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Phase 1 Transit Evaluation Report FINAL

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13. ABSTRACT
The 95 Express Lanes in Miami-Dade County have been in operation since December 2008. This project involved the conversion of a single high occupancy vehicle lane in both directions to two high occupancy tolls lanes in both directions. These lanes rely on dynamic pricing to keep the lanes free flowing. A portion of the toll revenues is used to fund operations of the 95 Express Bus Service, which is composed of four routes that provide service between Broward County, northern Miami-Dade County, and downtown Miami. The Center for Urban Transportation Research at the University of South Florida evaluated the impacts of the express lanes on the 95 Express Bus. There were several positive findings. The 95 Express Bus Service has benefitted from the HOV to HOT conversion in improved travel times and on-time performance. The service has attracted a large percentage of choice riders, and ridership has grown despite rising unemployment in Miami-Dade County. On-board transit surveys reveal that the HOT lanes did influence riders' decisions to use the bus.

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Funded by the Federal Transit Administration

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Executive Summary

Miami was one of six cities that were awarded funding from the United States Department of Transportation (USDOT) through the Urban Partnership Agreement/Congestion Reduction Demonstration (UPA/CRD) Program. USDOT sought applications from cities with congestion reduction programs that relied on what were called the 4T's: **T**olling, **T**ransit, **T**echnology, and **T**elecommuting. The other cities that were awarded funds besides Miami included Atlanta, Los Angeles, Minneapolis, San Francisco, and Seattle.

The Miami Urban Partnership Agreement is being implemented by the Florida Department of Transportation (FDOT) and is supported by Florida's Turnpike Enterprise, Miami-Dade Transit (MDT), Broward County Transit (BCT), and South Florida Commuter Services. The goal is to alleviate traffic congestion on the I-95 corridor between I-595 in Broward County and I-395 in Miami-Dade County. The project involved replacing high occupancy vehicle (HOV) lanes on a segment of I-95 with '95 Express Lanes' based on a high occupancy toll (HOT) lane concept and augmenting it with enhanced transit and travel demand management services.

The previous system was a single HOV lane in both directions with a carpool occupancy requirement of 2+. No carpool registration was required. Not only did the 95 Express Lanes Project involve a HOV to HOT conversion, but it added a second HOT lane as well. The additional required space for the extra lane was obtained by narrowing the width of the existing lanes from 12 feet to 11 feet and by narrowing the width of the shoulder. The carpool requirement was changed from 2+ to 3+, and a registration requirement was added.

The 95 Express Lanes project is a two phase project with Phase 1 being further sub-divided into two parts - Phase 1A and Phase 1B. Phase 1A provided express lanes in the northbound direction of I-95 between SR 112 and Golden Glades Interchange. Tolling for Phase 1A began in December 2008. Phase 1B provided express lanes on the same segment of I-95 but in the southbound direction. Phase 1B also extended the Express Lanes to south of SR 112. Tolling for Phase 1B began in January 2010. Phase 2 of the 95 Express Lanes will extend the express lanes in both directions from the current terminus at Golden Glades Interchange to I-595 in Broward County. Phase 2 is scheduled to begin construction in Summer 2011 and open in early 2014.

The UPA included improvements to transit service in the I-95 corridor. During Phase 1A, there were no transit improvements directly funded by the UPA. However, minor schedule adjustments were made to the Route 95X in anticipation of the express lanes opening, and two additional northbound trips were added to the p.m. schedule.[1] During Phase 1B, UPA funds were used to create three new express routes. These three routes go into Broward County and operate on Pines/Hollywood Boulevard, Sheridan Street, and Broward Boulevard. In this report, these three new routes and the existing Route 95X are referred to collectively as the "95 Express Bus Service." In addition to the new transit service, park and ride lot capacity at the Golden Glades Park and Ride Lot was increased during Phase 1B.

[1] There is a separate Phase 1A report entitled "Miami UPA – Transit Evaluation Report – Phase 1A" dated November 2009.

This report summarizes the results of the transit evaluation for all of Phase 1. The transit evaluation addressed four hypotheses/questions. They were:

1. The UPA project will enhance transit performance (through reduced travel times, increased reliability, increased capacity, etc.).
2. The UPA project will increase ridership and facilitate a mode shift to transit.
3. Mode shift to transit/increased ridership will contribute to congestion mitigation.
4. What was the contribution of each UPA project element to increased ridership and/or mode shift to transit?

