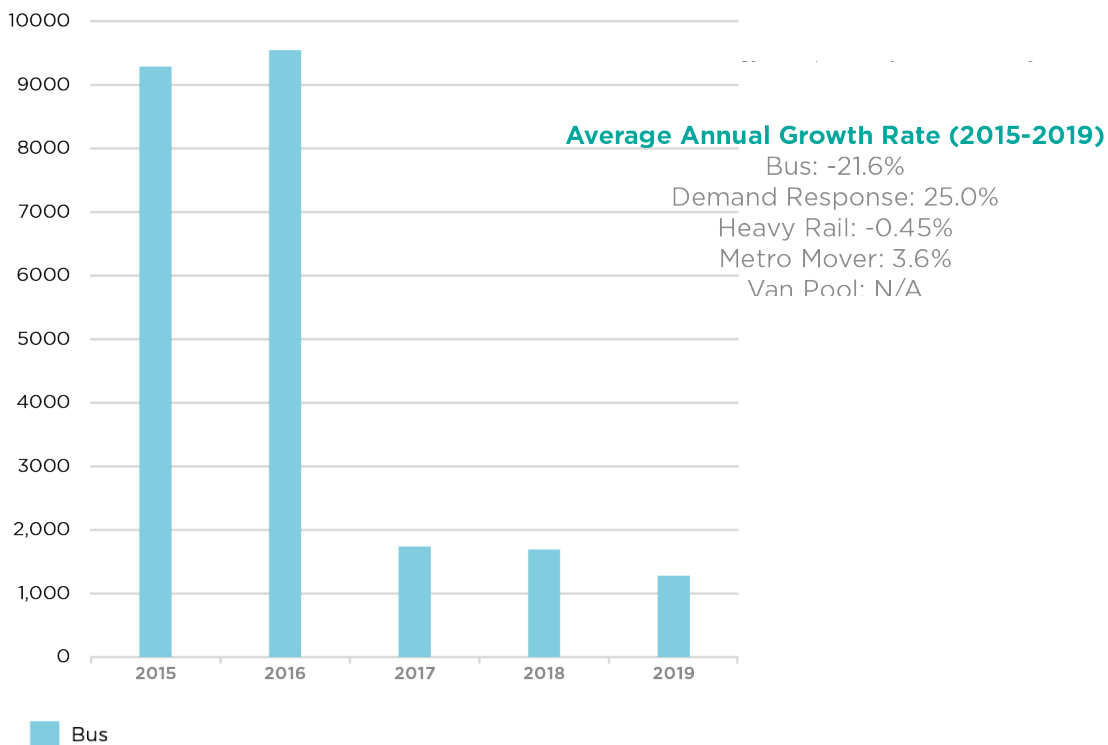
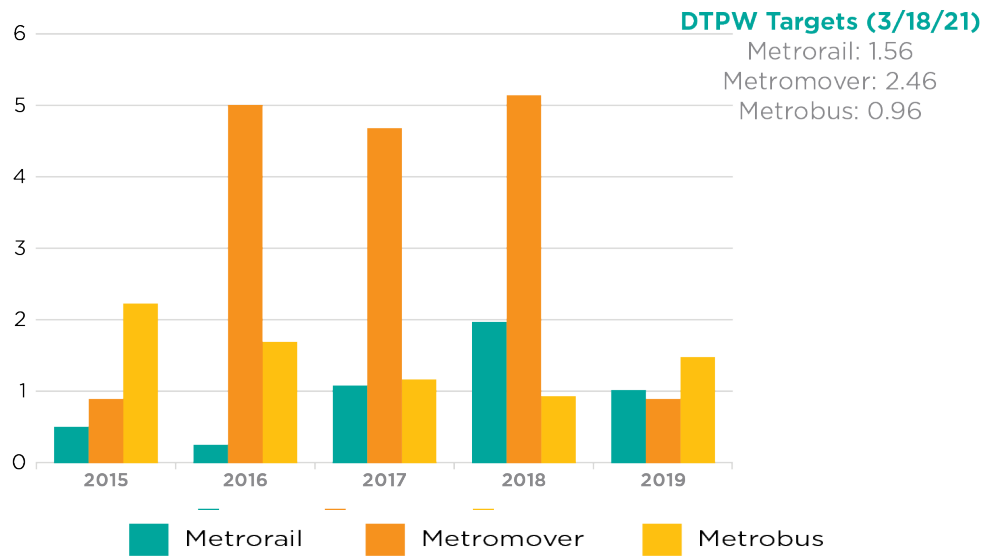
