Miami-Dade Transportation Planning Organization

# Factors Affecting Transit Ridership in Miami-Dade County

Final Report

November 2018



“The preparation of this report has been financed in part from the U.S. Department of Transportation (USDOT) through the Federal Highway Administration (FHWA) and/or the Federal Transit Administration (FTA), the State Planning and Research Program (Section 505 of Title 23, U.S. Code) and Miami-Dade County, Florida. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

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# 1.0 Introduction

Miami-Dade County has the 15th largest public transit system in the country. The Department of Transportation and Public Works (DTPW) is Miami-Dade County's primary transit system operator with a multimodal transit system comprising of Metrobus, Metrorail, Metromover, and Special Transportation Services (STS). In 2016, approximately 89.5 million passenger boardings were recorded in the DTPW system (Transit Development Plan FY 2019-2028 Annual Update). In addition to DTPW, approximately 25 out of 34 Miami-Dade County's municipalities operate local transit circulators that supplement DTPW transit operations. Other public and private transit operators in Miami-Dade County include the South Florida Regional Transportation Authority (SFRTA), All Aboard Florida, Greyhound, Amtrak, Broward County Transit (BCT), and private contractors.

As seen in national trends, Miami-Dade County's transit system has experienced a trend of declining ridership in recent years which in some cases have resulted in the DTPW scaling transit services accordingly. The Miami-Dade Transportation Planning Organization (TPO) initiated this study to identify and examine the contributing factors for the decreasing trend in transit ridership in Miami-Dade County and to recommend potential actions. The main tasks of this study area presented under the following sections:

- Literature Research: This section summarizes a review of recent ridership trends in Miami-Dade County's transit system as well as national research to identify the factors contributing to decreasing ridership experienced by other transit agencies and actions taken to address the decline.
- Survey and Data Analysis: This section summarizes results of a survey conducted to obtain input from the perspective of the transit user and the public in Miami-Dade County. *It should be noted that this was not a scientific survey. The survey provided informal feedback on service from individuals that may or may not use transit today, and is not necessarily representative of the general cross section of the population.*
- Conclusions and Recommendations: This section summarizes study results and makes recommendations to address the findings.



# 2.0 Literature Research

A literature research was conducted to better understand the current state of transit ridership in Miami-Dade County and the contributing factors to changes in transit ridership. In addition, national research was conducted to understand ridership trends experienced by other transit agencies, causal factors, and strategies developed to mitigate transit ridership decline.

## 2.1 Transit in Miami-Dade County

### 2.1.1 Overview

The following sections include: (i) an overview of Miami-Dade Transit's (MDT) historical ridership data, (ii) an overview of ridership for local municipal trolleys in Miami-Dade County, (iii) a review of changes in transit ridership at other agencies around the country, (iv) a summary of countermeasures, and (v) a summary of recommendations for mitigating decreasing transit ridership in Miami-Dade County.

MDT is the 15th largest public transit system in the United States and the largest transit agency in Florida. MDT is an integrated transportation system and includes four primary modes:

- *Metrobus* – 95 bus routes, including limited stop and express routes, provide service throughout Miami-Dade County using more than 800 buses. A system map is included in Figure 1.
- *Metrorail* – an electrically-powered, elevated heavy rail system consisting of two routes (Green Line and Orange Line) totaling 25 miles serving Miami International Airport and the greater Miami area. Metrorail also provides connections to Broward and Palm Beach counties via SFRTA's Tri-Rail service and Brightline, a high-speed passenger rail service operated by All Aboard Florida. A system map is included in Figure 2.
- *Metromover* – a 4.4-mile elevated people mover serving Downtown Miami, Omni, and Brickell areas. As shown in Figure 3, the Metromover system consists of three loops (Brickell, Inner and Omni).
- *Special Transportation Service (STS)* – is a complementary paratransit service assisting the users that are unable to use regular transit service due to disabilities.

MIAMI-DADE COUNTY

# TRANSIT SYSTEM

## MARCH 2018

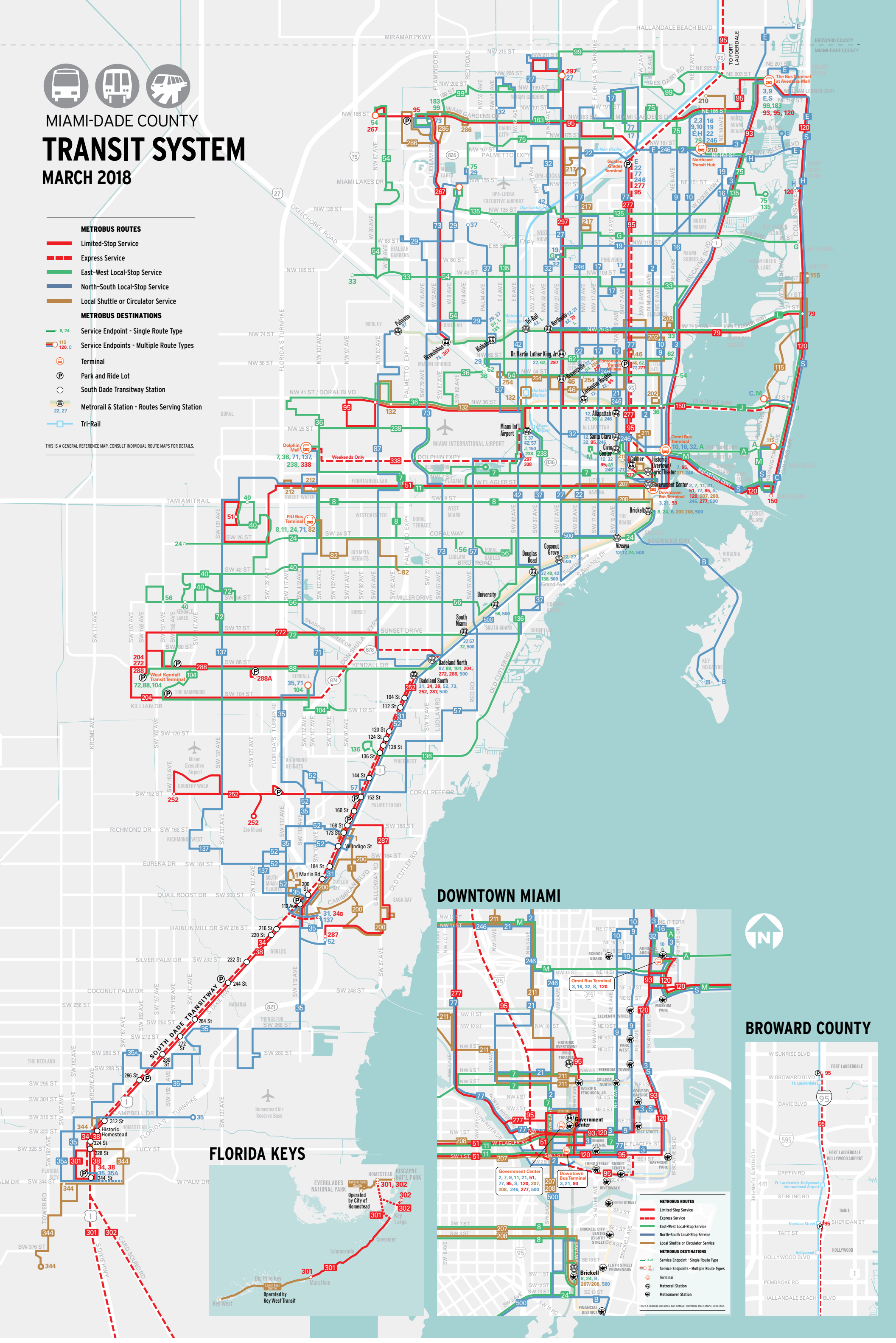
**METROBUS ROUTES**

- Limited-Stop Service
- Express Service
- East-West Local-Stop Service
- North-South Local-Stop Service
- Local Shuttle or Circulator Service

**METROBUS DESTINATIONS**

- Service Endpoint - Single Route Type
- Service Endpoints - Multiple Route Types
- Terminal
- Park and Ride Lot
- South Dade Transitway Station
- Metrorail & Station - Routes Serving Station
- Tri-Rail

THIS IS A GENERAL REFERENCE MAP. CONSULT INDIVIDUAL ROUTE MAPS FOR DETAILS.




# Figure 1: Metrobus System Map

## METROBUS ROUTES

Connects with Metrorail · Serves Park & Ride Lot · Overnight Service · Serves Miami International Airport · Connects with Tri-Rail

- 1 Perrine ⇆ Quail Roost Dr/SW 117 Ave
- 2 163 St Mall, 84 St ⇆ Downtown Miami
- 3 Aventura Mall ⇆ Downtown Miami
- 7 Dolphin Mall, Miami Intl Airport ⇆ Downtown Miami
- 8 FIU Maidique Campus ⇆ Brickell Metrorail
- 9 Aventura ⇆ Downtown Miami
- 10 Skylake Mall ⇆ Omni Metrobus Terminal
- 11 FIU Maidique Campus ⇆ Downtown Miami
- 12 Northside Metrorail ⇆ Mercy Hospital
- 16 163 St Mall ⇆ Omni Metrobus Terminal
- 17 Norwood ⇆ Vizcaya Metrorail
- 19 (WEEKDAYS ONLY) MDC North Campus ⇆ 163 St Mall
- 21 Northside Metrorail ⇆ Downtown Miami
- 22 163 St Mall ⇆ Coconut Grove Metrorail
- 24 **CORAL WAY LIMITED** - West Dade ⇆ Brickell Metrorail
- 27 Miami Gardens ⇆ Coconut Grove Metrorail
- 29 (WEEKDAYS ONLY) Miami Lakes Education Center ⇆ Hialeah
- 31 **BUSWAY LOCAL** - South Dade Government Center ⇆ Dadeland South Metrorail
- 32 Carol City ⇆ Omni Metrobus Terminal
- 33 Hialeah ⇆ NE 79 St/Biscayne Blvd
- 34 **34 EXPRESS** (WEEKDAY RUSH-HOUR ONLY)
  **34A:** Florida City ⇆ Dadeland South Metrorail
  **34B:** S Dade Govt Ctr ⇆ Dadeland South Metrorail
- 35 MDC Kendall Campus ⇆ Florida City
- 36 Dolphin Mall, Doral, Miami Springs ⇆ Midtown Miami
- 37 Hialeah ⇆ South Miami Metrorail
- 38 **BUSWAY MAX** Dadeland South Metrorail ⇆ Florida City
- 40 West Dade ⇆ Douglas Road Metrorail
- 42 Opa-locka Tri-Rail ⇆ Douglas Road Metrorail
- 46 **LIBERTY CITY CONNECTION** (WEEKDAY RUSH-HOUR ONLY)
  Brownsville Metrorail ⇆ Seventh Avenue Transit Village
- 51 **FLAGLER MAX** (WEEKDAYS ONLY) West Dade ⇆ Downtown Miami
- 52 Dadeland South Metrorail ⇆ South Dade Health Center
- 54 Miami Gardens Dr/NW 87 Ave, Hialeah Gardens ⇆ Biscayne Blvd/NE 54 St
- 56 (WEEKDAYS ONLY) West Dade ⇆ Miami Children's Hospital
- 57 (WEEKDAYS ONLY) Miami Intl Airport ⇆ Jackson South Hospital
- 62 Hialeah ⇆ Biscayne Blvd / 62 St
- 71 Dolphin Mall ⇆ MDC Kendall Campus
- 72 West Kendall Terminal, Miller Square ⇆ South Miami Metrorail
- 73 Miami Gardens Dr & NW 73 Ave Park & Ride ⇆ Dadeland South Metrorail
- 75 Miami Lakes ⇆ FIU Biscayne Bay Campus
- 77 Norwood ⇆ Downtown Miami
- 79 **79 STREET MAX** (WEEKDAY RUSH-HOUR ONLY) Northside Metrorail ⇆ 72 St / Miami Beach
- 82 **WESTCHESTER CIRCULATOR** (WEEKDAYS ONLY) FIU Maidique Campus ⇆ Tropical Park
- 87 Palmetto Metrorail, Doral ⇆ Dadeland North Metrorail
- 88 Dadeland North Metrorail ⇆ West Kendall Terminal
- 93 **BISCAYNE MAX** (WEEKDAYS ONLY) Downtown Miami ⇆ Aventura Mall
- 95 **95 EXPRESS GOLDEN GLADES** (WEEKDAY RUSH-HOUR ONLY)
  Carol City, Aventura Mall, Golden Glades ⇆ Downtown Miami, Civic Center
  **95 EXPRESS DADE BROWARD** (WEEKDAY RUSH-HOUR ONLY)
  ROUTE 195: Broward Blvd ⇆ Downtown Miami
  ROUTE 196: Sheridan St ⇆ Downtown Miami
  ROUTE 295: Broward Blvd ⇆ Civic Center
  ROUTE 296: Sheridan St ⇆ Civic Center
- 99 Miami Gardens Dr & NW 73 Ave Park & Ride ⇆ Aventura Mall
- A ROUTE 101: Omni ⇆ 20th Street & West Avenue / Miami Beach
- B ROUTE 102: Brickell Metrorail ⇆ Key Biscayne
- C ROUTE 103: South Beach ⇆ Mt. Sinai Medical Center
- 104 West Kendall Terminal ⇆ Dadeland North Metrorail
- E ROUTE 105: Golden Glades ⇆ Hallandale Beach
- G ROUTE 107: 94 St / Miami Beach ⇆ MDC North Campus
- H ROUTE 108: 163 Street Mall ⇆ Haulover Park
- J ROUTE 110: Miami Intl Airport ⇆ 41 St / Miami Beach
- L ROUTE 112: Lincoln Rd ⇆ Hialeah Metrorail
- M ROUTE 113: Civic Center ⇆ Mt. Sinai Hospital
- 115 **MID-NORTH BEACH CONNECTION** - Collins Ave / 88 St ⇆ Lincoln Rd
- S ROUTE 119: Downtown Miami ⇆ Aventura Mall
- 120 **BEACH MAX** Downtown Miami ⇆ Aventura Mall
- 132 **TRI-RAIL DORAL SHUTTLE** (WEEKDAY RUSH-HOUR ONLY): Doral ⇆ Hialeah Market Tri-Rail
- 135 Hialeah Metrorail, Miami Lakes ⇆ FIU Biscayne Bay Campus
- 136 (WEEKDAY RUSH-HOUR ONLY) SW 136 St / US1 ⇆ Douglas Road Metrorail
- 137 **WEST DADE CONNECTION** Dolphin Mall ⇆ South Dade Gov Center
- 150 **MIAMI BEACH AIRPORT EXPRESS** Miami Intl Airport ⇆ South Beach
- 183 Miami Gardens Dr & NW 73 Ave Park & Ride ⇆ Aventura Mall
- 200 **CUTLER BAY LOCAL** (NO SUNDAYS)
- 202 **LITTLE HAITI CONNECTION** Biscayne Shopping Plaza, NW 5 AVE / 83 St ⇆ Miami Design District
- 204 **KILLIAN KAT** (WEEKDAY RUSH-HOUR ONLY) West Kendall Terminal ⇆ Dadeland North Metrorail
- 207 **LITTLE HAVANA CONNECTION** (CLOCKWISE) Downtown Miami, Brickell ⇆ SW 25 Ave
- 208 **LITTLE HAVANA CONNECTION** (COUNTERCLOCKWISE) Downtown Miami, Brickell ⇆ SW 27 Ave
- 210 **SKYLAKE CIRCULATOR** Skylake Mall ⇆ 163 Street Mall
- 211 **OVERTOWN CIRCULATOR** (WEEKDAYS ONLY)
- 212 **SWEETWATER CIRCULATOR** (WEEKDAYS ONLY)
- 217 **BUNCHE PARK CIRCULATOR** (WEEKDAYS ONLY) NW 127 St / 33 Ave ⇆ N Dade Health Center
- 238 **EAST-WEST CONNECTION** (WEEKDAYS ONLY) Dolphin Mall ⇆ Miami Int. Airport
- 246 **NIGHT OWL** Downtown Miami ⇆ 163 St Mall
- 252 **CORAL REEF MAX** Country Walk ⇆ Dadeland South Metrorail, Zoo Miami (Weekends Only)
- 254 **BROWNSVILLE CIRCULATOR** (WEEKDAYS ONLY) Caleb Center ⇆ Jefferson Reeves Park, Hialeah (Thursday only)
- 267 **LUDLAM LIMITED** (WEEKDAY RUSH-HOUR ONLY) NW 186 St/87 Ave ⇆ Okeechobee Metrorail
- 272 **SUNSET KAT** (WEEKDAY RUSH-HOUR ONLY) West Kendall Terminal ⇆ Dadeland North Metrorail
- 277 **NW 7 AVENUE MAX** (WEEKDAY RUSH-HOUR ONLY) Downtown Miami ⇆ Golden Glades Park & Ride
- 286 **NORTH POINTE CIRCULATOR** (NO SUNDAYS) Miami Gardens Dr & NW 73 Ave Park & Ride ⇆ NW 57 Ave/NW 176 St
- 287 **SAGA BAY MAX** (WEEKDAY RUSH-HOUR ONLY) S Dade Health Center ⇆ Dadeland South Metrorail
- 288 **KENDALL CRUISER** (WEEKDAY RUSH-HOUR ONLY)
  West Kendall Terminal, SW 127 Ave Park & Ride ⇆ Dadeland North Metrorail
- 297 **27th AVE ORANGE MAX** (WEEKDAYS ONLY) Miami Intl Airport ⇆ Miami Gardens
- 301 **DADE-MONROE EXPRESS** Florida City ⇆ Marathon Key
- 302 **CARD SOUND EXPRESS** Florida City ⇆ Ocean Reef Club
- 338 **WEEKEND EXPRESS** (WEEKENDS ONLY) Miami Intl Airport ⇆ Dolphin Mall
- 344 (WEEKDAYS ONLY) Florida City ⇆ MDC Homestead Campus
- 500 **MIDNIGHT OWL** Dadeland South Metrorail ⇆ Downtown Miami

## SPECIFIC ROUTE INFORMATION / TRIP PLANNING:

**www.miamidade.gov/transit** · **MDT Tracker App** · **311** OR 305.468.5900 (TDD: 305.468.5402)

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DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