Below is a synopsis of the results for each hypothesis/question. Following the synopsis is a table that summarizes the main conclusions of this report and relates them to the hypotheses/questions.

First Hypothesis: The UPA project will enhance transit performance

The 95 Express Bus Service benefitted significantly from the conversion of the HOV lanes into HOT lanes. Average travel times in the Express Lanes decreased from 25 minutes in 2008 to around 8 minutes in 2009 and 2010. At the same time, average travel speeds in the Express Lanes increased from 18 mph in 2008 to 57 mph in 2009 and decreased only slightly to 55 mph in 2010. The increased speeds and reduced travel times allowed Miami-Dade Transit to reduce the scheduled travel times for the original Route 95X. The scheduled travel time of the Route 95X between downtown Miami and the Golden Glades Interchange was reduced from 32 minutes to 22 minutes in the northbound direction and from 32 minutes to 25 minutes in the southbound direction. I-95 Express buses were on-time 76.2% of the time in 2008, 75.5% in 2009, and 81.1% in 2010. Utilization of the Golden Glades Park and Ride Lot increased 15% between 2008 and 2009 but decreased 23% between 2009 and 2010. The decline was due, at least in part, to some riders of the Route 95X switching to the park and ride lots served by the three new 95 Express routes in Broward County.

Second Hypothesis: The UPA Project will increase ridership and facilitate a mode shift to transit

Average weekday ridership on the 95 Express Bus Service increased 57% between 2008 and 2010. Some of this increase was due to the addition of three new routes in Broward County. However, on the original Route 95X alone, there was still a 13% increase in ridership from 2008 to 2010.

Ridership for the two control groups decreased over the same time period. Combined ridership on the Routes 77 and 277, which run parallel to I-95 on 7th Avenue, declined 21%, and system-wide bus ridership on Miami-Dade Transit declined 15%. Service cuts in 2008 and 2009 may explain some of the decline for MDT system-wide. However, there were no cuts to the Route 277, and the service cut to the Route 77 was simply to eliminate overnight service in the early hours of the morning.

What explains the opposing trends in ridership? First and foremost, the 95 Express Bus is a popular service that provides a direct, high speed transit connection to downtown Miami. Another possible explanation is that 95 Express Bus riders were not as affected

by high unemployment and a 2008 fare increase as MDT riders system-wide were. Average household incomes of 95 Express Bus riders are higher than the average household incomes of MDT bus riders system-wide. While 46% of 95 Express Bus riders have an annual household income of $60,000 or more, only 4% of MDT riders system-wide are in this income bracket. In contrast, 71% of MDT's riders system-wide have annual household incomes less than $20,000. In 2008, MDT raised the one-way fare for express bus 27% from $1.85 to $2.35 and the monthly Metropass 33% from $75 to $100. Unemployment in Miami-Dade County has increased steadily from 4.9% in January 2008 to 11.4% in April 2010.

Another measure examined under the second hypothesis was boardings per revenue mile, which is a measure of a route's efficiency. The results vary depending on whether one includes all of the routes that fall under the umbrella of 95 Express Bus Service or just the original Route 95X. Recall that the three routes into Broward County did not begin until January 2010. Their addition more than doubled the amount of revenue miles of the 95 Express Bus Service. However, their ridership has not yet grown to the same level as the Route 95X. Consequently, boardings per revenue mile for the entire 95 Express Bus Service dropped 14% between 2008 and 2010, from 0.85 to 0.73. However, when looking at just the original Route 95X, boardings per revenue mile increased 51% between 2008 and 2010 from 0.85 to 1.28.

Average vehicle occupancy (AVO) and transit mode share in the 95 Express Lanes decreased despite increased transit ridership. These decreases are due to the influx of toll paying single occupant vehicles on the express lanes. Between 2008 and 2010, Express Lanes AVO decreased from 2.20 to 1.36 in the a.m. peak period southbound and from 1.95 to 1.50 in the p.m. peak period northbound. Transit mode share in the express lanes decreased from 18.6% to 16.1% in the a.m. peak period southbound and from 15.0% to 14.3% in the p.m. peak period northbound. On the facility as a whole (express lanes + general purpose Lanes), AVO decreased from 1.38 to 1.23 in the a.m. peak southbound and from 1.50 to 1.37 in the p.m. peak northbound.