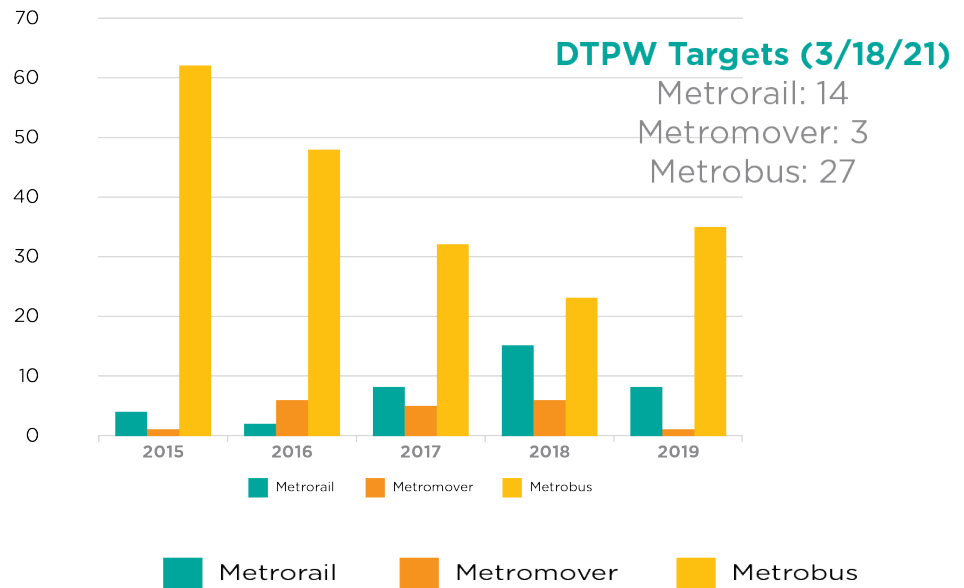