MIAMI-DADE COUNTY

# METRORAIL

JUNE 2018

MIAMI-DADE COUNTY

PALMETTO
OKEECHOBEE
HIALEAH
TRI-RAIL
to West Palm Beach
METRORAIL TRANSFER
NORTHSIDE
DR. MARTIN LUTHER KING, JR.
BROWNSVILLE
EARLINGTON HEIGHTS
TRANSFER BETWEEN ORANGE AND GREEN LINES
to West Palm Beach
27
MEDLEY
826
WESTGATE
NW 79 ST
79 S
HIALEAH MARKET
MIAMI SPRINGS
BISCAYNE BLVD
JUL
112
195
ALLAPATTAH
RENTAL CAR CENTER
MIA TERMINAL
MIAMI AIRPORT
NW 27 AVE
SANTA CLARA
WYNWOOD
95
1
MIAMI INTERNATIONAL AIRPORT
CIVIC CENTER
CULMER
836
395
MIAMI STATION
HISTORIC OVERTOWN / LYRIC THEATRE
DOWN-TOWN
GOVERNMENT CENTER
LITTLE HAVANA
SW 8 ST / TAMIAMI TRAIL
41
BRICKELL
THE ROADS
CORAL WAY
VIZCAYA
SW 27 AVE
S DIXIE HWY
COCONUT GROVE
CORAL GABLES
DOUGLAS ROAD
UNIVERSITY
SOUTH MIAMI
826
SW 88 ST / KENDALL DR
DADELAND NORTH
to Homestead & Florida City
DADELAND SOUTH
TRANSFER TO SOUTH DADE TRANSITWAY
1
PINECREST
NORTH

Figure 2: Metrorail System Map

**METRORAIL**

- Orange Line / Station
- Green Line / Station
- Station Serving Both Lines
- Station Served by Downtown Express
- Recommended Transfer Station
- Station Connects with Metromover
- Station Connects with Tri-Rail
- Station Connects with Airport
- Station Connects with Brightline

**CONNECTING SERVICES**

- Metromover
- Tri-Rail (**tri-rail.com**)
- Brightline (**gobrightline.com**)
- MIA Mover (**miami-airport.com**)
- South Dade Transitway

**www.miamidade.gov/transit**

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**311** OR 305.468.5900 (TTY: 305.468.5402)

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# METROMOVER

JUNE 2018

MIAMI-DADE COUNTY

NE 15 ST
ADRIENNE ARSHT CENTER
SCHOOL BOARD
I-195 MACARTHUR CSWY
BRIGHTLINE
N MIAMI AVE
ELEVENTH STREET
MUSEUM PARK
PARK WEST
WILKIE D. FERGUSON, JR.
TRANSFER TO BRIGHTLINE
COLLEGE NORTH
TRANSFER TO INNER LOOP
FREEDOM TOWER
NE 6 ST
PORT BLVD
COLLEGE BAYSIDE
TRANSFER TO OMNI LOOP
BISCAYNE BLVD
GOVERNMENT CENTER
TRANSFER TO METRORAIL
FIRST STREET
FLAGLER ST
MIAMI AVENUE
KNIGHT CENTER
TRANSFER TO INNER LOOP
BAYFRONT PARK
I-95 RAMP
THIRD STREET
TRANSFER TO BRICKELL LOOP
RIVERWALK
MIAMI RIVER
BISCAYNE BLVD WAY
FIFTH STREET
BRICKELL CITY CENTRE (EIGHTH STREET)
SW 8 ST
BRICKELL KEY DR
TENTH STREET PROMENADE
BRICKELL
TRANSFER TO METRORAIL
BRICKELL AVENUE
FINANCIAL DISTRICT
NORTH

**Figure 3: Metromover System Map**

## LEGEND

- OMNI LOOP
- INNER LOOP
- BRICKELL LOOP
- STATION SERVING SINGLE LOOP
- STATION SERVING MULTIPLE LOOPS
- RECOMMENDED TRANSFER STATION
- DIRECTION OF TRAVEL
- METRORAIL

ADRIENNE ARSHT CENTER

SCHOOL BOARD
ELEVENTH STREET
MUSEUM PARK
PARK WEST
WILKIE D. FERGUSON, JR.
TRANSFER TO BRIGHTLINE
COLLEGE NORTH
TRANSFER TO INNER LOOP
FREEDOM TOWER
COLLEGE BAYSIDE
GOVERNMENT CENTER
TRANSFER TO METRORAIL
FIRST STREET
BAYFRONT PARK
KNIGHT CENTER
THIRD STREET
TRANSFER TO BRICKELL LOOP

**OMNI LOOP**
Downtown to Omni
(North Extension)

**INNER LOOP**
Serves Downtown
(Central Business District)

WILKIE D. FERGUSON, JR.
TRANSFER TO BRIGHTLINE
COLLEGE NORTH
COLLEGE BAYSIDE
TRANSFER TO OMNI LOOP
GOVERNMENT CENTER
TRANSFER TO METRORAIL AND BRICKELL LOOP
FIRST STREET
MIAMI AVENUE
KNIGHT CENTER
BAYFRONT PARK

**BRICKELL LOOP**
Downtown to Brickell
(South Extension)

WILKIE D. FERGUSON, JR.
TRANSFER TO BRIGHTLINE
COLLEGE NORTH
COLLEGE BAYSIDE
TRANSFER TO OMNI LOOP
GOVERNMENT CENTER
TRANSFER TO METRORAIL
FIRST STREET
KNIGHT CENTER
TRANSFER TO INNER LOOP
BAYFRONT PARK
THIRD STREET
RIVERWALK
FIFTH STREET
BRICKELL CITY CENTRE (EIGHTH STREET)
TENTH STREET PROMENADE
BRICKELL
TRANSFER TO METRORAIL
FINANCIAL DISTRICT

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An overview of the MDT transit system characteristics is provided in Table 1. This information was obtained from the Miami-Dade County Transit Development Plan FY 2019-2028.

Table 1: MDT Transit System Characteristics by Mode (2017)

| System Characteristics | Metrobus | Metrorail | Metromover |
|---|---|---|---|
| Number of Routes | 95* | 2 | 3 |
| Number of Stops/Stations | 9,244 | 23 | 21 |
| Route Miles | 2,199 | 24.8 | 4.4 |
| Total Fleet Size | 824 | 136 | 26 |
| Annual Revenue Miles | 29,713,685 | 7,857,582 | 1,122,584 |
| Annual Boardings | 57,618,210 | 19,984,735 | 9,463,403 |

Note: * Includes 16 contracted routes.

## 2.1.2 Ridership Trends – MDT System

Historical monthly weekday ridership data was obtained from Miami-Dade County's ridership reports for the month of March for five years (2014-2018) and is summarized in Table 2, Table 3, and Figure 4. March was selected for this analysis because it is a representative month of peak seasonal ridership. As shown in Table 2, systemwide ridership for all transit modes decreased over the five-year period. Overall, there were 1.74 million fewer monthly weekday transit boardings in March 2018 in comparison to March 2014. Metrobus experienced the most significant decline in monthly ridership of the three modes at -29%, followed by Metrorail (-9%) and Metromover (-8%). Further, Metrobus accounted for 89% of the total ridership decline with 1.55 million fewer weekday boardings during the month of March over the five (5) year period. As a result, Metrobus' mode share decreased from 68% in March 2014 to 62% in March 2018. Metrobus ridership decline began in 2015, whereas Metrorail and Metromover ridership declines began in 2017. The most significant year to year ridership decline was from March 2017 to March 2018, with the transit system recording 1.12 million fewer boardings.

Table 2: Total Weekday Boardings for March by Mode (2014-2018). Mode Share

| Mode | 2014 | | 2015 | | 2016 | | 2017 | | 2018 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Boardings | Mode Share % | Boardings | Mode Share % | Boardings | Mode Share % | Boardings | Mode Share % | Boardings | Mode Share % |
| Metrobus | 5,265,534 | 68 | 5,478,734 | 68 | 4,833,560 | 64 | 4,513,157 | 63 | 3,719,191 | 62 |
| Metrorail | 1,606,072 | 21 | 1,707,781 | 21 | 1,747,930 | 23 | 1,686,955 | 24 | 1,460,487 | 24 |
| Metromover | 740,543 | 10 | 769,463 | 10 | 836,323 | 11 | 783,199 | 11 | 684,041 | 11 |
| Total | 7,731,909 | 100 | 8,081,029 | 100 | 7,545,143 | 100 | 7,120,323 | 100 | 5,994,084 | 100 |

Note: Due to rounding the percentages may not add up to 100.

Table 3: Total Weekday Boardings for March by Mode (2014-2018). Annual Percent Change

| Mode | 2014 Boardings | 2015 Boardings | % Change 2014 - 2015 | 2016 Boardings | % Change 2015 - 2016 | 2017 Boardings | % Change 2016 - 2017 | 2018 Boardings | % Change 2017 - 2018 | % Change 2014 - 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Metrobus | 5,265,534 | 5,478,734 | 4% | 4,833,560 | -12% | 4,513,157 | -7% | 3,719,191 | -18% | -29% |
| Metrorail | 1,606,072 | 1,707,781 | 6% | 1,747,930 | 2% | 1,686,955 | -3% | 1,460,487 | -13% | -9% |
| Metromover | 740,543 | 769,463 | 4% | 836,323 | 9% | 783,199 | -6% | 684,041 | -13% | -8% |
| Total | 7,731,909 | 8,081,029 | 5% | 7,545,143 | -7% | 7,120,323 | -6% | 5,994,084 | -16% | -22% |

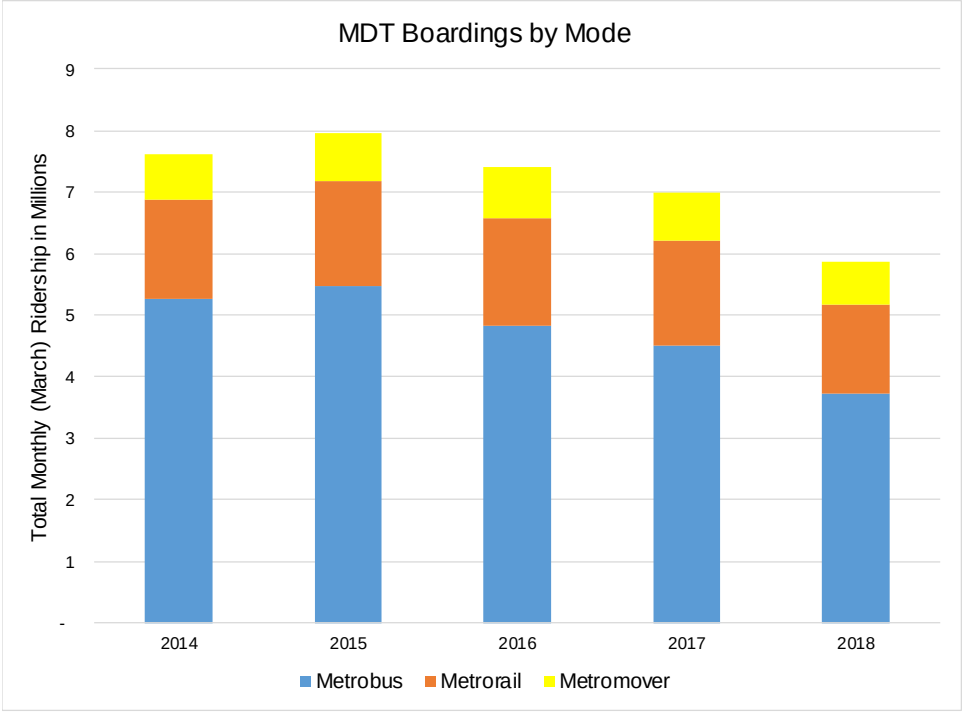



Figure 4: Systemwide Cumulative Weekday Ridership for March (2014-2018)

## *Metrobus – Top Five Routes Analysis*

Average weekday ridership data for the five Metrobus routes with the highest weekday average ridership for March is summarized in Table 4 and Figure 5. These include routes 119-S (Miami Beach), 11 (Flagler Street), 77 (NW 7 Avenue), 112-L (NW 79 Street and Collins Avenue), and 27 (NW 27 Avenue). MDT maps for these routes are included in Appendix A. Average weekday ridership for all five routes decreased between 2014 to 2018. Route 119-S experienced the largest decrease (39%) from 14,601 average weekday riders in 2014 to 8,863 average weekday riders in 2018. To assess if the ridership decline is attributable to reduction of service, "revenue miles" data was also analyzed. The data shows that three of the routes saw a reduction in revenue miles between 2014 and 2018 (Route 119-S, Route 11, and Route 112-L). These three routes experienced the largest decrease in average weekday ridership. However, two routes (77 and 27), experienced negligible to no reduction in revenue miles yet still experienced between



25 to 30 percent decrease in ridership. To further evaluate the impact of revenue miles on ridership, weekday ridership data was normalized by revenue miles (ridership divided by revenue miles) as shown in Table 4 and Figure 6. The normalized data indicate all five routes experience ridership decline per revenue mile by between 25 percent to 30 percent. These results indicate that there may be contributing factors other than the amount of service being provided that are leading to a reduction in ridership.

Table 4: Historical Weekday Ridership of Top 5 Metrobus Routes

| Route | 2014 | 2015 | 2016 | 2017 | 2018 | % Change Between 2014 and 2018 |
|---|---|---|---|---|---|---|
| Average Weekday Ridership | | | | | | |
| Route 119 - S | 14,601 | 13,672 | 11,308 | 8,615 | 8,863 | -39% |
| Route 11 | 12,687 | 12,918 | 10,607 | 10,018 | 8,157 | -36% |
| Route 77 | 10,585 | 10,006 | 9,043 | 9,252 | 7,707 | -27% |
| Route 112 - L | 11,516 | 11,230 | 8,945 | 7,528 | 7,353 | -36% |
| Route 27 | 10,181 | 9,344 | 8,269 | 8,531 | 7,350 | -28% |
| Revenue Miles | | | | | | |
| Route 119 - S | 3,895 | 3,895 | 3,899 | 3,962 | 3,449 | -11% |
| Route 11 | 2,116 | 2,116 | 2,065 | 2,065 | 1,810 | -14% |
| Route 77 | 2,945 | 2,945 | 2,920 | 2,930 | 2,930 | -0.5% |
| Route 112 - L | 2,701 | 2,701 | 2,720 | 2,709 | 2,462 | -9% |
| Route 27 | 2,610 | 2,610 | 2,610 | 2,610 | 2,610 | 0% |
| Average Weekday Ridership Normalized by Revenue Miles | | | | | | |
| Route 119 - S | 3.7 | 3.5 | 2.9 | 2.2 | 2.6 | -30% |
| Route 11 | 6.0 | 6.1 | 5.1 | 4.9 | 4.5 | -25% |
| Route 77 | 3.6 | 3.4 | 3.1 | 3.2 | 2.6 | -28% |
| Route 112 - L | 4.3 | 4.2 | 3.3 | 2.8 | 3.0 | -30% |
| Route 27 | 3.9 | 3.6 | 3.2 | 3.3 | 2.8 | -28% |

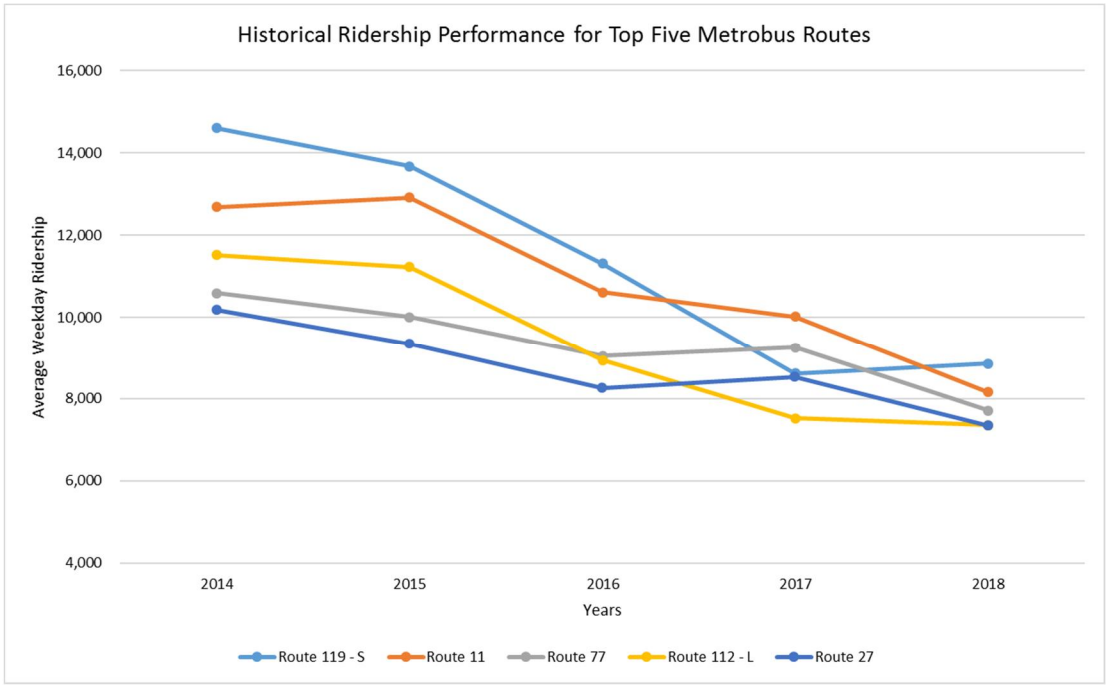



Figure 5: Historical Ridership (Average Weekday) Performance for Top Five Metrobus Routes

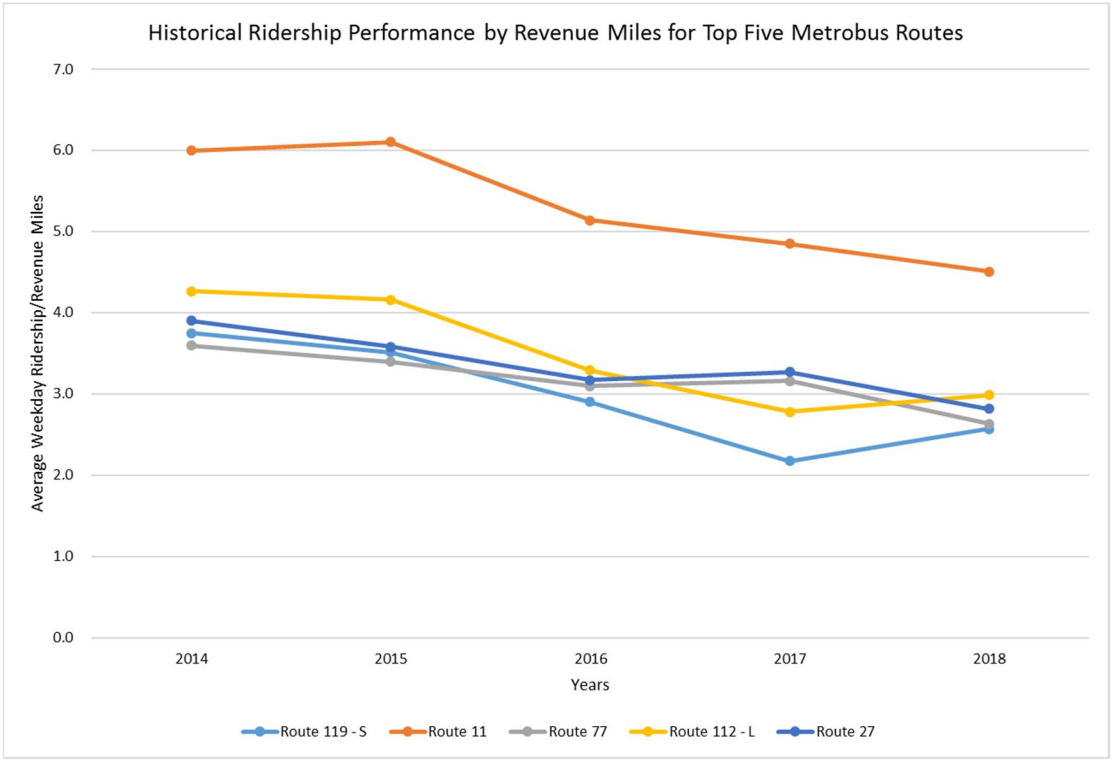



Figure 6: Historical Ridership (Average Weekday) by Revenue Miles for Top Five Metrobus Routes

### *Metrorail – Top Five Stations Analysis*

Average weekday boardings data for the five Metrorail stations with the highest weekday average boardings for the month of March is summarized in Table 5. Government Center and Dadeland North experienced the highest percentage decline in boardings, whereas Brickell experienced a slight increase during the five-year period.