Third Hypothesis: Mode shift to transit/increased ridership will contribute to congestion mitigation

The two measures for the third hypothesis are roadway level of service (LOS) and person throughput. Between 2008 and 2010, LOS improved on both the express lanes and the general purpose lanes. Although the changes varied by peak period and direction, in general LOS went from F to C in the express lanes and from F to D in the general purpose lanes.

Person throughput is the total number of people that move through a corridor, as opposed to vehicles. Between 2008 and 2010, the total person throughput from all modes on the 95 Express Lanes increased 42% for both the a.m. and p.m. peak periods. The largest source of the increased person throughput was toll paying single occupant vehicles. However, person throughput from transit alone increased 23% in the a.m. peak period southbound and 36% in the p.m. peak period northbound. Person throughput on the I-95 facility as a whole (express lanes + general purpose lanes) increased by 48% in the a.m. peak period southbound and by 13% in the p.m. peak northbound. Given the improvements in LOS and person throughput, it is fair to say that the 95 Express Lanes Project as a whole reduced corridor congestion and that the 95 Express Bus Service contributed to that reduction.

Fourth Hypothesis/Question: What was the contribution of each UPA project element to increased ridership and/or mode shift to transit?

The answer to this question can be gleaned mostly from the transit on-board surveys. 95 Express Bus riders were specifically asked whether the opening of the express lanes influenced their decision to use transit. When looking at just new riders, that is to say those that began riding after the northbound express lanes opened in December 2008 (Phase 1A), 53% (150 out of 282) said the opening of the express lanes influenced their decision to use transit. When these same new riders were asked about their previous mode of travel, the results are mixed. Thirty-eight percent (38%) of new riders said they used to drive alone, but another 45% said they used to take some other transit service. Within that 45% figure are 34% that used to take Tri-Rail and Metrorail. This makes sense since a trip to downtown Miami on Tri-Rail requires a transfer to Metrorail while the same trip on the 95 Express Bus is a direct trip. There was little evidence of riders switching to the 95 Express Bus Service from the control routes, Routes 77 and 277. Barely 1% reported diverting from these two routes. Clearly, the opening of the express lanes influenced people to switch to the 95 Express Bus Service. Some of them switched from driving alone, and others switched from other transit service.

Results Summary in Relation to NEF Hypotheses/Questions

Hypothesis/ Question	Measures of Effectiveness	Results
The UPA project will enhance transit performance in the UPA/CRD corridors (through reduced travel times, increased reliability, increased capacity, etc.)	– On-time performance – Scheduled travel times – Actual travel times – Travel speeds – Park and Ride Lot utilization	– On-time performance increased from 76% (2008) to 81% (2010) – Scheduled end to end travel times decreased by 7 minutes (southbound) and 10 minutes (northbound) – Actual travel times in the northbound Express Lanes decreased from 25 minutes (2008) to 8 minutes (2010) – Travel speeds during the p.m. peak period (northbound) in the Express Lanes increased from 18 mph (2008) to 55 mph (2010) – Utilization of Golden Glades Park and Ride lot decreased 23% between 2009 and 2010; partly caused by riders shifting to lots served by the 3 new routes
The UPA project will increase ridership and facilitate a mode shift to transit.	– Average weekday ridership – Boardings per revenue mile (productivity measure) – Average vehicle occupancy – Transit mode share	– Average weekday ridership for increased 57% between 2008 and 2010 – Boardings per revenue mile for the entire 95 Express Bus Service decreased 14% between 2008 and 2010 from 0.85 to 0.73 – Boardings per revenue mile for the original Route 95X increased 51% from 0.85 to 1.28 – Express Lanes AVO declined between 2008 and 2010 from 2.20 to 1.36 (a.m. southbound) and from 1.95 to 1.50 (p.m. northbound) – AVO for the I-95 facility as a whole (Express + GP Lanes) declined from 1.38 to 1.23 (a.m. southbound) and from 1.50 to 1.37 (p.m. northbound) – Transit mode share in the Express Lanes decreased from 18.6% to 16.1% (a.m. southbound) and from 15.0% to 14.3% (p.m. northbound)

Results Summary in Relation to NEF Hypotheses/Questions (cont'd)