FIGURE 40. MAJOR EVENTS PER 100 MILLION VRM



*Note: Years with no data indicate no fatalities for the respective mode in the respective year*

*Source: Federal Transit Administration National Transit Database*

FIGURE 41. MAJOR FAILURES BY MODE

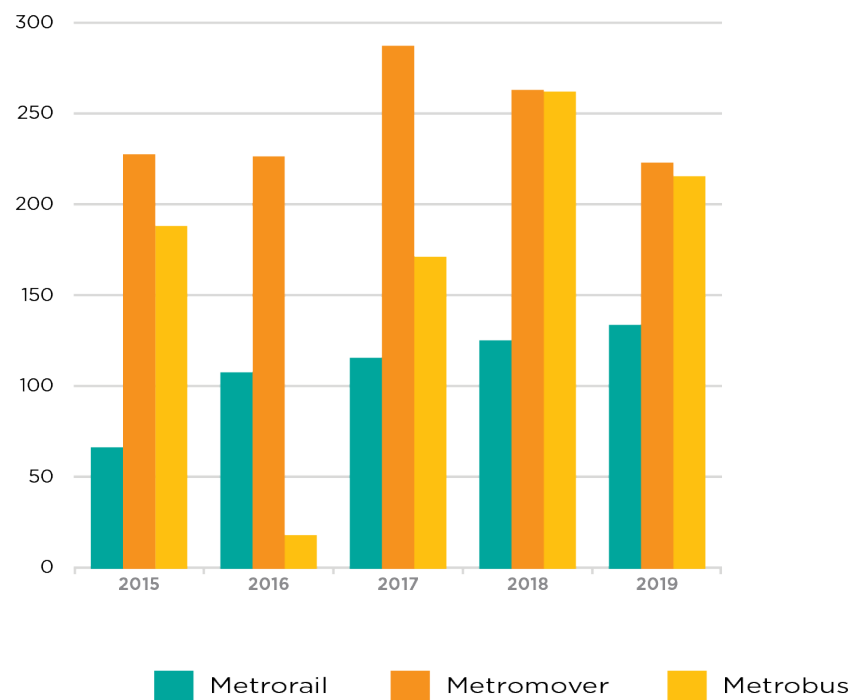
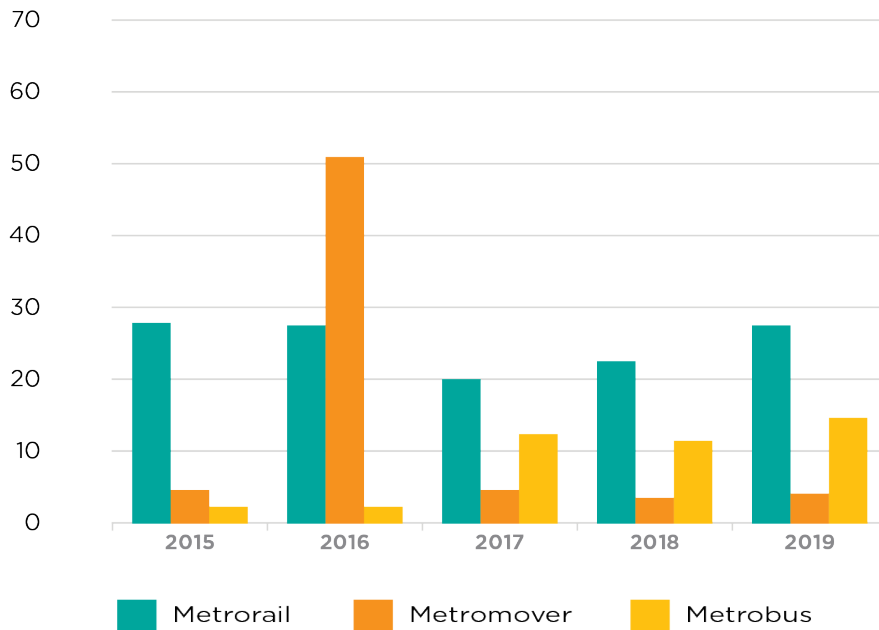




FIGURE 42. MEAN DISTANCE BETWEEN MAJOR FAILURES BY MODE



DPTW Target (3/15/21):

Mean Distance between Major Failures

Metrobus: 4,000

Metrorail: 39,000

Metromover: 4,000

Source: Federal Transit Administration National Transit Database

## Transit Safety Performance Measures








Tables 9–11 summarizes the targets and trends for public transportation safety measures.

TABLE 9. METRORAIL EVENTS TARGETS AND PERFORMANCE

MEASURE	TARGET	CURRENT (2019)
Total number of reportable fatalities	3 or fewer	3
Fatality rate per 1 million vehicle revenue miles	0.33 or less	0.38
Total number of reportable injuries	7 or fewer	3
Injury rate per 1 million vehicle revenue miles	0.78 or less	0.38
Total number of reportable events	14 or fewer	8
Reportable event rate per 1 million vehicle revenue miles	1.56 or less	1.01
System reliability—mean distance between major mechanical failures	39,000 miles or more	35,532 miles

Source: Miami-Dade County Department of Transportation and Public Works

TABLE 10. METROMOVER EVENTS TARGETS AND PERFORMANCE

MEASURE	TARGET	CURRENT (2019)
Total number of reportable fatalities	2 or fewer	0 
Fatality rate per 1 million vehicle revenue miles	1.67 or less	0 
Total number of reportable injuries	2 or fewer	0 
Injury rate per 1 million vehicle revenue miles	1.64 or less	0.88 
Total number of reportable events	3 or fewer	1 
Reportable event rate per 1 million vehicle revenue miles	2.46 or less	0.88 
System reliability—mean distance between major mechanical failures	6,000 miles or more	5,240 miles 