Table 5: Metrorail Historical Average Weekday Boardings by Station for March

| Station | 2014 | 2015 | 2016 | 2017 | 2018 | % Change Between 2014 and 2018 |
|---|---|---|---|---|---|---|
| Government Center | 13,163 | 13,094 | 12,741 | 12,312 | 10,818 | -18% |
| Dadeland South | 8,036 | 7,958 | 7,687 | 7,204 | 7,289 | -9% |
| Dadeland North | 7,195 | 7,356 | 7,047 | 6,713 | 6,029 | -16% |
| Civic Center | 6,250 | 6,351 | 6,332 | 6,243 | 5,679 | -9% |
| Brickell | 6,078 | 6,655 | 6,920 | 6,593 | 6,319 | 4% |

### *Metromover – Top Five Stations Analysis*

Average weekday boardings data for the five Metromover stations with the highest weekday average boardings for the month of March is summarized in Table 6. With the exception of Brickell, the other stations experienced a decline in boardings. Metrorail station analysis also indicated an increase in boardings at the Brickell station.

Table 6: Metromover Historical Average Weekday Boardings by Station for March

| Station | 2014 | 2015 | 2016 | 2017 | 2018 | % Change Between 2014 and 2018 |
|---|---|---|---|---|---|---|
| Government Center | 9,979 | 9,505 | 9,455 | 8,675 | 7,850 | -21% |
| Brickell | 3,143 | 3,358 | 3,571 | 3,615 | 3,373 | 7% |
| Bayfront Park | 3,492 | 3,309 | 3,479 | 3,290 | 3,089 | -12% |
| College/Bayside | 2,794 | 2,636 | 2,758 | 2,407 | 2,198 | -21% |
| Omni | 3,184 | 2,728 | 2,771 | 2,178 | 2,030 | -36% |



## 2.2 Factors Influencing Transit Ridership in Miami-Dade County

The possible factors influencing transit ridership can be broadly categorized as either internal to the transit system (e.g., service reductions) or external (e.g., increased automobile ownership). The following sections provide a review of internal and external factors in the context of decreasing transit ridership in Miami-Dade County.

### 2.2.1 Potential Internal Factors

#### *Service Adjustments*

Transit agencies adjust service for a variety of reasons. The most common reasons include increasing/decreasing demand along an existing transit route, to serve new markets/areas, budgetary shortfalls that require reduction of service, and strategic decisions such as replacing one transit mode with another. Since Metrobus is the most robust transit system in Miami-Dade County, this section presents an assessment of service adjustments implemented in 2018, as summarized in the Miami-Dade County Transit Development Plan FY 2019-2028. Appendix B identifies the routes that were subjected to service adjustments in 2018. Overall, 16 routes experienced service frequency reductions, 15 routes experienced service improvements, one new route (248) was added, and one route (249) was discontinued. The revenue miles operated (Metrobus, Metrorail and Metromover) slightly increased from 38.4 million in 2016 to 38.7 million in 2017 (0.7% increase). However, during the same period, systemwide ridership for the same three modes decreased by 9.8%.

Figure 7 shows that Metrobus ridership started to tail off around the end of 2014, which resulted in the DTPW scaling the service down to match the demand, thereof. What this highlights is that the Metrobus service reductions were made in response to the ridership decline.

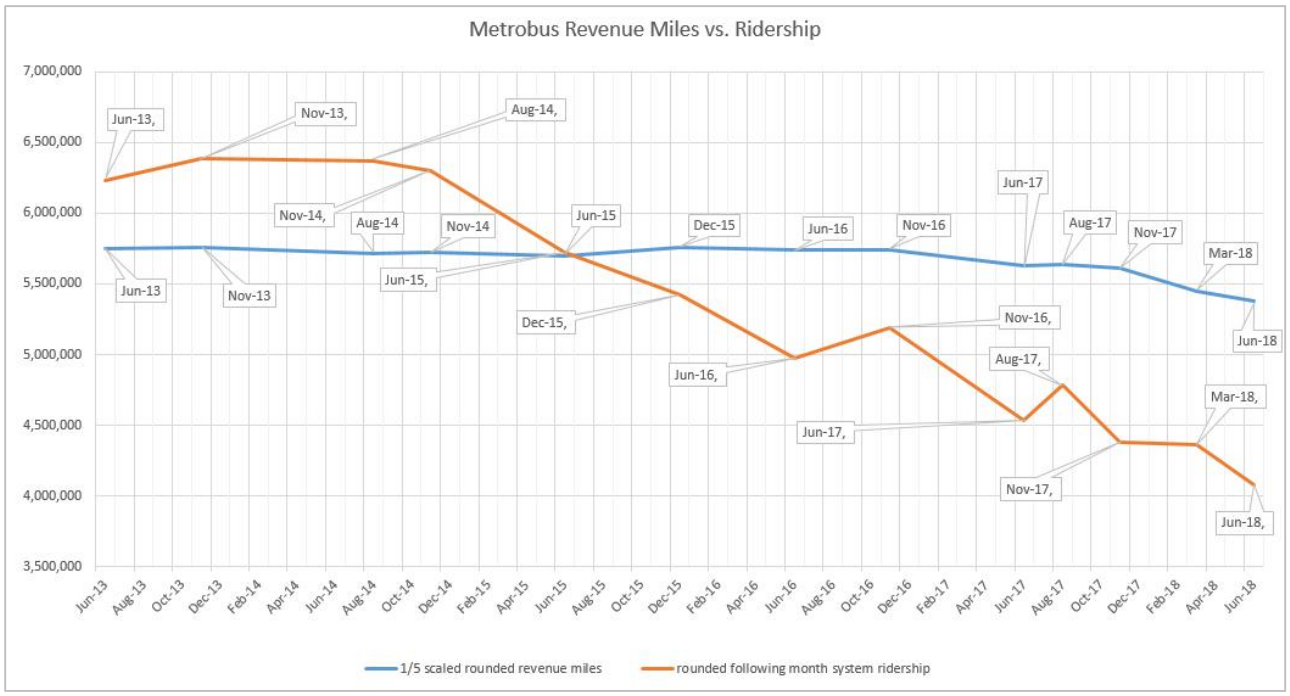



Figure 7: Metrobus Revenue Miles vs. Ridership (2013 – 2018)

### *Service Reliability and Quality of Service*

Even though transit reliability can be defined using several metrics, the most common measure from the transit user standpoint is on-time performance. If the service does not meet the published schedule and travel time on a consistent basis, the customers tend to lose faith in the system, which may result in ridership decline. Table 7 summarizes on-time performance by mode and the performance target set in the Transit Development Plan (TDP). As shown in Table 7, on-time performance decreased in 2017 for both Metrobus and Metrorail services. While Metrobus on-time performance has been below par for the past four years, it was not until 2017 that Metrorail on-time performance has dipped below the target value.

Table 7: Historical On-Time Performance of Transit Vehicles Per Mode

| Year | Metrorail | Metrobus |
|---|---|---|
| | On-time Performance (Target) | |
| 2014 | 96.6% (95%) | 74.2% (78%) |
| 2015 | 96.0% (95%) | 67.0% (78%) |
| 2016 | 97.0% (95%) | 74.0% (78%) |
| 2017 | 87.6% (95%) | 69.2% (78%) |

Another indicator of the transit system performance is the feedback submitted by users through Miami-Dade County's 311 Service. Over 37,000 comments provided by transit users between June 2016 and March 2018 were summarized based on common themes, as shown in Table 8. Almost 20,000 (52 percent) of the reported complaints are service-related (e.g., transit vehicles not arriving, service running late, vehicles not stopping to pick up riders, etc.), followed by around 4,000 (11 percent) complaints on operator behavior

.

Table 9 provides a breakdown of complaints by mode. Overall, 84 percent of complaints were related to Metrobus, followed by Metrorail (13 percent). It is interesting to note that there were more equipment/facilities maintenance and passenger incident complaints associated with Metrorail than other modes.

Table 8: Breakdown of Miami-Dade County Transit 311 Complaints

| Complaint Type | Number of Complaints | Percentage |
|---|---|---|
| Service Related | 19,265 | 52% |
| Operator Behavior | 3,991 | 11% |
| Driving Safety | 2,706 | 7% |
| Service Request Related | 2,638 | 7% |
| Equipment/Facilities Maintenance | 3,114 | 8% |
| Commendation | 1,928 | 5% |
| Planning and Scheduling | 1,348 | 4% |
| Office Administration | 1,331 | 4% |
| Passenger Incident | 584 | 2% |
| Fares and Transfers | 158 | < 1% |
| Other | 71 | < 1% |
| Total | 37,134 | 100% |

Table 9: Breakdown of Miami-Dade County Transit 311 Complaints by Mode

| Complaint Type | Bus | Metrorail | Metromover | Contracted | Other | Total |
|---|---|---|---|---|---|---|
| Service Related | 16,469 | 2,373 | 74 | 294 | 26 | 19,236 |
| Operator Behavior | 3,503 | 150 | 0 | 31 | 7 | 3,691 |
| Driving Safety | 2,598 | 64 | 2 | 35 | 3 | 2,702 |
| Service Request | 2,496 | 105 | 9 | 14 | 11 | 2,635 |
| Equipment Maintenance | 1,106 | 931 | 95 | 15 | 5 | 2,152 |
| Commendation | 1,803 | 67 | 0 | 9 | 46 | 1,925 |
| Planning and Scheduling | 1,265 | 62 | 1 | 12 | 7 | 1,347 |
| Office Administration | 1,061 | 178 | 21 | 16 | 50 | 1,326 |
| Facilities and Maintenance | 393 | 452 | 87 | 1 | 24 | 957 |
| Passenger Incident | 165 | 381 | 17 | 5 | 16 | 584 |
| Employee Behavior | 121 | 115 | 4 | 16 | 36 | 292 |
| Fares and Transfers | 145 | 8 | 0 | 4 | 1 | 158 |
| Total | 31,125 | 4,886 | 310 | 452 | 232 | 37,005 |

### *Municipal Transit Circulators*

The potential impacts of municipal transit circulators are considered internal since municipal services are planned in coordination with Miami-Dade County to be complementary to the MDT routes and are subject to the County's service planning guidelines. Further, the County may adjust the MDT routes with the introduction of local circulators. There are approximately 25 municipality-operated transit systems in Miami-Dade County. Figure 8 shows a map of all Miami-Dade County municipal circulators.

The Citizen's Independent Transportation Trust (CITT), which oversees the People's Transportation Plan funded with the half-penny sales surtax in Miami-Dade County, provided historical annual ridership data for municipal transit circulator systems and are summarized in Table 10. Figure 9 shows the total annual ridership for the top five circulator systems and for all other systems. A summary of observations is listed below.

- Overall ridership of municipal circulators increased from 7.4 million in 2013 to 10.9 million in 2017, indicating there is a continuing demand for transit in Miami-Dade County.
- Fourteen municipal circulators experienced an increase in ridership whereas 11 municipal circulators experienced a decrease in ridership.
- There is no clear correlation between ridership trends and the size of a municipality in terms of population (source: Census estimates).
- Miami, Miami Beach, and Doral transit circulator systems collectively experienced 3.7 million additional trips between 2013 and 2017. The City of Miami's trolley system experienced a 2.5 million increase in ridership between 2013 and 2017. During this period, the number of trolley routes in Miami also increased from seven to 12.
- Hialeah, which is the second most populous municipality in Miami-Dade County, experienced the largest ridership decline. Hialeah operates two routes and there were no changes to the services during this period. Since the inception of service, Hialeah charges a fee for using its transit system.
- Given the increase in ridership is not universal across all the circulators, there is no clear indication that the circulators are negatively impacting MDT ridership. In general, local circulators are distinct from MDT bus routes given that these services are more access oriented in nature, by connecting trip generators and attractors within communities. Therefore, extensive duplication of MDT bus routes typically does not occur.



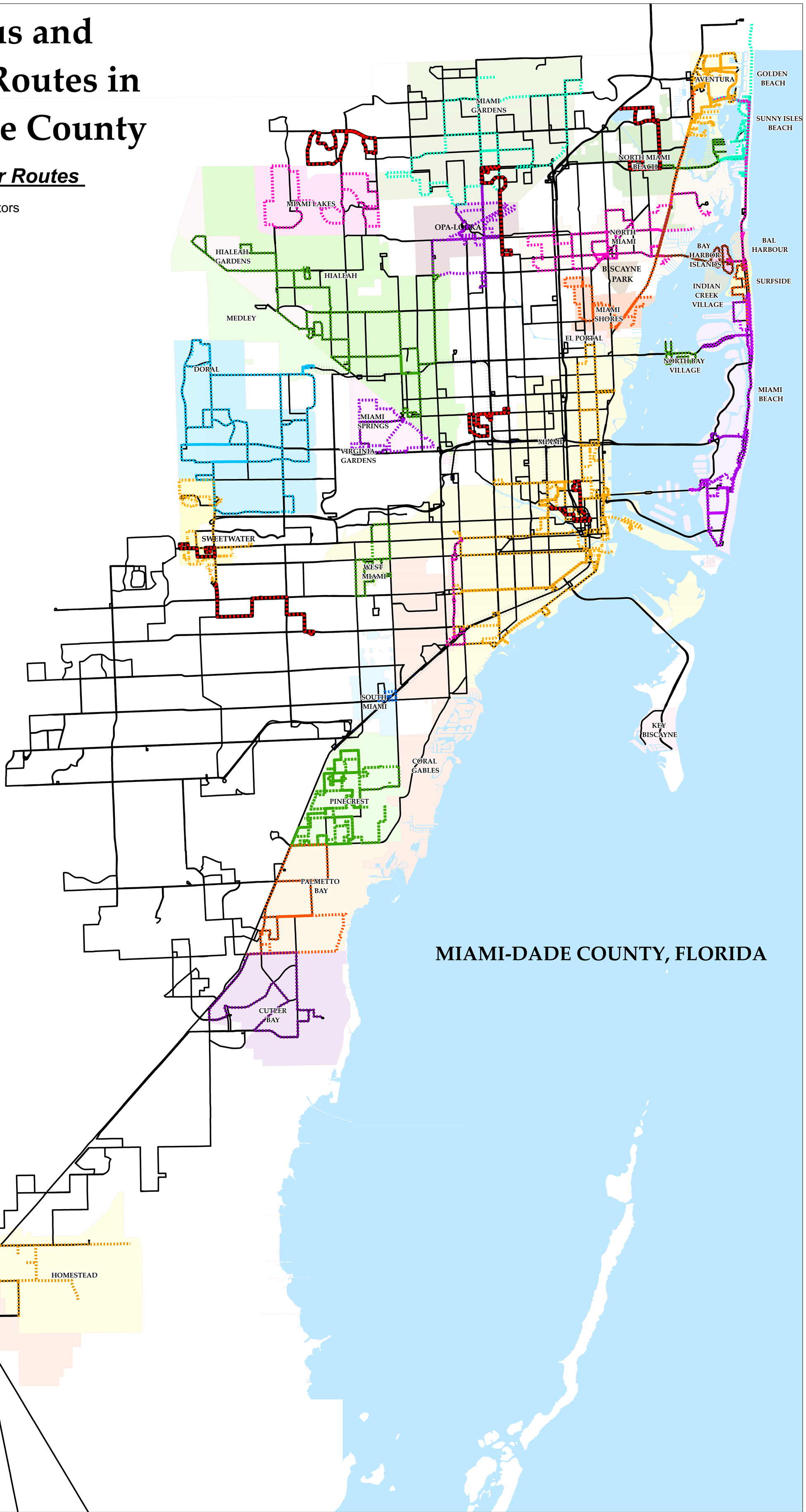
Table 10: Municipal Circulators in Miami-Dade County