Hypothesis/ Question	Measures of Effectiveness	Results
Mode shift to transit / increased ridership will contribute to congestion mitigation	– Person throughput – Roadway Level of Service (LOS)	– Total person throughput on the Express Lanes from all modes increased 42% for both the a.m. and p.m. peak periods between 2008 and 2010 – Total person throughput on the I-95 facility as a whole increased 48% (a.m. southbound) and 13% (p.m. northbound) – Person throughput in the Express Lanes from transit increased 23% in the a.m. peak southbound and 36% in the p.m. peak northbound. – Roadway LOS improved between 2008 and 2010. In general LOS went from F to C in the Express Lanes and from F to D in the GP Lanes
What was the contribution of each UPA project element to increased ridership and/or mode shift to transit?	– Percentage of transit riders who chose transit because of the Express Lanes	– 53% of new transit riders on the 95 Express Bus Service said the Express Lanes influenced their decision to use transit – 38% of new transit riders on the 95 Express Bus Service used to drive alone

1 Introduction

1.1 Background

Miami is one of the United States Department of Transportation (USDOT)'s Urban Partnership Agreement (UPA) program sites. This federally funded project is being implemented by the Florida Department of Transportation (FDOT), supported by Florida's Turnpike Enterprise, Miami-Dade Transit (MDT), Broward County Transit (BCT), and South Florida Commuter Services, to alleviate traffic congestion on the I-595 corridor between I-595 in Broward County and I-395 in Miami-Dade County.

As shown in Figure 1, the project involves replacing the existing High Occupancy Vehicle (HOV) lanes with '95 Express Lanes' which are based on the high occupancy toll (HOT) concept. Phase 1A was implemented in December 2008 providing new '95 Express Lanes' in the northbound direction between SR 112 and Golden Glades Interchange. Southbound express lanes on this section were added in January 2010 (Phase 1B). Also during Phase 1B, the express lanes were extended south of SR 112. Phase 2, from Golden Glades to I-595 is scheduled to begin construction in Summer 2011 and open in late 2013.

Figure 1: The Miami UPA Project
Source: Briefing of 95 Express Progress NTOC, FDOT, 2009.

Various transit measures were implemented to support the 95 Express Lanes. The new Miami-Dade Transit and Broward County Transit express buses began in late January 2010 and provide non-stop service from Broward County to Downtown Miami via I-95 (buses operate on the HOT lanes south of the Golden Glades Interchange and on HOV lanes north of Golden Glades Interchange). In December 2010, transit signal priority (TSP) was activated at 50 intersections along Hollywood/Pines Blvd. (SR 820) and Broward Blvd. (SR 842).

1.2 Evaluation Roles and Responsibilities

The National Bus Rapid Transit Institute (NBRTI) is responsible for the evaluation of the transit elements of the Miami UPA project, with FDOT responsible for the other aspects of the evaluation. General NBRTI responsibilities are defined as follows:

a) Provide technical assistance to Miami UPA local partners by providing input on the development of, and reviewing and commenting on, evaluation materials, such as the evaluation plan, test plans, and surveys as applicable.

b) Analyze data collected by local partners.

c) Develop and submit transit evaluation reports to the Federal Transit Administration (FTA) and National UPA Evaluator (Battelle Memorial Institute), and to assist FDOT with the transit-related sections of their evaluation reports.

1.3 Transit Evaluation Objectives

A Transit Evaluation Plan was developed for FTA to guide the transit evaluation process. A summary of this is provided as a matrix in Appendix A[2]. The plan aims to address the four basic objectives identified in the National Evaluation Framework document developed by the National Evaluation team led by the Battelle Memorial Institute. This document identifies the following core questions/hypotheses to be addressed in the Transit Analysis section:

(i) The UPA project will enhance transit performance (through reduced travel times, increased reliability, increased capacity, etc.)

(ii) The UPA project will increase ridership and facilitate a mode shift to transit.

(iii) Mode shift to transit/increased ridership will contribute to congestion mitigation.

(iv) What was the contribution of each UPA project element to increased ridership and/or mode shift to transit?