Target Met



Target Not Met

Source: Miami-Dade County Department of Transportation and Public Works

TABLE 11. METROBUS EVENTS TARGETS AND PERFORMANCE

MEASURE	TARGET	CURRENT (2019)
Total number of reportable fatalities	5 or fewer	2 
Fatality rate per 1 million vehicle revenue miles	0.18 or less	0.08 
Total number of reportable injuries	41 or fewer	49 
Injury rate per 1 million vehicle revenue miles	1.45 or less	2.06 
Total number of reportable events	27 or fewer	35 
Reportable event rate per 1 million vehicle revenue miles	0.96 or less	1.47 
System reliability—mean distance between major mechanical failures	4,000 miles or more	18,877 



Target Met



Target Not Met

Source: Miami-Dade County Department of Transportation and Public Works

## AIR & SEA

### Miami International Airport

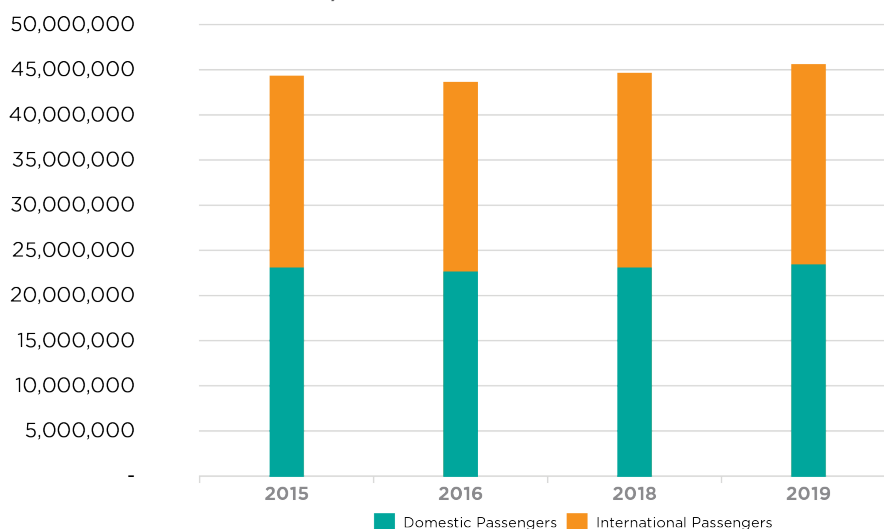
With service to more than 130 destinations worldwide, Miami International Airport (MIA) is a vital gateway for national and international passenger and freight transportation. In 2019, nearly 46 million people came through MIA with more than 22 million travelling internationally. Miami-Dade's MIA and four general aviation airports have an annual economic impact just under \$32 billion and employ over 275,000 people in Miami-Dade, including aviation related industry employment.

MIA has expanded significantly over the last decade, investing \$1.1 billion in the expanded 1.2 million square foot South Terminal in 2007 and \$3 billion in the North Terminal, completed in 2012. Completion of the \$2 billion Miami Intermodal Center and MIA Mover connecting it to the airport in 2010 vastly improved the airport's connection to ground transportation in Miami-Dade County, including Tri-Rail, Metrorail, Metrobus, and rental cars. MIA also has plans for a \$5 billion airport modernization project to serve a projected 77 million travelers in the year 2040.<sup>16</sup>

#### Enplanements

MIA leads the country in service to Latin America and the Caribbean and is recognized as the country's second leading airport for international travel. The airport is serviced by more than 90 commercial airlines providing non-stop service to 77 domestic destinations and more than 90 international destinations. Enplanements refer to boardings of aircraft by revenue passengers. Between 2016–2019, domestic and international passenger enplanements and deplanements grew by one percent each year (see Figure 43).