| Municipality | 2013 | 2014 | 2015 | 2016 | 2017 | Change in Ridership between 2013-2017 | Population 2017 |
|---|---|---|---|---|---|---|---|
| Bay Harbor Islands | 6,100 | 8,700 | 7,786 | 8,000 | 7,850 | 1,750 | 6,006 |
| City of Aventura | 285,000 | 276,434 | 270,182 | 274,223 | 265,532 | - 19,468 | 38,202 |
| City of Coral Gables | 1,290,000 | 1,158,627 | 1,147,358 | 1,185,537 | 1,120,774 | - 169,226 | 51,095 |
| City of Doral | 312,862 | 362,470 | 445,275 | 548,960 | 587,045 | 274,183 | 61,130 |
| City of Hialeah | 510,000 | 489,284 | 410,991 | 338,019 | 261,902 | - 248,098 | 239,673 |
| City of Homestead | 120,000 | 164,150 | 142,590 | 111,258 | 137,692 | 17,692 | 69,907 |
| City of Miami | 2,600,000 | 3,643,872 | 3,683,299 | 4,581,709 | 5,087,070 | 2,487,070 | 463,347 |
| City of Miami Beach | 1,309,300 | 1,231,806 | 2,084,831 | 1,788,334 | 2,248,578 | 939,278 | 92,307 |
| City of Miami Gardens | - | - | 14,261 | 76,619 | 83,338 | 83,338 | 113,750 |
| City of Miami Springs | 30,302 | 30,275 | 23,722 | 28,876 | 21,720 | - 8,582 | 14,424 |
| City of North Bay Village | 2,400 | 2,400 | 2,400 | 2,675 | 2,600 | 200 | 8,317 |
| City of North Miami | 350,000 | 460,000 | 377,939 | 357,485 | 340,359 | - 9,641 | 62,225 |
| City of North Miami Beach | 14,200 | 15,600 | 17,404 | 22,165 | 85,593 | 71,393 | 44,124 |
| City of Opa-Locka | 180,000 | 112,000 | 178,912 | 178,912 | 178,912 | - 1,088 | 16,479 |
| City of Sunny Isles Beach | 154,746 | 167,740 | 166,399 | 148,597 | 122,158 | - 32,588 | 22,348 |
| City of Sweetwater | 72,000 | 54,000 | 55,383 | 65,073 | 126,487 | 54,487 | 21,028 |
| City of West Miami | 2,500 | 2,500 | 7,786 | 6,000 | 12,750 | 10,250 | 8,120 |
| Miami Shores Village | 21,000 | 19,033 | 16,751 | 17,216 | 9,879 | - 11,121 | 10,649 |
| Town of Cutler Bay | 73,400 | 20,575 | 31,128 | 51,895 | 52,787 | - 20,613 | 45,101 |
| Town of Medley | 1,250 | 1,095 | 1,345 | 1,270 | 1,078 | - 172 | 891 |
| Town of Miami Lakes | 12,172 | 30,275 | 21,987 | 16,233 | 22,041 | 9,869 | 31,087 |
| Town of Surfside | 5,000 | 2,500 | 26,774 | 29,518 | 29,539 | 24,539 | 5,841 |
| Village of Bal Harbour | 5,432 | 22,234 | 16,517 | 18,971 | 11,627 | 6,195 | 3,059 |
| Village of Palmetto Bay | 9,000 | 5,650 | 7,271 | 7,032 | 5,276 | - 3,724 | 24,710 |
| Village of Pinecrest | 23,500 | 23,362 | 23,885 | 27,930 | 29,875 | 6,375 | 19,651 |
| Total | 7,392,177 | 8,306,596 | 9,184,191 | 9,894,523 | 10,854,479 | 3,462,298 | |

# Figure 8: Bus and Circulator Routes in Miami Dade County

## *Bus and Circulator Routes*

- Non-Municipal Circulators
- Aventura
- Bal Harbour
- Bay Harbor Islands
- Coral Gables
- Cutler Bay
- Doral
- Hialeah
- Homestead
- Miami Beach
- Miami Gardens
- Miami Lakes
- Miami Shores
- Miami
- Miami Springs
- North Bay Village
- North Miami
- North Miami Beach
- Opa-locka
- Palmetto Bay
- Pinecrest
- South Miami
- Sunny Isles Beach
- Surfside
- Sweetwater
- West Miami
- Bus Routes
- Metrorail




**LEGEND**

Coastal Water

N
W E
S

0 1 2 3 4
Miles

TPO
Miami-Dade Transportation Planning Organization

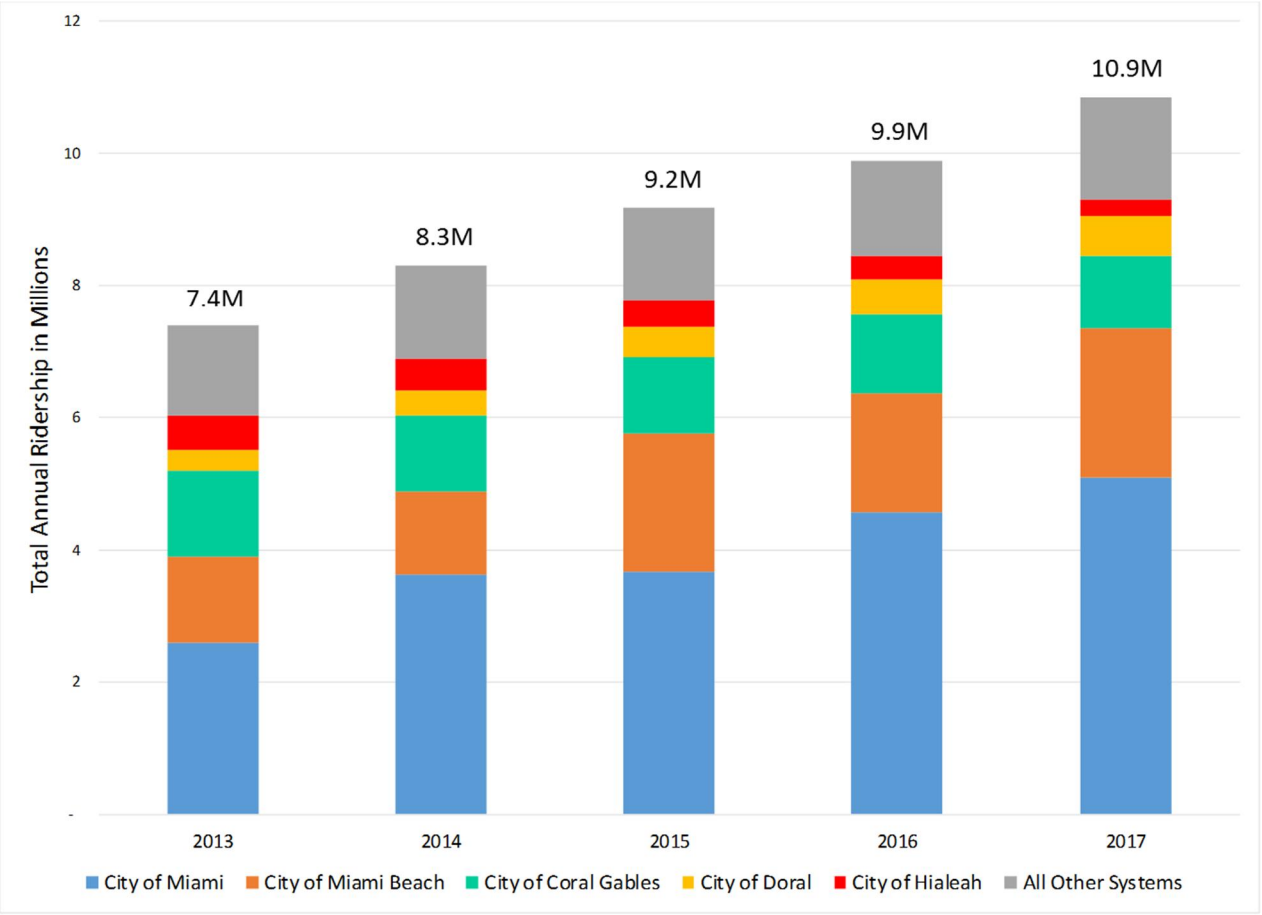



Figure 9: Annual Ridership for Miami-Dade County Municipal Circulators

## 2.2.2 Potential External Factors

Car ownership, income, unemployment, and gas prices are among the external factors that may contribute to transit ridership fluctuations. An example of the impact of these external factors is the transit ridership increase experienced by many agencies during the economic recession in 2007-2011 timeframe.

### *Car Ownership and Unemployment*

Car ownership in Miami-Dade County has increased disproportionately relative to population growth in the past few years. The American Community Survey (ACS) estimates indicate that 254,000 personal cars were added to Miami-Dade County between 2013 to 2016, while the overall population only grew by 70,000. These findings are consistent with similar trends in other metropolitan areas. Increasing car ownership and decreasing unemployment, especially among those who are transit-dependent, may lead to reduced transit ridership. Unemployment in Miami-Dade County has steadily decreased in the past five years as shown Figure 10. However, increasing car ownership also leads to congestion, which in turn may lead some populations to shift to transit modes such as Metrorail that offer comparative travel times and eliminate the stress of driving.

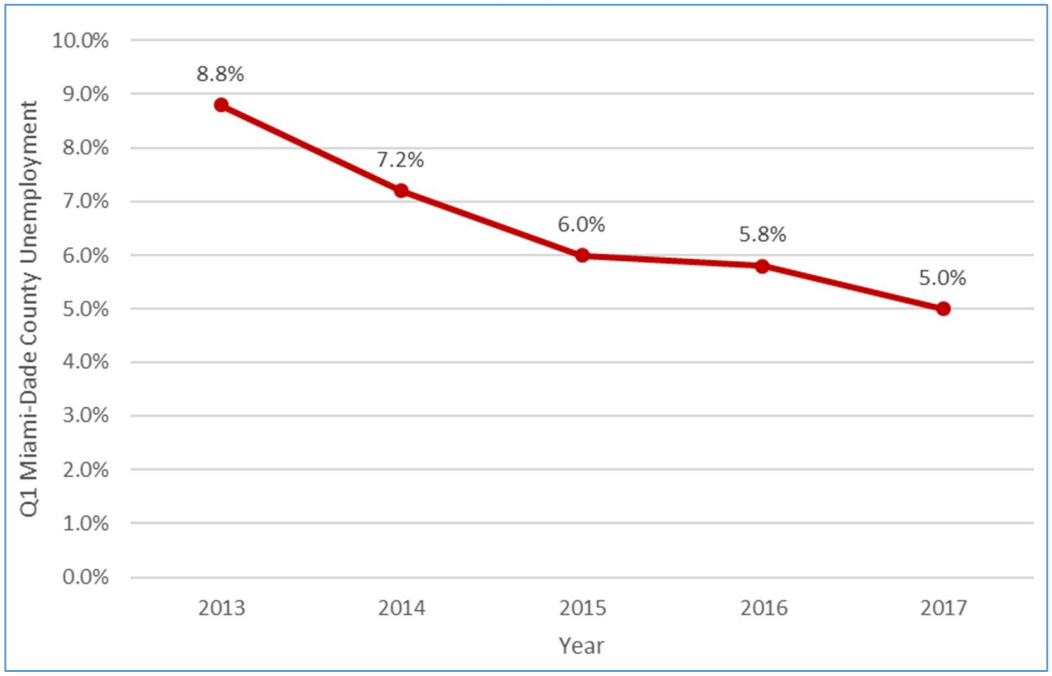



Figure 10: Historical Unemployment Rate for Miami-Dade County

### *Fuel Prices*

Average gas prices in Miami-Dade County for 2013 to 2017 are shown in Figure 11. Gas prices have decreased from a peak in 2014, which could contribute to increased automobile travel and hence a shift from transit to automobile.

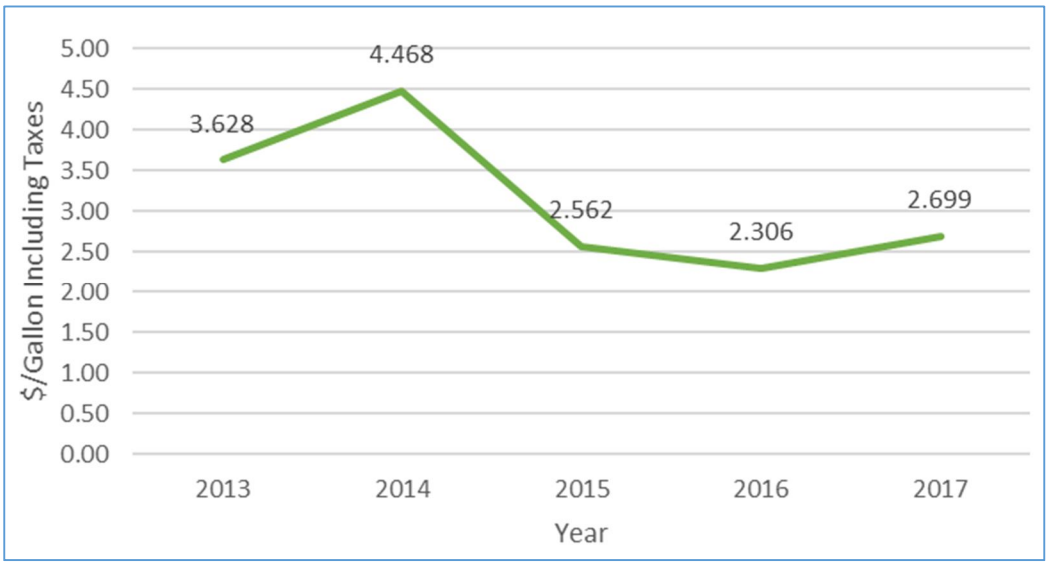



Figure 11: Average Annual Gas Prices in Miami, FL (U.S. Energy Information Administration)



### *Shared Mobility Options*

Emerging transportation options such as Transportation Network Companies (TNCs) and ridesharing companies may have an impact on other travel options, including transit in Miami-Dade County. Two of the widely known TNCs, Uber and Lyft, began service in Miami-Dade County in 2014 and were legally recognized in 2016. The popularity of TNCs can be attributed to ease of booking, payment, quick accessibility, reliability, and convenience. TNCs also offer ridesharing options, which allow passengers to split the cost of a ride with someone else who is taking a similar route.

Dynamic carpooling services allow commuters to pair with other commuting drivers going in the same direction. RideFlag piloted an application with South Florida Commuter Services (SFCS) and Florida International University (FIU). This program now includes University of Miami and continues to expand. DTPW is exploring methods to introduce dynamic carpooling programs to Metrorail stations.

Carsharing entities provide members with short-term access to vehicles. Car2go operated in Miami-Dade from July 2012 to March 2016. In 2017, ZipCar partnered with DTPW to launch a 5-year pilot program where designated parking spaces are allocated at five Metrorail stations (Coconut Grove, Vizcaya, Earlington Heights, Hialeah, and Palmetto) for ZipCar vehicles.

Bikeshare programs provide users on-demand access to bicycles at various docking station locations for one-way or roundtrip travel. For example, CitiBike provides bicycles at docking stations in Miami Beach and downtown Miami as shown in Figure 12. Spin, ofo, and LimeBike are also piloting dock-less bikeshare systems throughout Miami-Dade County. Similar companies, Lime and Bird, are providing dock-less electric scooters in Miami-Dade County, where riders can rent the scooters with a smartphone application, provided they are at least 18 years old and have a valid driver's license.

In absence of usage information, the impacts of shared mobility options on transit ridership cannot be determined. A review of national literature on the impact of TNCs on transit is presented in a later section of this report.

## CitiBike Miami Station Map

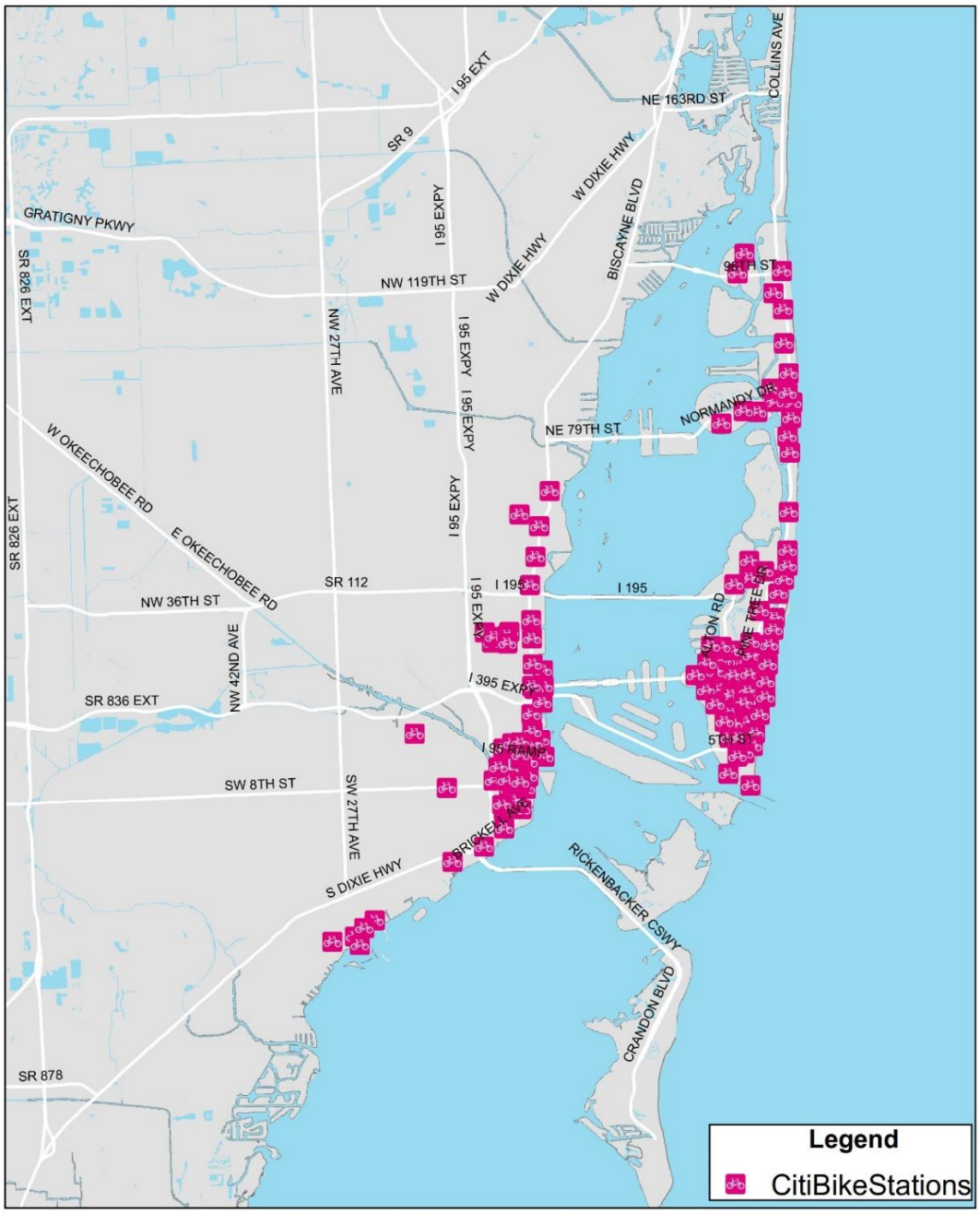



Figure 12: CitiBike Station Map

### *Non-motorized Transportation Modes*

There has been an increased recognition and promotion of biking and walking as viable and beneficial transportation modes. The Journey to Work data available from *US Census Bureau's American Community Survey* indicates an increasing trend of biking to walk among Miami-Dade County residents. As shown in Figure 13 and Figure 14, the increase is noticeable in Miami Beach. Among the notable recent bike infrastructure enhancements include green bike lanes along Venetian Causeway and Crandon Boulevard. The impacts of increased popularity of biking to work on transit use is not known.