[2] Some indicators shown in the Transit Evaluation Matrix have not been assessed within this report:
- Operating cost/farebox data are not available at the corridor level
- Safety data are not available at the corridor level
- ADA Compliance has not been assessed due to no infrastructure changes related to the project

2 Project Description

2.1 95 Express Lanes – Phase 1

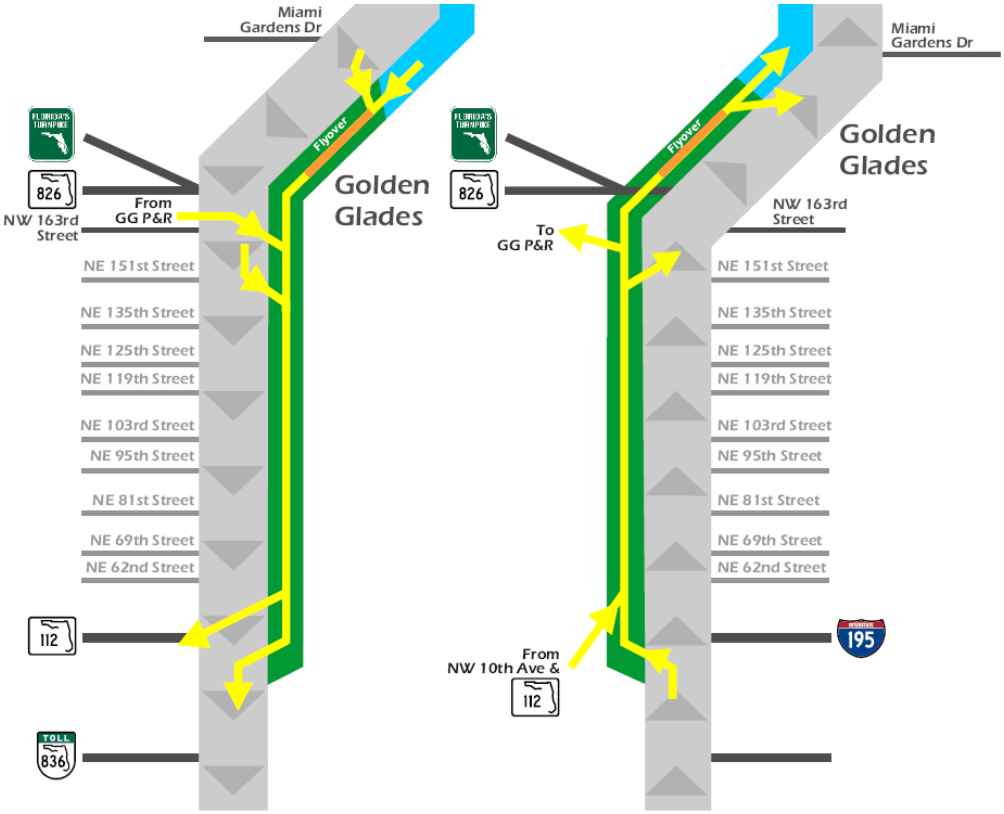


Figure 2: 95 Express Lanes - Phase 1
Source: FDOT. www.95express.com

As of January 15, 2010, Phase 1 of the express lanes implementation was complete with the opening of the southbound lanes. The HOV lanes (one in each direction) were replaced with HOT lanes (two in each direction). The additional space required for the extra lane was obtained by narrowing the width of the existing lanes from 12 feet to 11 feet and by narrowing the width of the shoulder.

Registered vanpools, registered carpools of 3+, registered hybrid vehicles and motorcycles can use the express lanes without paying a toll. Buses of several types can also use the express lanes toll-free. This includes Miami-Dade County and Broward County express and regular transit buses, public school buses, and over-the-road coaches. Trucks of three or more axles are not allowed to use the express lanes. Both the 3+ requirement for HOVs and the registration requirement were changes implemented by the express lanes project. Previously, the requirement for HOVs was 2+, and there was no registration requirement.

Unregistered vehicles participating in the SunPass prepaid toll program are permitted to travel in the express lanes for a fee that ranges typically from $0.25 to $3.50 in order to ensure average speeds of 45 mph or above in the express lanes. However, tolls can go as

high as $7.10 under extreme conditions.[3] Access to the lanes has been restricted to specific entry and exit points using closely spaced delineator poles. Previously when the express lanes were merely HOV lanes, there was only a painted doubled solid line.

2.2 95 Express Bus Service

The term "95 Express Bus Service" refers collectively to four routes that share a common trunk segment on the 95 Express Lanes but diverge to various destinations at the endpoints. During Phase 1A, there was only one route, the 95X, operated by Miami-Dade Transit. Even this route had several variants, depending on the particular trip. The 95X connects various locations in northern Miami-Dade County with various locations downtown. There are essentially three groups of destinations served by the Route 95X. The destinations include downtown Miami and the Brickell area just south of downtown; the Civic Center and Veterans Hospital area just northwest of downtown; and the Earlington Heights Metrorail Station on the Airport Expressway (SR 112) and Doral area west of the airport (see Appendix D for a map of the Route 95X). After Phase 1A, the route structure of the 95X was modified at the northern end. Where previously it went beyond Golden Glades to Carol City and Aventura Mall, the 95X now terminates at Golden Glades and has only a few select trips to/from Aventura Mall.