**FIGURE 43. PASSENGER ENPLANEMENTS AND DEPLANEMENTS BY YEAR, 2016–2019**



Domestic Passengers  
Average Annual Growth  
Rate (2016-2019): 0.51%

International Passengers  
Average Annual Growth  
Rate (2016-2019): 1.6%

Combined Average  
Annual Growth Rate  
(2016-2019): 1.0%

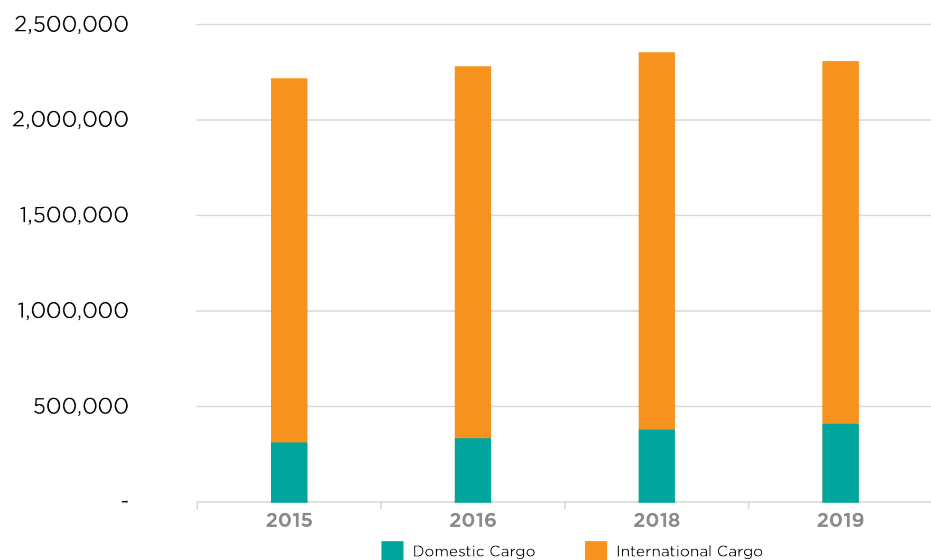
Source: Miami-  
International Airport,  
2021

<sup>16</sup> Miami International Airport Traffic Report, 2019. <https://www.miami-airport.com/library/pdfdoc/Traffic%20Reports/CY%202019%20Traffic%20Report.pdf>.

## Air Cargo

MIA is the number one airport in the United States for international freight, handling 79% of all air imports and 77% of all exports between the US and Latin America and the Caribbean<sup>17</sup>. The airport also specializes in the shipment of perishables, telecommunications equipment, textiles, sensitive pharmaceuticals, and industrial machinery.<sup>18</sup> From 2016 to 2020, MIA's domestic cargo grew by more than 10 percent each year, including during the COVID-19 pandemic. However, MIA's international cargo declined during this same period, falling by 0.2 percent (see Figure 44).

FIGURE 44. AIRPORT CARGO TONS BY YEAR, 2016–2019



Domestic Cargo Tons Average Annual Growth Rate (2016-2019): **10.5%**  
 International Cargo Tons Average Annual Growth Rate (2016-2019): **0.2%**  
 Combined Cargo Tons Average Annual Growth Rate (2016-2019): **0.33%**  
 Source: Miami-International Airport, 2021

<sup>17</sup> MIA Cargo HUG, Miami International Airport, 2, <https://www.miami-airport.com/library/pdfdoc/Cargo%20Documents/MIA%20Cargo%20Hub%20Brochure%202019.pdf>.

<sup>18</sup> MIA Cargo HUB, Miami International Airport, <https://www.miami-airport.com/home-cargo.asp>.