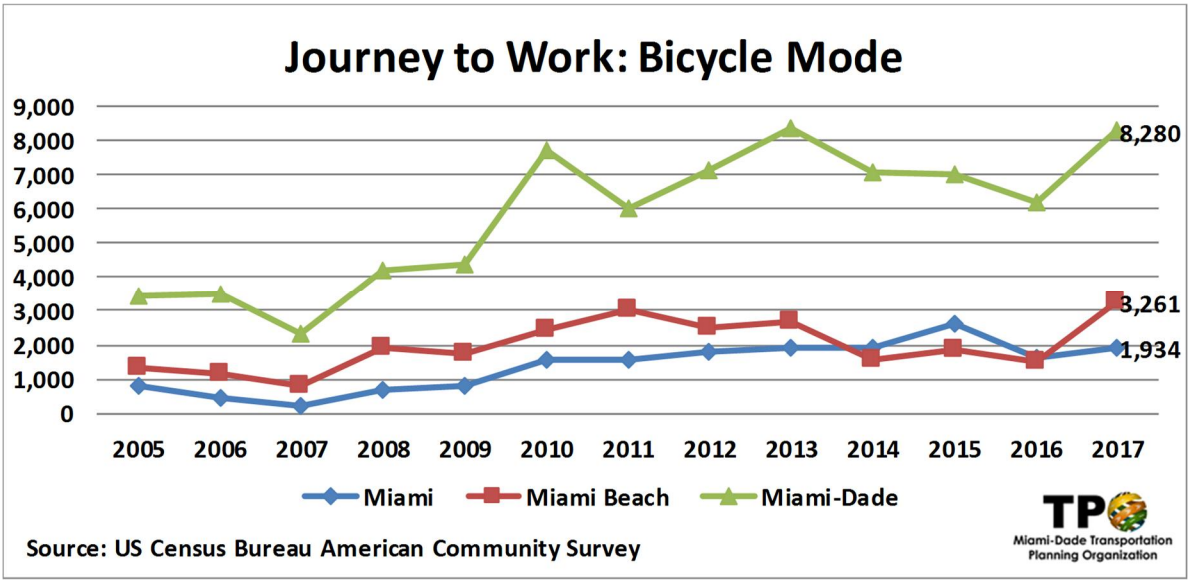



Figure 13: Journey to Work – Bike Commuters

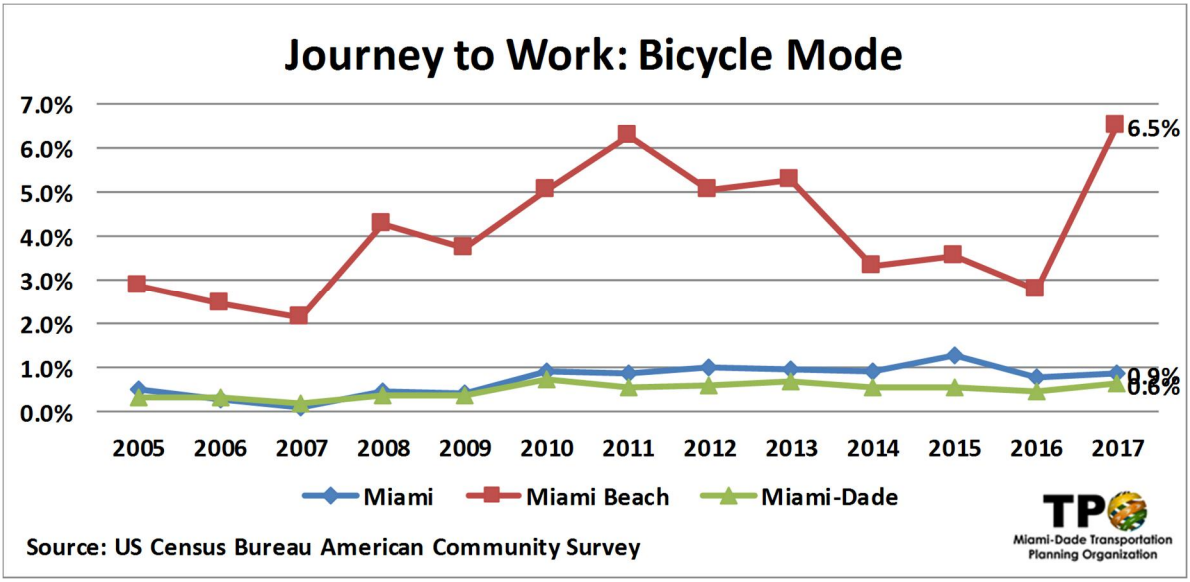



Figure 14: Journey to Work – Bike Mode Share

## 2.3 National Literature Review

A national literature research was conducted to compare MDT with other public transit systems, causal factors for ridership change, and strategies developed to mitigate ridership decline. In addition, a review of literature on the impacts of TNCs on transit use is also included in this section.

### 2.3.1 Comparison of MDT with Other Transit Systems

Data from the National Transit Database (NTD) for 2012 to 2016 was used to compare MDT ridership change with major transit systems in Florida and transit systems in other major urbanized areas (UZA). Figure 15 shows annual unlinked trips for transit agencies in Broward County, Orlando, Tampa, Atlanta, Boston, Dallas, Denver, Los Angeles, Houston, Philadelphia, Phoenix, Seattle, and Washington, DC.

Overall, transit ridership in major transit systems in Florida and elsewhere experienced a decline, except for a few agencies. Therefore, transit ridership decline during last few years is a common trend among many transit agencies in the US. Nationally, overall transit ridership (measured using unlinked passenger trips) reduced from 10.352 billion in 2012 to 10.240 billion in 2016 (Source: NTD). A review of select agencies that experienced a ridership increase is included in the next section.

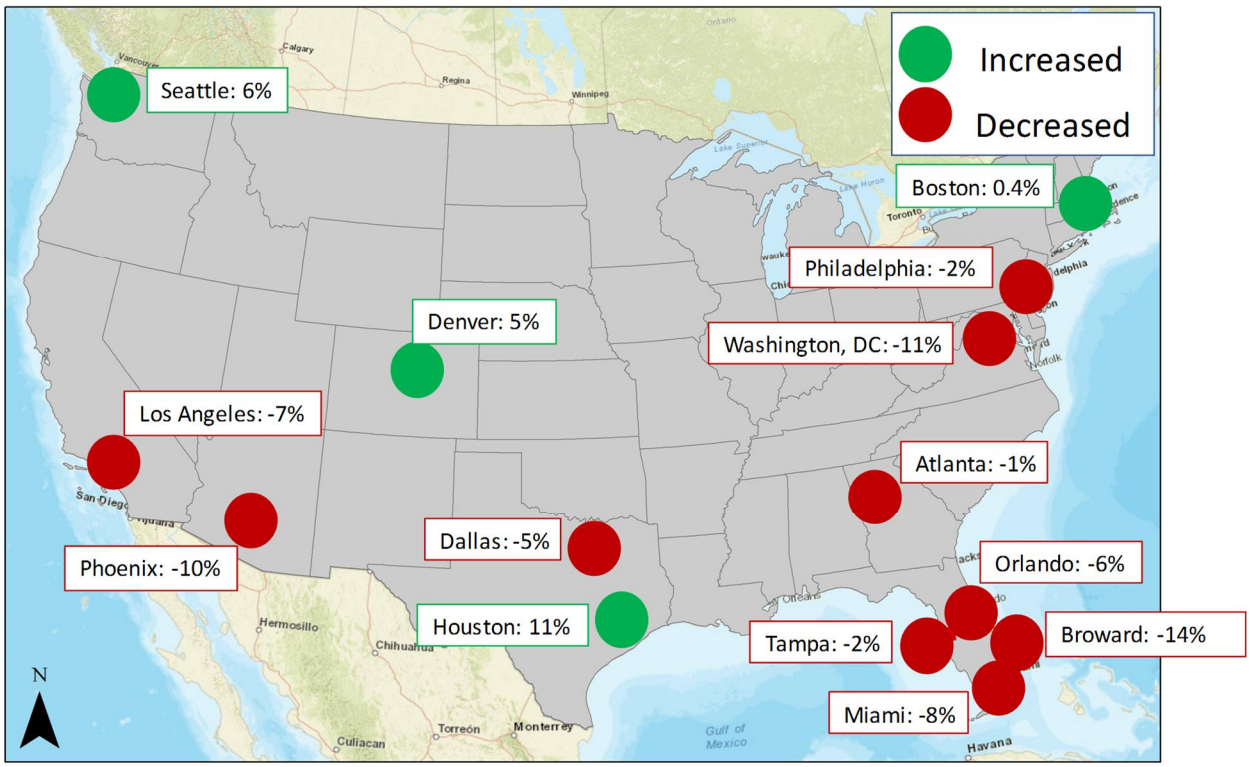



Figure 15: Change in Unlinked Passenger Trips between 2012 and 2016 (Comparison with Other Transit Agencies)

### 2.3.2 Transit Agencies with Increase in Ridership

Ridership on King County Metro Transit (Seattle, WA) has been increasing notably, with 120 (million unlinked passenger trips in 2012 to 127 million unlinked passenger trips in 2016 (Source: NTD). These gains are a result of continued investments in the system by King County and the City of Seattle. Future plans include a $30 million annual investment to address overcrowding and reliability, expansion of the light rail system, and improving connections to the existing RapidRide bus system.


King County Metro - Seattle, WA (The Seattle Times, 2017)

Houston has also seen an increase in transit use from 81 million unlinked passenger trips in 2012 and 90 million unlinked passenger trips in 2016 (Source: NTD). This increase in ridership may be attributed to the expansion of light rail and restructuring of the bus network. In 2015, Houston restructured the bus network to a grid-like system, increased access to bus service by providing frequencies of at least every 15 minutes, and expanded service on weekends and evenings. From May 2015 to May 2016, monthly bus ridership increased by 7% and light rail ridership increased by 28%.

In 2004, voters of the Regional Transportation District (RTD) in Metro Denver region approved a rapid transit expansion program with a $5.3 billion investment. The Metro Denver region has seen an increase in transit use from 99 million unlinked passenger trips in 2012 to 103 million unlinked passenger trips in 2016 (Source: NTD). A report that assessed transit ridership between 2010 and 2015 indicates a 5% increase in annual boardings, with light rail experiencing a 30% increase, whereas bus ridership has been steady. However, transit mode share remained consistent and per capita boardings decreased by 4%.

Transit use in Minneapolis' Metropolitan Council has increased from 81 million in 2012 to 83 million in 2016 (Source: NTD). Furthermore, ridership on the Green and Blue light rail lines experienced a 4% growth in 2017. The agency has two light rail extensions in the Capital Investment Grants (CIG) Program engineering phase, and it is planning for 17 new rapid bus routes, 46 new local bus lines, and upgrades to 76 existing bus routes to accommodate future ridership. Additionally, ridership on Minneapolis' arterial Bus Rapid Transit A-Line increased 30% from 2016 to 2018 after a $27 million investment. Peak service operates at 10-minute headways, buses have transit signal priority, stations are well-equipped with shelters, real-time information, and bike racks. In 2016, Metro Transit introduced an application with

mobile payment options and a trip planner. Sixteen percent (16%) of fares are purchased online and about 75% of visits to their website occur on a mobile device.


Metropolitan Council - Minneapolis, MN (MinnPost, 2015)

In November 2017, the Toronto Transit Commission (Toronto, ON, Canada) implemented dedicated right-of-way and transit priority measures for the King Street streetcar line. There has been an 11% increase in all-day weekday ridership along the corridor as of June 2018. The largest change is during weekday ridership, which increased by 35% in the morning, and 27% in the evening. The improvements also include implementing a growth strategy program that establish a partnership with microtransit companies, increasing bus and streetcar signal priority, and the installation of Wi-Fi services at key locations.

A summary of strategies that led to an increase in transit ridership is provided below.

- Large scale investments that include transit network expansions and operational improvements to the existing system
- Investment in passenger rail systems
- Restructuring of bus systems in response to the changing land use patterns and growth trends
- Obtaining public support and input for the investments

### 2.3.3 Internal and External Factors Affecting Transit Ridership

The determinants of transit ridership can be categorized as either internal (operational) or external factors, where factors such as fuel prices, land use, socioeconomic factors, metropolitan population, and economic vitality are among the external factors that influence ridership. Factors such as transit service levels, transit service quality, fare prices, and quality of service are among the operational factors that influence ridership.

A 2015 study conducted by the Mineta Transportation Institute, *Investigating the Determining Factors for Transit Travel Demand by Bus Mode in US Metropolitan Statistical Areas*, sought to examine the influence of operational and external factors on transit ridership by bus using 2010 data. A total of 19 variables were

analyzed (8 internal and 11 external). The results indicated that seven out of eight operational variables proved to be significant factors in determining travel demand by bus. These include transit fare, transit supply, revenue hours, average headway, safety, transit coverage, and service intensity. Contrastingly, only gas price proved to be a significant external predictor of transit demand by bus.

A 2018 study by McGill University, *Invest in the Ride: A 14 Year Longitudinal Analysis of the Determinants of Public Transport Ridership in 25 North American Cities*, sought to explore the determinants of transit ridership. The findings suggest that operational factors, rather than TNCs and gas price, are key determinants of ridership. As shown in Table 11, revenue miles and average fare were among the operational factors shown to have a significant effect on transit ridership (i.e., statistically significant). The presence of private bus operators, the proportion of carless households, gas prices, and population were among the external factors to have a significant influence on transit ridership.

Table 11: The Effects of Operational and External Factors on Transit Ridership

| Factor | Factor Type | Statistically Significant | Effect |
|---|---|---|---|
| Revenue miles | Operational | Yes | Positive association. More service results in increased ridership |
| Average fare | Operational | Yes | Negative association. Increases in fare result in decreased ridership |
| Private Bus Operators | External | Yes | Positive association. The presence of a privately-operated bus service results in increased ridership for transit agencies, suggesting that those services are complementary to the service directly operated by agency |
| Presence of TNCs | External | No | Some positive association. TNCs provide a complement to public transit services. |
| Presence of bicycle sharing systems | External | No | Some positive association. Ride sharing services provide a complement to public transit services. |
| Proportion of zero-car households | External | Yes | Positive association. Car ownership can be used as an indicator of economic vitality. A greater number of household without a car is associated with more transit trips. |
| Gas price | External | Yes | Small positive association. Higher gas prices may result in increased transit ridership |
| Population | External | Yes | Positive association. In the study, a 10% increase in population was associated with a 3.39% increase in ridership |

A 2018 University of South Florida study to understand demographic factors that influence transit ridership concluded:

- As the population's age distribution changes, propensity to use transit also changes. The study cites the National Household Travel Survey in 2017, where transit use trip share is highest among the 16 – 35 age group, remains steady among the 35-65 age group, and declines among the 65+ age group. The study recommends the need to understand older individuals' differing travel needs and preferences.
- As auto availability changes, propensity to use transit also changes. Therefore, increase the attractiveness of transit to "choice riders," as "captive" transit ridership is showing a decreasing trend.

A study conducted by the Southern California Association of Governments (SCAG) in 2018, *Falling Transit Ridership: California and Southern California*, attributes transit ridership decreases in Southern California during the past decade to a combination of falling gas prices, new mobility options by transportation network companies (TNC) services, fare increases in Orange County, concerns about safety, and upward socioeconomic mobility of previously transit-dependent populations. The authors of this study conclude that rising vehicle ownership is the strongest explanation for falling transit ridership. Between 2000 and 2015, Southern Californians acquired vehicles at almost four times the rate they had between 1990 and 2000. The same study suggests that rising personal vehicle ownership is heavily contributing to falling transit ridership in urban areas. Outcomes of several studies recommend that transit agencies should not focus on reversing the trends of vehicle ownership increases by lower-income people, as it is evident that vehicle ownership has beneficial impacts for families. Instead, transit agencies should focus on building a broad base of transit users. The authors estimate that 77% of the 18.8 million residents in the Southern California region rarely or never use transit. If one quarter of non-transit users would replace a single driving trip twice a month, annual ridership would grow by 96 million – more than enough to compensate for recent losses.

### 2.3.4 Transportation Network Companies (TNCs)

A study was conducted by the Institute of Transportation Studies at University of California, Davis, in 2017, *Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States*, to evaluate the impact of TNCs on travel behavior, including vehicle ownership, trip generation, mode substitution, and vehicle miles traveled. The findings of this study indicate that there is uneven adoption of ride-hailing across income classes and age groups. Moreover, use of TNC services is less common by those who live in suburban areas. Contrary to previous studies that suggest that use of TNC services results in a complementary relationship to public transit, the findings of this study show mixed results – the data show a 6% reduction in the use of bus services and a 3% reduction in the use of heavy rail. Furthermore, the authors provided recommendations for improving ridership and state that cities and transit agencies need to be more proactive in collecting data from transit and TNC users such as vehicle ownership, vehicle miles traveled, and mode shares. This could be achieved by mandating data-sharing for TNCs and other mobility operators that use public roads and investing. Additionally, investment in more frequent data

collection efforts should be made. Absent of data, cities and transit agencies will not be able to make data-informed decisions.