The 95X was designed primarily to connect commuters with employment sites in downtown Miami. The service operates on weekdays only from 5:30 am to 10:15 am and 2:30 pm to 6:30 pm in the southbound direction and 6:00 am to 10:30 am and 2.45 pm to 8:00 pm in the northbound direction. During peak periods (7:00 am to 9:00 am; 4:00 pm to 6:00 pm), the service operates at three to five minute headways on the I-95 trunk section. Outside these peak periods, and outside the I-95 trunk section of the route, services run at lower frequencies of 15 to 30 minutes. The 95X uses the 95 Express Lanes in the both directions.

2.3 New 95 Express Bus Services

On January 25, 2010, three additional routes were added to the 95 Express Bus Service that provide service between Broward County and Downtown Miami. Two of the routes are operated by Miami-Dade Transit. One of them runs on Sheridan Street, and the other runs on Broward Boulevard. Miami-Dade Transit identifies these two routes collectively as the Route 195 (Dade-Broward Express) and reports ridership on them collectively. The route operated by Broward County Transit is identified as the Route 107 (Pines Blvd. Express). The maps for these new routes are found in Appendix D.

2.3.1 Route 195 (Dade-Broward Express - Sheridan Street.)

The Dade-Broward Express - Sheridan Street is operated by Miami-Dade Transit and provides service between the Sheridan Street Tri-Rail Station located at Sheridan Street and I-95 and downtown Miami. It runs every 15 minutes during weekday rush hours. Southbound buses depart from 5:45 until 8:45 a.m. and from 4:42 until 5:53 p.m. Northbound buses depart from 6:28 until 7:58 a.m. and from 4:18 until 7:18 p.m.

[3] Source: 95 Express Website, www.95express.com

2.3.2 Route 195 (Dade-Broward Express - Broward Boulevard)

The Dade-Broward Express – Broward Boulevard is operated by Miami-Dade Transit and provides service between the Fort Lauderdale Tri-Rail Station located at Broward Boulevard and I-95 and downtown Miami. It runs every 15 minutes during weekday rush hours. Southbound buses depart from 5:45 until 8:45 a.m. and from 4:42 until 5:57 p.m. Northbound buses depart from 6:17 until 7:58 a.m. and from 3:43 until 6:53 p.m.

2.3.3 Route 107 (Pines Boulevard Express)

The Pines Boulevard Express is operated by Broward County Transit and provides service between the C.B. Smith Park and Ride Lot located at Pines Boulevard and Flamingo Road and downtown Miami. It has intermediate stops at University Drive, U.S. 441, the Hollywood Tri-Rail Station and the Golden Glades Park & Ride lot. It runs every 30 minutes during weekday rush hours. Southbound buses depart from 5:45 until 8:45 a.m. and from 4 until 6 p.m. Northbound buses depart from 6 until 8 a.m. and from 3:45 until 6:45 p.m.

3 Methodology

3.1 Definition of Pre and Post Deployment Evaluation Periods

The general approach used in this evaluation is a longitudinal comparison over three years. Ideally, this would encompass at least one year of baseline "before" data, one year of post-deployment "after" data for Phase 1A, and one year of post-deployment "after" data for Phase 1B. However, given the reporting timelines and the time constraints on data availability, the following evaluation periods were used:

- January to April 2008 - Baseline period
- January to April 2009 - Phase 1A post-deployment period
- January to April 2010 - Phase 1B post deployment period

January was originally selected as the first month of each evaluation period because tolling for Phase 1A began in December 2008. It should be noted that the Phase 1A Transit Evaluation Report (Nov. 2009) used January to March evaluation periods, but the evaluation periods for this report were extended to April. The reason for adding an extra month is because the three new 95 Express Bus routes did not begin until the end of January 2010. If the January to March evaluation periods were kept, there would not have been three full months of data for 2010. So an extra month was added. Using the same four months removes the potential for bias due to seasonal factors. While these four-month periods are the focus of the evaluation, the evaluation did also look at the trend lines for the entire period between January 2008 and April 2010.