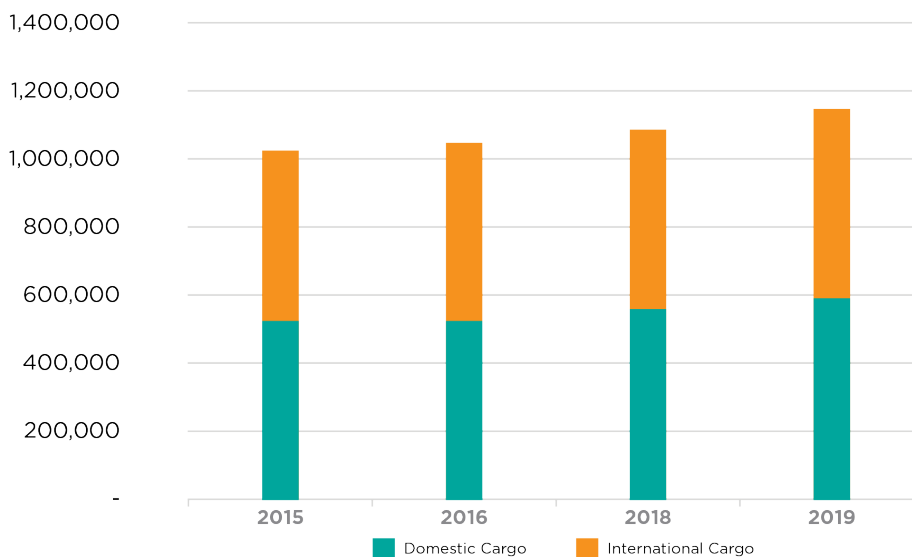
## PortMiami

PortMiami, set in Biscayne Bay, is a powerhouse of the Miami-Dade economy, contributing \$43 billion each year to the local economy and providing employment for more than 330,000 people.<sup>19</sup> The Port is known as the Cruise Capital of the World, serving as the home port for 12 cruise lines and port of call for 11 cruise companies. In 2020, PortMiami served more than 3.4 million cruise passengers. PortMiami's cargo operations include the movement of over 10 million tons of cargo annually, with the capability to serve the large Post-Panamax vessels, which have almost triple the tonnage capacity relative to Panamax ships.<sup>20</sup>

PortMiami expanded its capacity to accommodate the larger ships taking advantage of the widening of the Panama Canal in 2016. Port expansions included \$1 billion in infrastructure investments, which included deepening the bay to 50 feet; installation of new cranes to service the larger ships; and construction of the Port Tunnel connecting the Port directly to the Interstate Highway System. The Port Tunnel project represents the first direct connection of a major seaport to the Interstate Highway System in the Country and has resulted in both smoother cargo operations and reduced truck traffic on non-Interstate roadways in downtown Miami.

From 2016-2020, Port Miami's imports grew by an average of 4.3 percent each year and its exports by 3.7 percent (see Figure 45).

**FIGURE 45. PORT MIAMI ANNUAL IMPORTS AND EXPORTS BY YEAR, 2016–2019**



Imports (TEUs) Average Annual Growth Rate (2016-2019): **4.3%**  
 Exports (TEUs) Average Annual Growth Rate (2016-2019): **3.7%**  
 Imports and Exports (TEUs) Average Annual Growth Rate (2016-2019): **4.0%**  
 Source: Port Miami, 2021

<sup>19</sup> PortMiami, About PortMiami, <https://www.miamidade.gov/portmiami/about.asp>.

<sup>20</sup> [Public Relations Seminar draft agenda \(aapa-ports.org\)](#)



# Conclusion

This analysis of Miami-Dade's State highway and modal transportation system not only tracks compliance with federal guidelines, but it also helps planners and transportation officials provide the improvements the region needs most. Performance measures are critical to a safe, efficient, and multimodal transportation system; they reveal how well the transportation system is working—what areas are congested, what areas have high crash rates—and they provide the information necessary to make project decisions and allocate funding.

Performance measures today help the TPO and its planning partners to meet transportation needs tomorrow.

Tracking and reporting these measures will serve two distinct purposes, from a planning perspective. The first is the a report of the comprehensive performance of transportation infrastructure in the various categories, facilitating the informed allocation of resources to different improvement types. The second is the prioritization of particular segments of the system, based on specific corridor or segment performance. In both cases, this data driven process will improve both cost efficiency and effectiveness of infrastructure improvement decisions.