A 2016 study in New York City, *For-Hire Vehicle Transportation Study*, indicates that TNCs were contributing to slower traffic flow within the urban core. This study recommends implementing a per-trip fee on taxi and TNC trips as a potential congestion pricing solution in urban environments. Implementing a per-trip fee would raise substantial revenue while only modestly reducing taxi and TNC vehicle mileage in Manhattan. Preliminary findings estimate that a $3 per-trip fee could reduce taxi/TNC mileage by 3-4% while at the same time generating $475 million per year in added revenue. Another approach would be to improve efficiency by reducing the unoccupied time that taxis and TNCs spend between dropping off passengers at the end of one trip and picking up passengers for their next trip.

An investigation of TNC users in the Boston Metropolitan area was conducted in 2017 by the Metropolitan Area Planning Council where almost 1,000 TNC users were asked about their demographics, nature of the trip, and why they chose to use TNC services over other modes of transportation. The results of the survey indicate that over 80% or the surveyed respondents were under the age of 35. Additionally, users surveyed listed speed of service as the primary reason for having selected TNC services as a mode of travel. The authors of the study state that transit and public agencies need more information from TNCs. It is recommended that state legislatures and public agencies should seek opportunities to mandate the provision of additional data from TNCs to ensure that more informed planning, operational, and policy decisions can be made.



# 3.0 Transit Survey Results

To complement our study, a web-based survey was conducted in June 2018 to obtain input from the residents of Miami-Dade County on the factors affecting transit use. Input was sought from both transit users and non-transit users by providing two separate sets of questions. Questionnaires were made available in English, Spanish, and Creole. The survey announcements were primarily carried out through e-blasts, agency websites, digital ads, and social media. These outreach efforts were supplemented by limited in-person surveys at major transit stations. The survey questionnaires, advertisement methods, and in-person survey locations are summarized in Appendix C. *It's important to note that this was not a scientific survey. The survey provided informal feedback on service from individuals that may or may not use transit today, and is not necessarily representative of the general cross section of the population.*

Overall, 1,755 completed surveys were received. As shown is Table 12, 719 responses were from frequent transit users (use transit at least once a week), 445 responses were from infrequent transit users (use transit less than once a week), and 591 responses were from non-transit users. The transit users (frequent and infrequent) were directed to ten follow-up questions and non-transit users were directed to nine separate follow-up questions. The questions were multiple choice responses, and most of the questions required only one response. Questions that asked age, household income, and resident zip code were labeled as optional. In addition, the respondents were given the opportunity to provide write-in comments in a separate section.

Table 12: Transit Use Frequency of Survey Responders

| Transit Use Frequency | Responses | Percentage |
|---|---|---|
| I use transit frequently (at least once a week) | 719 | 41% |
| I use transit infrequently (less than once a week) | 445 | 25% |
| I do not use transit | 591 | 34% |
| Total | 1,755 | 100% |

## 3.1 Survey Results – Transit Users

A summary of transit users' (frequent and infrequent) survey responses to each question is provided in Appendix D. Notable findings from transit user survey responses are provided below.

Transit use trends:

The number of respondents who claimed their transit use increased was higher than those who claimed their transit use deceased. This result is not consistent with the recent county-wide transit use trends. Possible reasons for this anomaly include:

- Surveys did not specifically target people whose transit use declined and/or no longer use transit.

- In-person surveys appear to have resulted in a (disproportionately) high responses from Metrorail users because most in-person surveys were conducted at Metrorail stations.
- In-person surveys were conducted by the facilitator reading the questions to the responder, and then the facilitator entered responses to the online survey platform. The presence of a facilitator might have influenced the response given to this question, especially those who reported an increase in transit use.

Table 13: Transit Use Trends in the Last 12 Months

| Transit Use Trends | Responses | Percentage |
|---|---|---|
| Decreased | 252 | 22% |
| Increased | 350 | 30% |
| Remained the same | 559 | 48% |
| Total | 1,161 | 100% |

Why transit use decreased?

This question was directed to those who said their transit use decreased during the last 12 months.

- Half of the respondents attributed their transit use has decline to transit service cuts, poor reliability, and/or safety concerns. As noted in Table 7 in Section 2.2, on-time performance of Metrobus and Metrorail modes were below the targets established in the DTPW's Transit Development Plan (TDP).
- The second most cited reason is driving a personal vehicle, which may be due to either internal (i.e., reduction in transit service or concerns with service reliability) or external (i.e., having access to a personal car due to increased income) factors. Between 2013 and 2016, automobile registration (254,000) in Miami-Dade County outpaced population growth (70,000) by a factor of 3.6, thus indicating increased access to a personal vehicle.
- Increased use of Uber, Lyft and taxi services was cited by 16 percent of the respondents as a reason for declined transit use.

Table 14: Primary Reason for Transit Use Decline

| Response Choices | Percentage |
|---|---|
| Reduction in transit service, reliability and/or safety concerns | 50% |
| Drive a personal vehicle and/or carpool/vanpool | 22% |
| I use Uber, Lyft or taxi | 16% |
| Change in residential or employment location | 4% |
| I am biking/walking | 2% |
| Other | 6% |
| Total | 100% |

Is there a correlation between age and transit use decrease?

Table 15 provides a breakdown of transit users by age groups. The results indicate that the 25-34 age group is most overrepresented for transit use decreased, followed by the 35-44 age group. In contrast, more respondents belonging to the 45+ age groups indicated that their transit use either increased or remained the same rather than decreased.

Table 15: Transit Use Decline vs. Age of Respondents

| Age Group | All Transit Users | Transit Use Decreased | Percent Difference |
|---|---|---|---|
| 16-24 years | 5% | 5% | 0% |
| 25-34 years | 25% | 34% | +9% |
| 35-44 years | 17% | 19% | +2% |
| 45-54 years | 20% | 16% | -4% |
| 55-64 years | 21% | 16% | -5% |
| Over 65 years | 12% | 10% | -2% |
| Total | 100% | 100% | - |

Is there a correlation between age and transit use decrease due to Uber, Lyft or taxi use?

Table 16 provides a breakdown of transit users by age groups for those who claimed their transit use declined due to the use of Uber, Lyft, or taxi services. The results indicate that the 25-34 age group is most overrepresented, followed by the 35-44 age group. In contrast, the 45+ age groups are underrepresented, indicating that Uber, Lyft, or taxi services had less of an impact on their decreased transit use.

Table 16: Transit Use Decline Attributed to Uber, Lyft, or Taxi Use by Age Groups

| Age Group | Transit Use Decreased | Transit Use Decreased Due to Uber, Lyft, or Taxi Use | Percent Difference |
|---|---|---|---|
| 16-24 years | 5% | 5% | 0% |
| 25-34 years | 34% | 43% | +9% |
| 35-44 years | 19% | 25% | +6% |
| 45-54 years | 16% | 13% | -3% |
| 55-64 years | 16% | 10% | -6% |
| Over 65 years | 10% | 5% | -5% |
| Total | 100% | 100% | - |



Is there a correlation between transit use decrease and household income?

Table 17 provides household income of transit users. In general, transit use decline is most notable among households with income less than $50,000, whereas transit use increased or remained constant among households with income more than $100,000. The decline among the lower income categories might be correlated with ridership decline for Metrobus, which has the widest coverage among transit modes in Miami-Dade County. The increase in transit use (or remained constant) among high income households might be correlated with a high response rate from Metrorail users, especially from the communities in Pinecrest, Cutler Bay, West Kendall areas. Maps created to depict zip codes of the survey participants are discussed in a later section.

Table 17: Household Income of Transit Users

| Annual Household Income | All Transit Users | Transit Use Decreased | Percent Difference |
|---|---|---|---|
| Less than $25,000 | 8% | 10% | +2% |
| $25,000 and $49,999 | 20% | 25% | +5% |
| $50,000 and $74,999 | 20% | 20% | 0% |
| $75,000 and $100,000 | 18% | 20% | +2% |
| More than $100,000 | 34% | 25% | -9% |
| Total | 100% | 100% | - |

Do you have access to an automobile?

As summarized in Table 18, 83 percent of transit users indicated as having access to an automobile for use. In comparison, 98 percent of non-transit users have access to an automobile. Only 17 percent of transit users who participated in the survey identified as "captive riders." Therefore, "choice riders" are a significant proportion of transit users in Miami-Dade County. As such, the likelihood of transit ridership fluctuations can be greater among the "choice riders."

Table 18: Access to an Automobile

| Access to an automobile | Yes | No | Total |
|---|---|---|---|
| Transit users | 83% | 17% | 100% |
| Non-transit users | 98% | 2% | 100% |

Table 19 further breaks down access to automobile based on the frequency of transit use. These results are consistent with the general understanding that high automobile ownership is an indicator of less propensity to use transit.

Table 19: Frequency of Transit Use and Access to an Automobile

| Access to an automobile | Yes | No | Total |
|---|---|---|---|
| Frequent transit users | 77% | 23% | 100% |
| Infrequent transit users | 93% | 7% | 100% |

What's the primary transportation mode of transit users?

As summarized in Table 20, 45 percent of transit users identified transit (including municipal circulators) as their primary travel mode. Another notable observation is that 42 percent of transit users listed private vehicles as their primary mode of transit, which may be due to the high automobile access as evident from the previously presented survey results. Based on the zip codes provided by transit users, the majority who reported municipal trolley/circulator as their primary mode of transportation reside in Downtown Miami and Miami Beach, which provide robust municipal transit services.

Table 20: Primary Travel Mode of Transit Users

| Response Choices | Percentage |
|---|---|
| Transit: Metrobus, Metrorail, Metromover, Tri-Rail, or paratransit | 45% |
| Drive a personal vehicle and/or carpool/vanpool | 42% |
| Bike or walk | 6% |
| Uber, Lyft, taxi, or carshare (Zipcar, other) | 4% |
| Transit: municipal circulator/trolley | 3% |
| Total | 100% |

Comments from transit users

The write-in comments were diverse and covered a broad spectrum of issues. Table 21 summarizes commonly expressed issues. The comments about poor service reliability and the need to improve transit stations/stops were the most common. There is a desire to see an overall improvement of transit services and customer experience. Table 22 lists different modes that were the focus of comments, where available. Metrorail was the most frequently cited mode, followed by Metrobus and Metromover. As previously noted, in-person surveys done at Metrorail stations may have resulted in a disproportionately high number of responses from Metrorail users.

Table 21: Transit Users' Comments

| Comment/Issue | Count | Percentage |
|---|---|---|
| Poor Service Reliability | 279 | 25% |
| Transit Stops/Stations | 207 | 18% |
| Improve Overall Service | 109 | 10% |
| Poor Visual Appearance | 104 | 9% |
| Add More Railcars/Buses | 101 | 9% |
| Improve Quality of Stations/Transit Modes | 93 | 8% |
| Improve Security/Safety | 49 | 4% |
| Add Express Routes | 47 | 4% |
| Improve Service Times | 31 | 3% |
| Complaints on Drivers | 19 | 2% |
| Improvements to Elderly/ADA Accommodations | 17 | 2% |
| Improve Payment System | 13 | 1% |
| Other | 56 | 5% |
| Total | 1,125 | 100% |

Table 22: Transit Users' Comments by Mode

| Mode | Count | Percentage |
|---|---|---|
| Metrorail | 256 | 23% |
| Metrobus | 88 | 8% |
| Metrorail & Metrobus | 52 | 5% |
| Metromover | 25 | 2% |
| Metrorail & Metromover | 16 | 1% |
| Metrobus & Metromover | 5 | <1% |
| General Comments or Mode Not Specified | 683 | 61% |
| Total | 1,125 | 100% |

Comments from whose transit use increased

Out of the respondents who said their transit use has increased, 37 percent attributed the increase to change in residential or employment location (note the discussion in literature review about external factors that impact transit use). Thirty five percent of the respondents said that transit is more convenient or costs less, which may indicate that some people are using transit because of worsening congestion that makes driving a car unappealing.

Table 23: Reasons for Transit Use Increase

| Response Choices | Percentage |
|---|---|
| Change in residential or employment location | 37% |
| Using transit is healthier and helps to reduce congestion/ environmental pollution | 22% |
| Transit is more convenient | 21% |
| Transit costs less | 14% |
| Availability of express bus service | 6% |
| Total | 100% |

What should be done to encourage more use of transit?

This question was included in both transit user and non-transit user questionnaires with response choices customized to each group. The respondents were allowed to select more than one response choice. While transit users identified more frequent and on-time service as the priority needs, non-transit users viewed more connecting options to and from transit facilities (i.e., first-mile and last-mile options) and express bus routes/passenger rail as important measures to encourage transit use. The input provided by non-transit users can be viewed as indications of latent demand for transit if appropriate improvements are made.

Table 24: Measures to Encourage Transit Use

| Response Choices | Transit Users | Non-Transit Users |
|---|---|---|
| More frequent and on-time transit service | 76% | 44% |
| More express bus routes and/or new passenger rail services | 53% | 49% |
| More connecting options to and from transit facilities | 46% | 50% |
| Safer and cleaner transit stations/stops and vehicles | 44% | 36% |
| More convenient and comfortable transit service | 41% | |
| Unlikely to use transit no matter what improvements are made | N/A | 18% |



## 3.2 Survey Results - Non-Transit Users

A summary of non-transit users' survey responses to each question is provided in Appendix E. Notable findings from non-transit user survey responses are provided below.

What is the reason for not using transit?

Lack of transit coverage and distance to bus stops were the most cited reasons for not using transit. Infrequent service and/or operational hours not suiting the needs is the second most cited reason. Poor service reliability, which was the number one concern among transit users, is the third most cited concern by non-transit users. This is understandable given that non-transit users may not be as knowledgeable about day-to-day transit service issues as transit users.

Table 25: Primary Reason for Not Using Transit

| Response Choices | Percentage |
|---|---|
| Does not serve my destinations and/or bus stops are too far to access | 40% |
| Service is not frequent and/or operational hours do not fit my schedule | 21% |
| Service is not reliable | 18% |
| I am concerned about safety | 11% |
| Transit vehicles and stops are not clean/well maintained | 10% |
| Total | 100% |

Will you use transit if shuttle services were provided to and from transit stops?

The purpose of this question is to gauge the role of improved first-mile, last-mile options could play in increasing transit use. As shown in Table 26, 73 percent of non-transit users responded favorably to the question. Therefore, enhanced first-mile, last-mile options could lead to transit use by those currently not using transit.

Table 26: First-Mile, Last-Mile Options to Attract Non-Transit Users

| Response Choices | Percentage |
|---|---|
| Yes | 73% |
| No | 27% |
| Total | 100% |



Comments from non-transit users

The issues identified by non-transit users in write-in comments were broadly categorized into common themes listed in Table 27. The need for enhanced transit accessibility, improvement of overall transit services and customer experience, and more express bus routes are the leading comments. As seen from Table 28, most non-transit users did not specify a transit mode. However, like the transit users survey, Metrorail was mentioned more frequently than other modes.

Table 27: Non-Transit Users' Comments

| Comment/Issue | Count | Percentage |
|---|---|---|
| More Transit Stops/Stations | 95 | 39% |
| Improve Overall Service | 68 | 28% |
| Add Express Routes | 27 | 11% |
| Improve Service Reliability | 16 | 7% |
| Add More Railcars/Buses | 15 | 6% |
| Improve Security/Safety | 8 | 3% |
| Improvements to Elderly/ADA Accommodations | 5 | 2% |
| Other | 8 | 3% |
| Total | 242 | 100% |

Table 28: Non-Transit Users' Comments by Mode

| Mode | Total | Percentage |
|---|---|---|
| General Comments or Mode Not Specified | 170 | 70% |
| Metrorail | 35 | 14% |
| Metrobus | 21 | 9% |
| Metrorail & Metrobus | 8 | 3% |
| Metromover | 7 | 3% |
| Metrorail & Metromover | 1 | < 1% |
| Total | 242 | 100% |



## 3.3 Survey Results - Maps

The survey questionnaire included an option to provide the respondent's resident zip code. Table 29 provides a summary of number of respondents who provided zip codes. The zip codes were used to map responses to select questions using a Geographic Information Systems(GIS) and these as shown in Figure 16.

Table 29: Zip Codes of Survey Respondents

| | Zip Code Provided | Zip Code Not Provided | Total |
|---|---|---|---|
| Transit users | 1,012 (87%) | 152 (13%) | 1,164 (100%) |
| Non-transit users | 481 (81%) | 110 (19%) | 591 (100%) |

Geographic distribution of survey respondents (see Figure 17 and Figure 18)

- In general, transit users who responded to the survey are concentrated in Central Miami-Dade County, along the Metrorail corridor between Dadeland South and Downtown Miami, Miami Beach, and along the Northeast Corridor. The in-person surveys at Metrorail stations appear to have influenced survey participation in Central Miami-Dade County.
- The non-transit user map also shows participation from areas listed above, as well as from Northwest Miami-Dade County.
- In general, survey participation was low from south and northcentral parts of the county.

Zero car households – transit users (see Figure 19)

- Most of the transit user survey participants who do not have access to a car are from Miami, Miami Beach, or North Miami-Dade County. In comparison to the map depicting geographic distribution of all transit users, zero car households are noticeably underrepresented in Central Miami-Dade County. The zero car households map may indicate areas with transit dependent populations.

Transit use increased/decreased (see Figure 20 and Figure 21)

- There were no discernable geographic correlations between resident location and transit use increase or decrease. In general, the same zip codes appear in both maps due to high survey participation from certain areas, as described above.



Primary travel mode = county's transit services (see Figure 22)

- As noted in Table 19, 45 percent of transit users indicated that their primary mode of travel is County's transit services. The map indicates Central Miami-Dade County as having a concentration of respondents whose primary travel mode is transit.

Primary travel mode = municipal transit service (see Figure 23)

- Only 26 transit users said municipal transit services was their primary travel mode. Most of them live in Miami or Miami Beach where circulator services experienced significant ridership increase, as evident from Table 9.