Transit mode share and transit travel time impacts were considered using data from FDOT's I-95 Lane Monitoring Reports. These data were compared against the outputs of similar studies conducted in prior years as documented in FDOT's biannual HOV Lane Monitoring Reports.

Pre and post deployment on-board surveys were conducted to assess the impact of Miami UPA Phase 1 on transit user perceptions. These surveys were conducted in May 2008 (baseline), May 2009 (post-deployment Phase 1A), and May 2010 (post-deployment Phase 1B).

3.2 Control Groups

In order to better assess whether the observed results for the 95 Express Bus Service were due to the UPA project and not exogenous factors, transit performance and service usage was compared to two control groups.

The first control group was other bus service in the I-95 corridor not including the 95 Express Bus. Specifically, this control group includes Miami-Dade Transit's Routes 77 and 277, both of which run parallel to I-95 on 7th Avenue. They are not part of the UPA project but do provide service between Golden Glades Interchange and downtown Miami.

The second control group is the entire Miami-Dade Metrobus system. This control group was chosen because the majority of the 95 Express Bus Service is operated by Miami-Dade Transit.

Tri-Rail was considered as a third control group but was eliminated after it was discovered in surveys that 34% of new riders (269 out of 801) to the 95 Express Bus switched from Tri-Rail and Metrorail. Tri-Rail cannot be considered as a control group because it was impacted by the study.

Table 1: Transit Control Groups

Control Group 1	Miami-Dade Transit Routes 77 & 277
Control Group 2	Miami-Dade Transit Bus System-wide

4 Exogenous Factors and Regional Trends

Implementation of Express Lanes on I-95 was just one event impacting travel patterns on the corridor. This section summarizes some of the other major events that occurred during the 28 month period between January 2008 and April 2010 that may have had an impact on travel patterns and mode choice decisions within the corridor.

4.1 Changes in MDT Service Characteristics

4.1.1 Fare Structure Changes

MDT's fare structure was revised in October 2008, as illustrated in Table 2.

Table 2: Fare Structure Before and After October 2008

	Pre 10/2008	Post 10/2008	% change
Express Bus One-Way Fare	$1.85	$2.35	27.0%
Monthly Metropass	$75.00	$100.00	33.3%
Monthly Metropass - Group Discount (100 or more passes)	$65.00	$85.00	30.8%

Table 2 shows that the October 2008 fare restructuring imposed a significant increase in fare and monthly pass costs for MDT riders. The regular cash fare was increased by 50 cents from $1.85 to $2.35, representing a 27% increase. The cost of the monthly Metropass was increased by $25 from $75 to $100, representing a 33.3% increase. The discounted pass available through Miami area employers was increased by $20 from $65 to $85, representing a 30.8 percent increase. There was no fare change after the implementation of Phase 1A.

4.1.2 Service Changes

MDT implemented system-wide service changes in June 2008 and June 2009. The changes made to the UPA corridor routes are summarized in Table 3. Most of the changes were service cuts, which reflect a system-wide effort by MDT to reduce operating costs due to budget restrictions and to improve service efficiency. For the 95X, this meant that some reverse commute direction trips with very low patronage were converted to deadhead trips to save revenue miles. Two new trips were added to the 95X in June 2009 in response to increased passenger demand following the 95 Express Lanes implementation.

At the end of January 2010, three new routes were added to the umbrella of 95 Express Bus Service. These included the Sheridan Street, Broward Boulevard, and Pines Boulevard express routes. In addition, the 95X was restructured so that its northern terminus is at Golden Glades Park and Ride Lot instead of the various northern termini from Phase 1A. There were no other service changes in the corridor as of the end of the evaluation period (April 2010).

Table 3: Changes Made to MDT UPA Corridor Services (2008 - 2010)