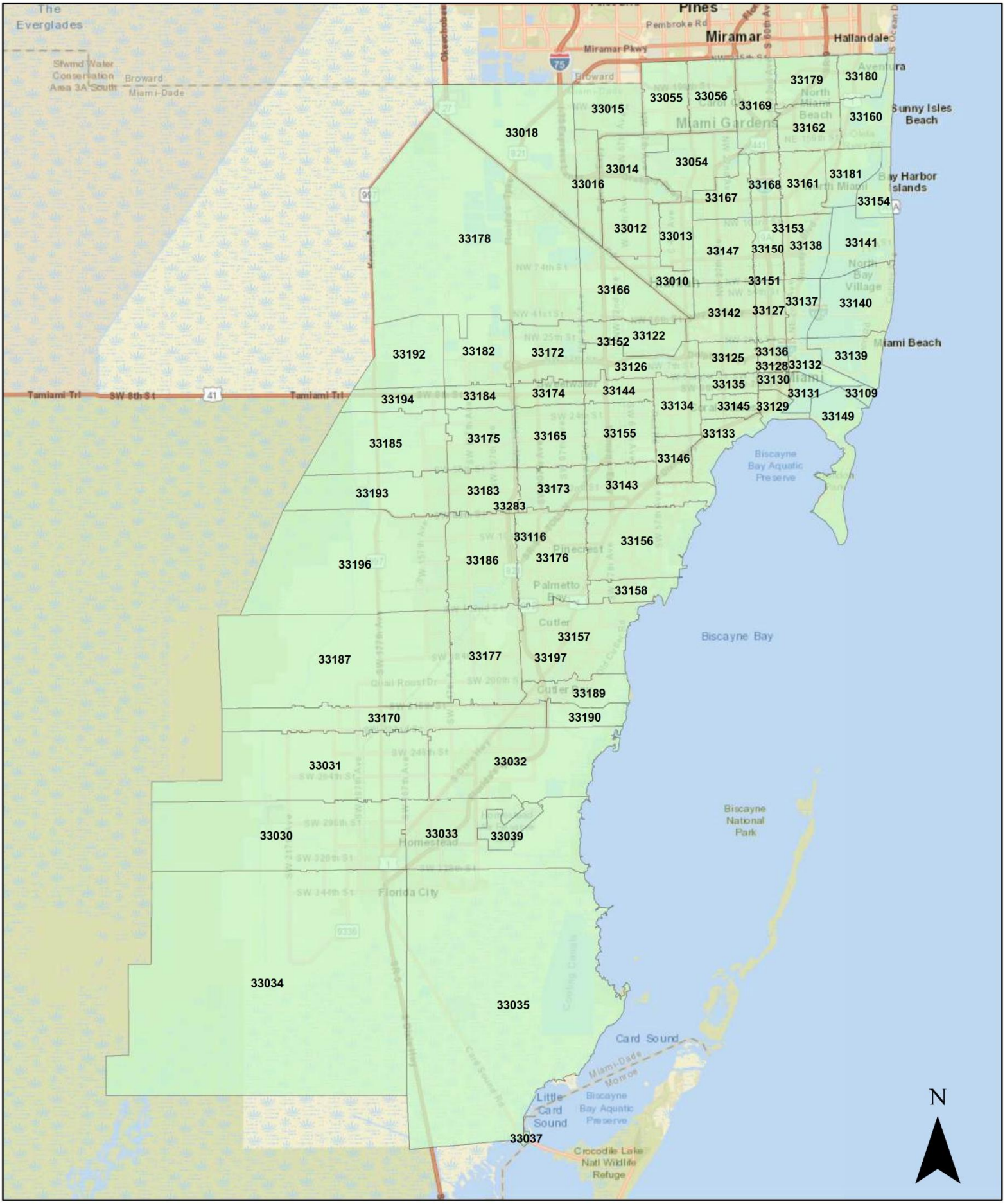



**Figure 16: Map of Zip Codes Reported by Respondents in Miami-Dade County**

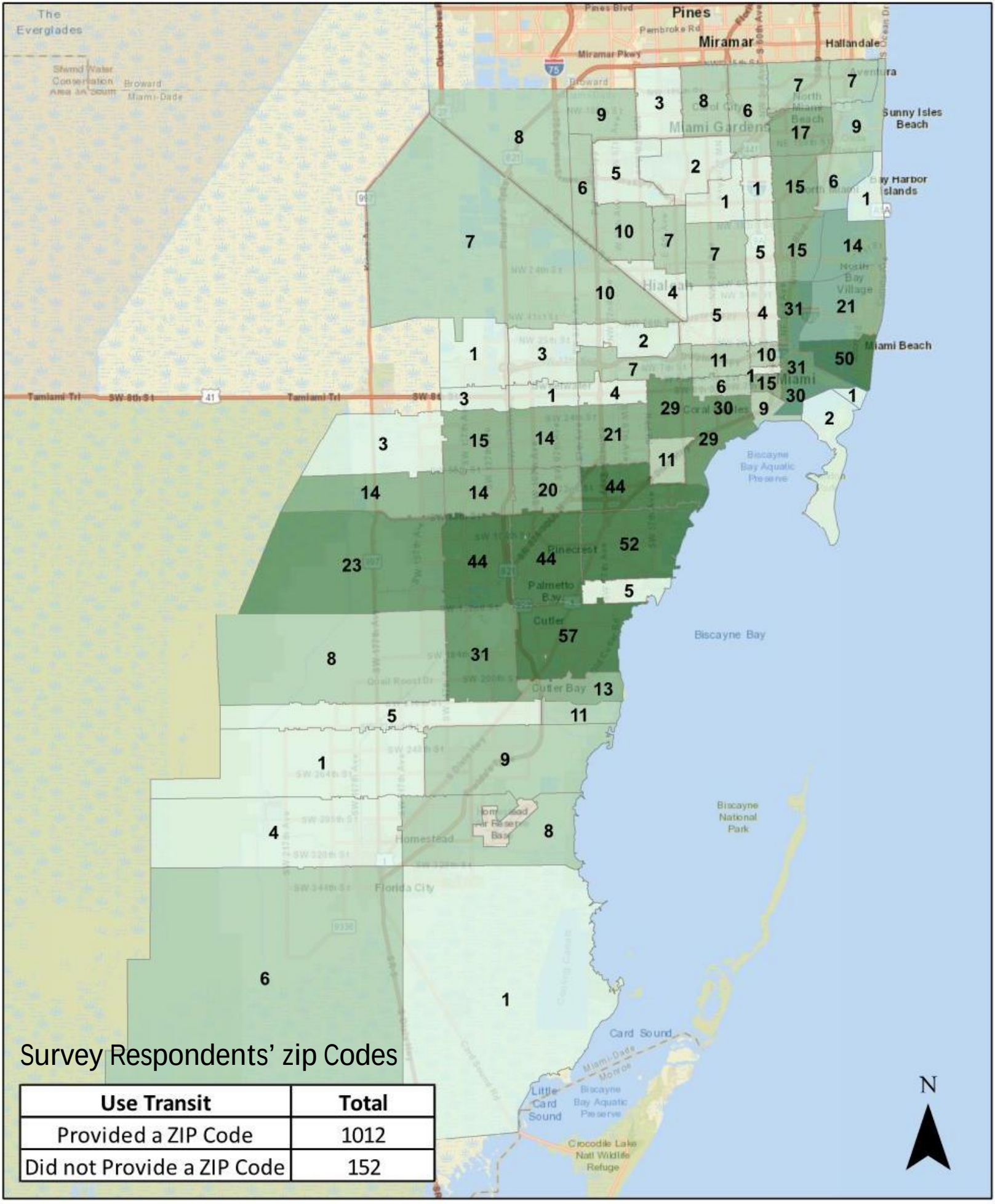



**Figure 17: Geographic Distribution of Survey Respondents. Transit Users**

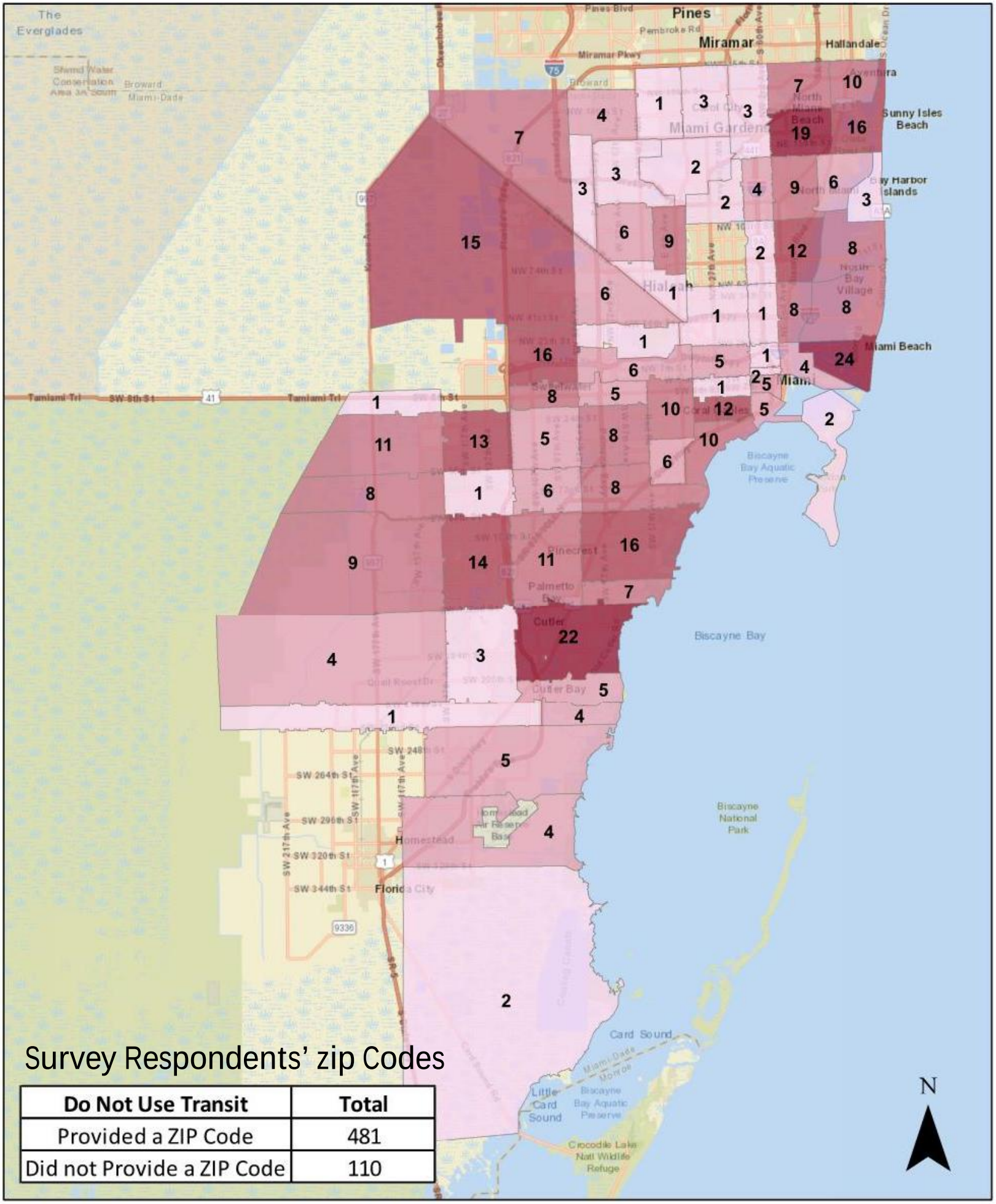
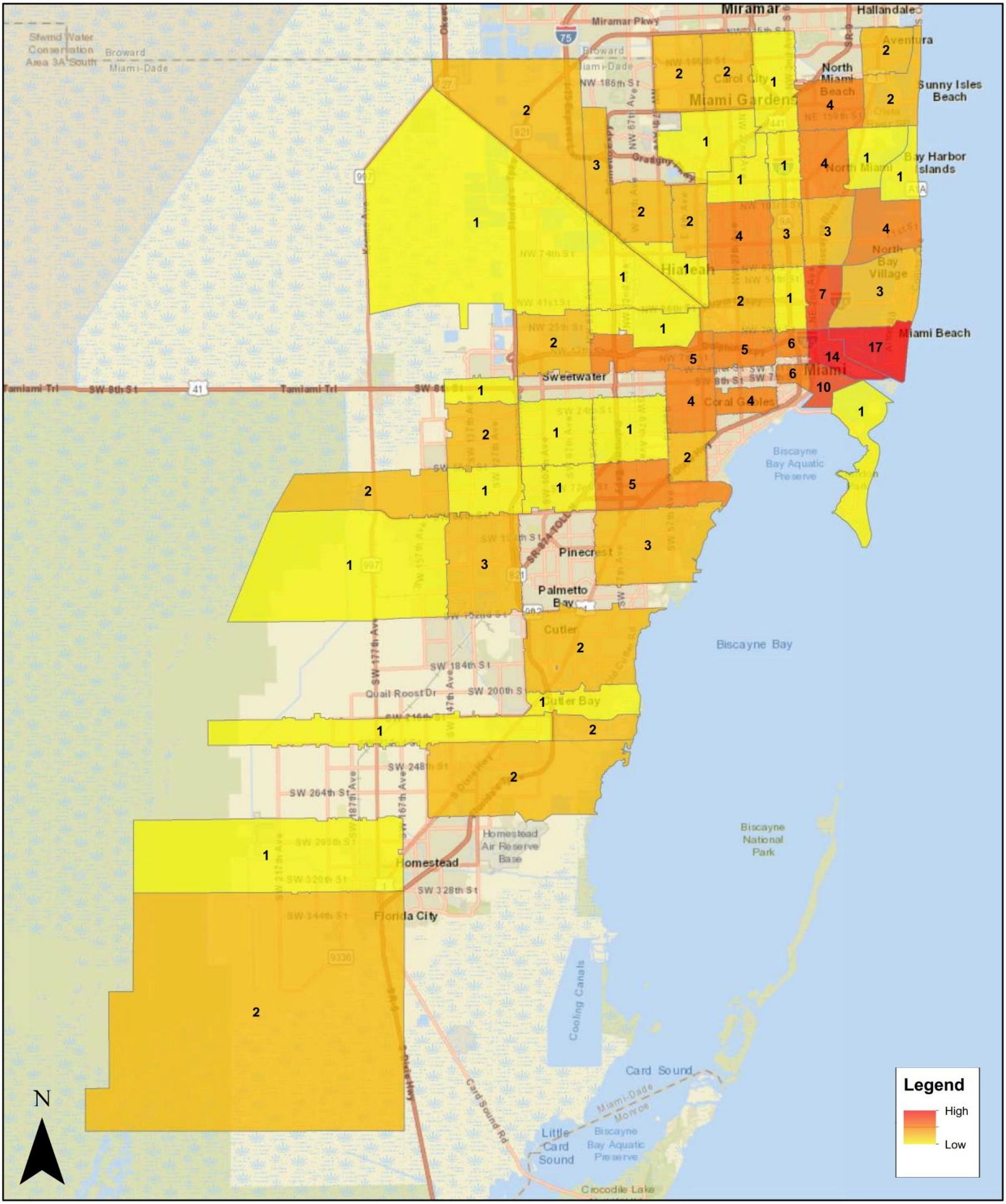



**Figure 18: Geographic Distribution of Survey Respondents. Non-Transit Users**




**Factors Affecting Transit Ridership in Miami-Dade County - Survey Results by Zip Code Boundary**

**Figure 19: Zero Car Households – Transit Users**

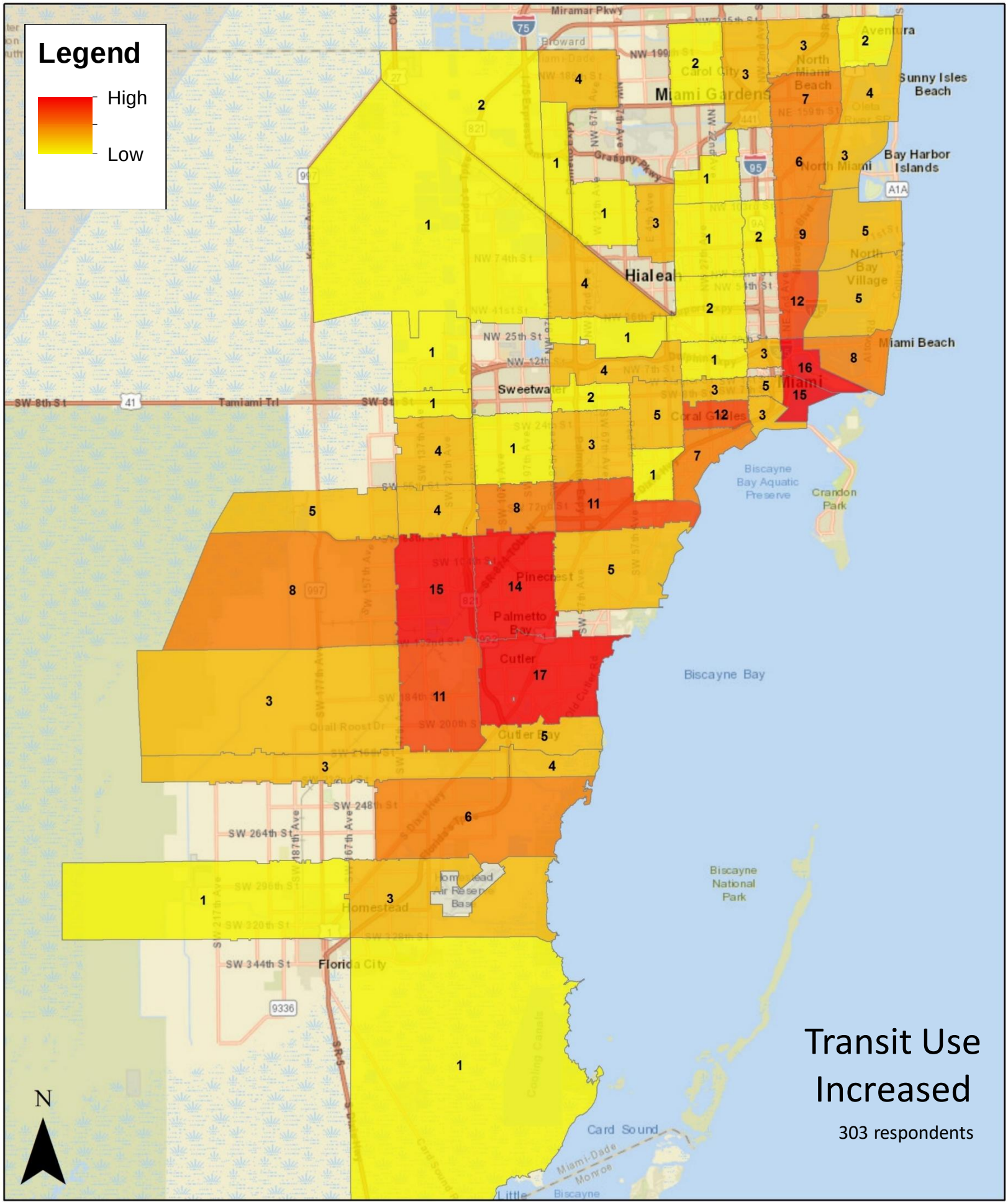



**Figure 20: Transit Use Increased**

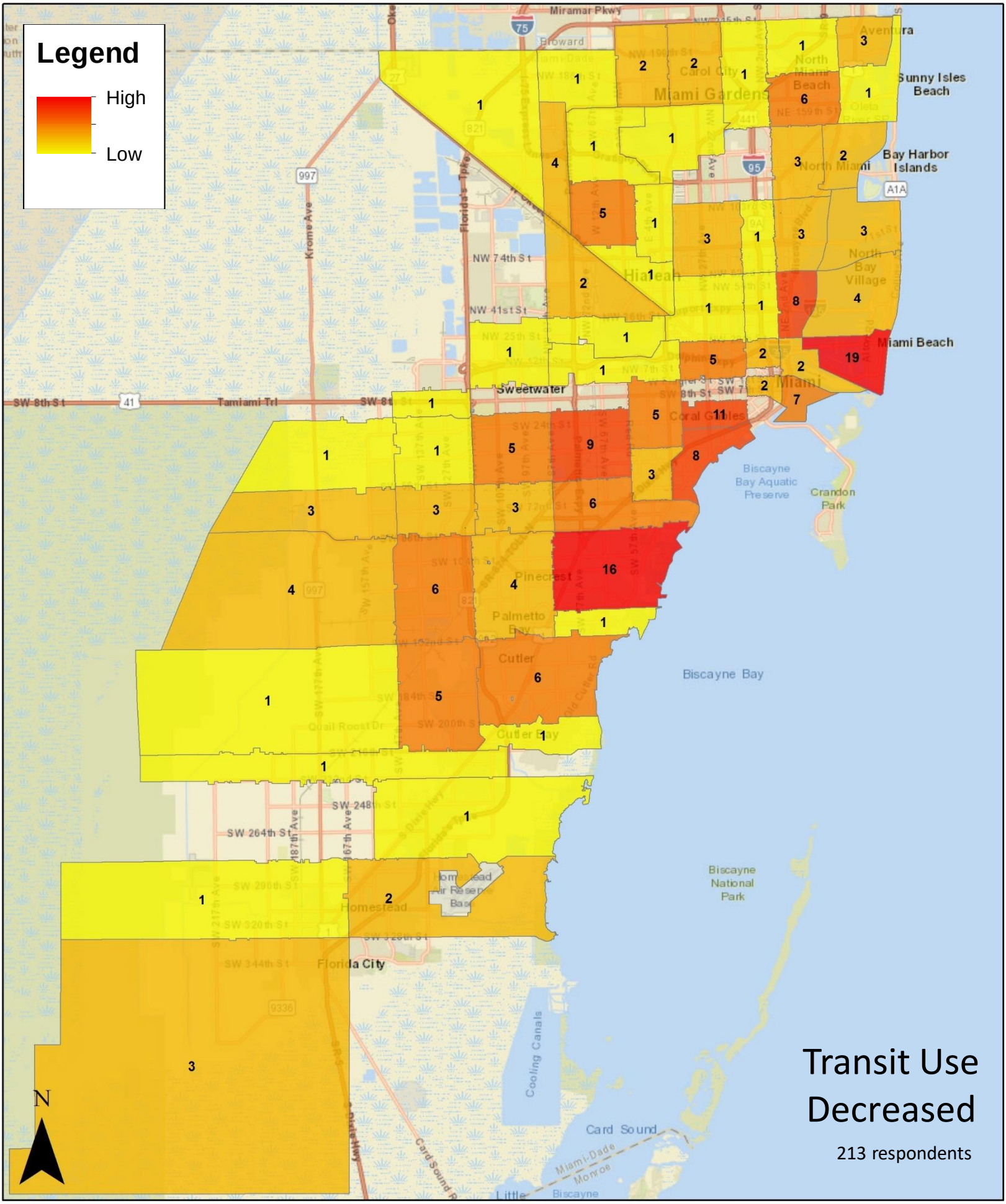



**Figure 21: Transit Use Decreased**

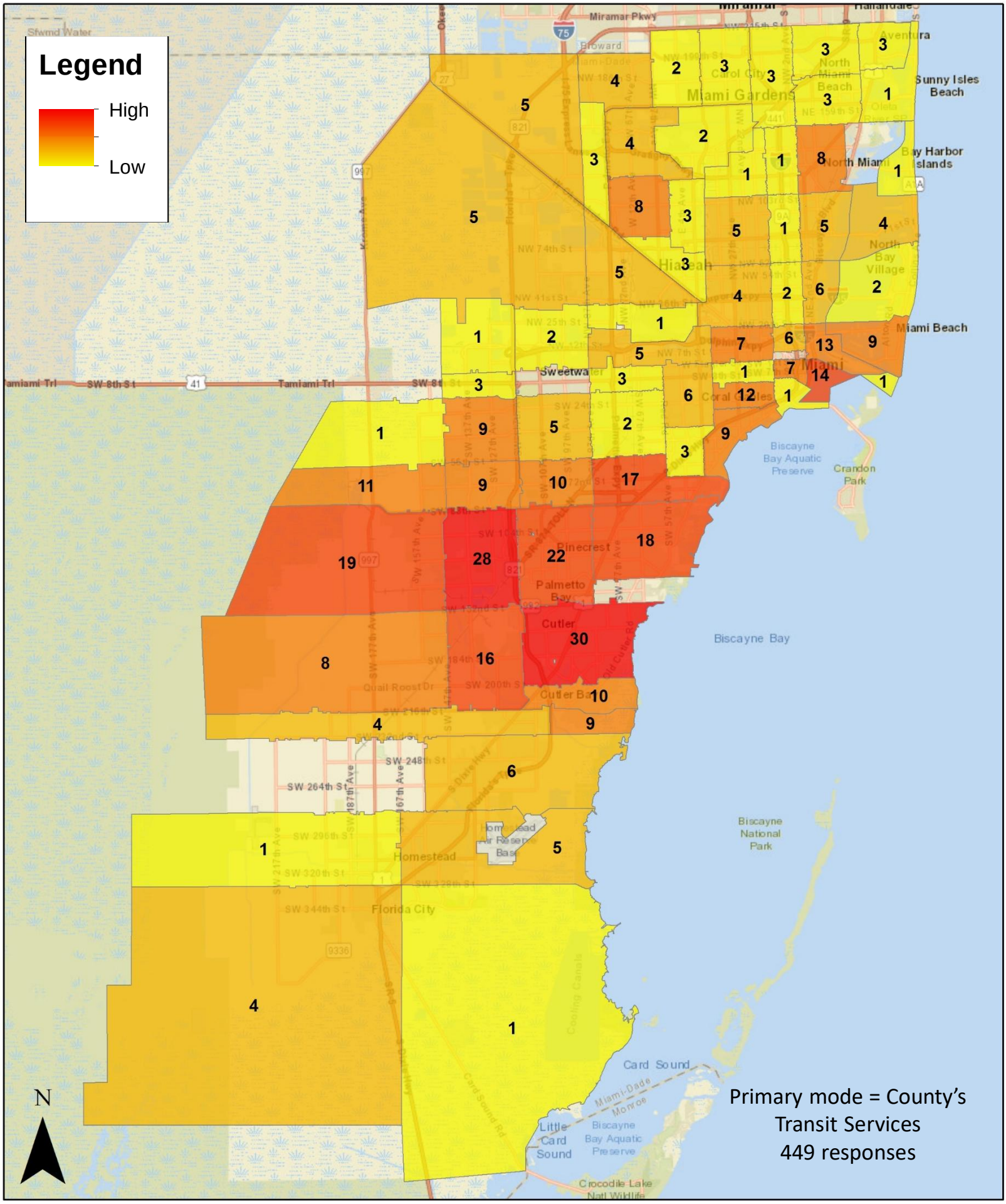



**Figure 22: Responded County Transit Services as Primary Mode of Travel for Transit Users**

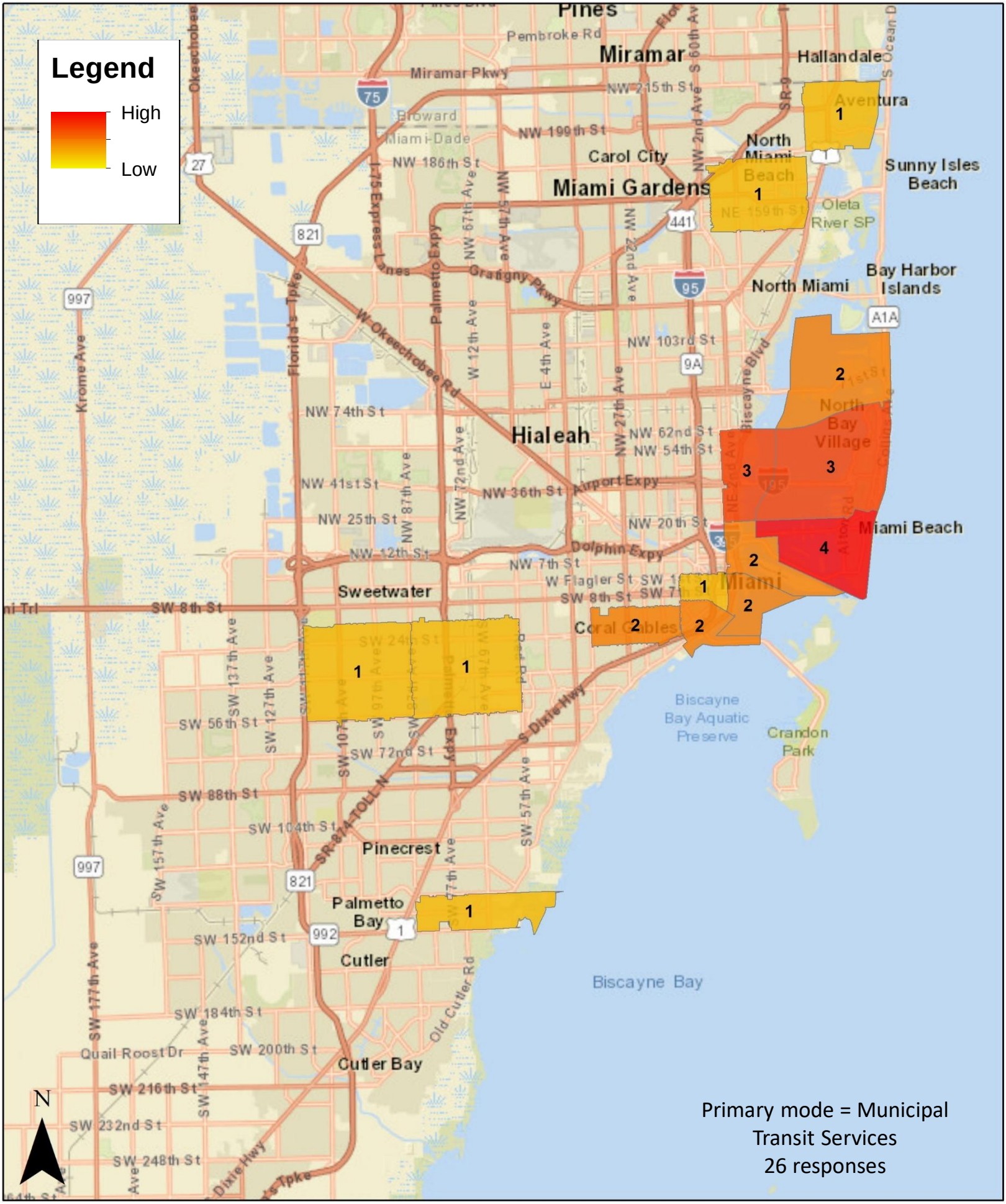



**Figure 23: Responded Municipal Transit Services as Primary Mode of Travel for Transit Users**



# 4.0 Conclusions and Recommendations

This study evaluated possible reasons for the recent transit ridership decline in Miami-Dade County through a literature review and an online survey. The results are summarized below.

## 4.1 Conclusions - Transit Ridership Data Analysis and Survey Results

This section summarizes key results from the analysis of Miami-Dade County transit ridership data (Sections 2.1 and 2.2) and survey (Section 3). *Please note that the survey was not a scientific survey. The survey provided informal feedback on service from individuals that may or may not use transit today, and is not necessarily representative of the general cross section of the population.*

- While ridership decline is evident in all three major transit modes operated by DTPW (Metrobus, Metrorail, and Metromover), Metrobus is the mode that has experienced the most decline. Metrobus ridership was down by 29% from March 2014 to March 2018; however, Metrobus ridership decline accounted for 89% of the total ridership decline across the three modes.
- As a result of the Metrobus ridership decline, which began towards the tail end of 2014, the DTPW subsequently scaled its service according to the lower demand.
- Local transit circulators in Miami-Dade County experienced an increase in ridership. However, this increase is largely due to significant ridership increases in Miami and Miami Beach.
- Transit ridership decline in Miami-Dade County is comparable to other major transit services in Florida and nationwide.
- Factors contributing to ridership decline in Miami-Dade County are both internal and external to the transit system.
    - Based on the 311 complaints, on-time performance statistics from the TDP, and survey input, service reliability issues appears to be the most prominent *internal factor*. The most recent on-time performance data of Metrobus and Metrorail are below the targets established in the TDP.
    - Increasing automobile ownership/income appears to be a primary *external factor* that contributed to modal shift from transit to automobile. Between 2013 and 2016, automobile registration (254,000) in Miami-Dade County outpaced population growth (70,000) by a factor of 3.6, thus indicating increased access to a personal vehicle.
    - Transportation Network Companies (TNCs) appear to have some impact on transit ridership decline, especially among the 24-35 age group.
- Ridership decline among households with an annual income less than $50,000 was noted. Possible reasons for modal shift among this income group include new automobile owners, especially among young people entering the workforce, and Metrobus being the primary transit mode available in areas with low/moderate income populations.
- Transit users' main suggestion to increase transit ridership is to offer more frequent and reliable transit services. Non-transit users suggested improving first-mile, last-mile options and providing new express bus and/or passenger rail services to attract non-transit users. Based on the significant non-transit user participation in the survey, it's apparent that there is latent demand for transit.

- Some ridership increase was evident among households with annual income above $100,000. A possible reason is increasing congestion leading some people to use transit, especially Metrorail because of comparative travel times and the desire to relieve stress from driving. It should also be noted that survey participation was high in areas such as Miami, Pinecrest, and West Kendall due to in-person surveys at Metrorail stations.
- The majority of transit users who responded to the survey were "choice riders." The likelihood of transit ridership fluctuations among "choice riders" can be greater due to the access to a private vehicle.
- The survey indicates that transit use decrease is most noticeable among the 25-34 age group, followed by the 35-44 age group. In contrast, more respondents belonging to the 45+ age groups indicated that their transit use either increased or remained the same rather than decreased.
- It should be noted that the survey was not a scientific one. Further, in-person surveys appear to have resulted in a (disproportionately) high responses from Metrorail users because most in-person surveys were conducted at Metrorail stations.

## 4.2 Conclusions – National Literature Research

This section summarizes key results from the national literature research (Section 2.3).

- Common factors among some transit operators that have experienced ridership increase include continued investments in transit systems, addressing overcrowding and reliability issues, proactive redesigning of the bus route network to respond to changing land use patterns and growth trends, expansion of passenger rail and rapid bus systems, and obtaining public support for transit investments.
- Studies have been done to identify correlations between transit ridership and external and internal factors. Among internal (operational) factors found to be influential were transit fare, transit supply, revenue hours, headway, safety, transit coverage and service intensity. Gas prices, personal vehicle ownership, zero car households, and population were noted as significant external predictors of transit demand.
- Overall, the findings on Transportation Network Companies (TNCs) impact on transit are mixed. Some studies suggest that use of TNC services results in a complementary relationship to public transit, whereas others indicate some adverse impacts on transit services. There is uneven adoption of ride-hailing across income classes and age groups. Moreover, use of TNC services is less common by those who live in suburban areas. The studies cite lack of data on TNCs as a challenge for determining the impact on transit and other modes. One recommended action is to enact legislations mandating the provision of data from TNCs to facilitate more informed planning, operational, and policy decisions.

## 4.3 Recommendations

This section summarizes recommendations based on transit data analysis and resurvey responses.

- From March 2014 to March 2018, Metrobus ridership decline accounted for 89% of total Miami-Dade County transit ridership decline across the three primary modes. Therefore, strategies to address Metrobus ridership decline should be considered. Addressing issues associated with service reliability should be a primary focus.
- Most transit users who responded to the survey can be categorized as "choice riders." The likelihood of transit ridership fluctuations among "choice riders" can be greater due to the access to a private vehicle. Therefore, strategies to attract and maintain choice riders such as park-and-ride facilities at major transit stations, first-mile, last-mile options, passenger rail services, and convenience and comfort of transit services should be evaluated.
- The survey indicated a decline in transit use among households with an annual income less than $50,000. Therefore, strategies to improve transit use in areas with low/moderate income populations such as service coverage and frequency improvements, grid routes, good transfer connections, and safety and security at transit stops should be evaluated.
- Based on the significant non-transit user participation in the survey, it's apparent that there is latent demand for transit. The main suggestions of non-transit users to improve transit use were improving first-mile, last-mile options and providing new express bus and/or passenger rail services. These suggestions should be considered in the assessment of existing transit system and future projects.