Route	June 2008	June 2009
95X	– Midday service to downtown Miami and the Civic Center will be discontinued. – The last morning trip to downtown Miami will be at 9:30 a.m. – The first afternoon trip from downtown Miami (Courthouse) will be 3:10 p.m. – The first afternoon trip from the Civic Center will be 3:30 p.m. Alternative service is available by using Tri-Rail with a transfer to and from Metrorail or by using Route 77 to and from downtown Miami. – Minor schedule adjustments will be made in anticipation of the opening of the new I-95 northbound express lanes this summer as well as the continued construction of the southbound I-95 express lanes.	– The segment from Miami Ave. to Golden Glades via NW 199 St., NW 7 Ave., and NW 2 Ave. will be discontinued. Passengers can use Metrobus Route 77 or Broward County Transit routes 18, University Breeze, and 441 Breeze. – **Two new northbound trips will be added to the PM schedule departing from downtown Miami [to Golden Glades] at 4:20 and 5:30 p.m.** – The following trips will be discontinued because of low ridership: 7:15 a.m. – Golden Glades to NW 36 St. and 87 Ave. 8:25 a.m. – Golden Glades to downtown Miami 8:30 a.m. – Carol City to Golden Glades 8:45 a.m. – Golden Glades to dtown Miami/ Brickell 4:35 p.m. – NW 36 St. /87 Ave. to Golden Glades 5:10 p.m. – Golden Glades to Carol City 6:45 p.m. – Civic Center to Golden Glades
Route 277	– No changes	– No changes
Route 77	– Overnight service that operates in the early morning hours will be discontinued. – S/B from NW 183 Street, the last trip will be 11:55pm and the first trip will leave at 4:31 am – N/B from Downtown Miami, the last trip is at 1:10 a.m. and the first trip is at 5:25 a.m.	– No changes

There were no service changes in 2010 as of the time of the report.

4.2 Gas Prices

Figure 3 below shows historic monthly average prices for regular unleaded gasoline in the Miami metro area from January 2007 through April 2010.

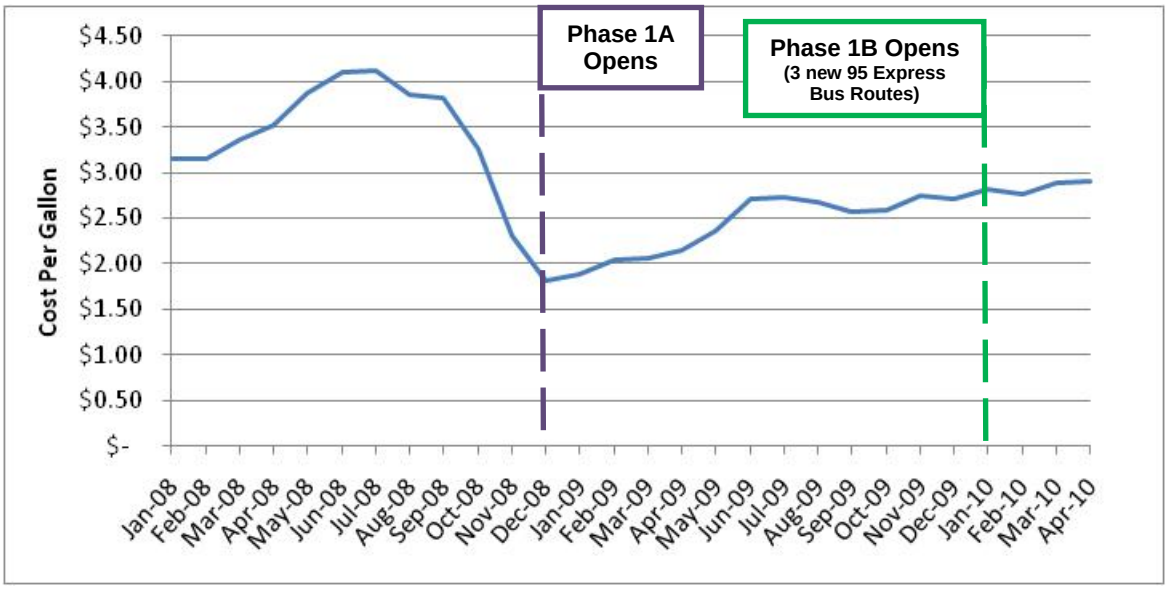


Figure 3: Historic Gas Prices in Miami-Dade County
Source: American Automobile Association

Figure 3 shows that gas prices were between $3.00 and $4.00 per gallon during much of the pre-deployment baseline period. However, by the time Phase 1A of the Express Lanes began in December 2008, prices had fallen to just below $2.00 per gallon. After December 2008, prices began to rise again but leveled off at just under $3.00 per gallon in April 2010.

4.3 Employment Data

Figure 4 shows that the unemployment rate in Miami-Dade County has risen steadily since January 2008. At that time, the unemployment rate was 4.9%. As of April 2010, it was 11.4%. Table 4 compares the four month averages (January to April) for 2008, 2009, and 2010. Between 2008 and 2010, there has been a 123% increase in unemployment.

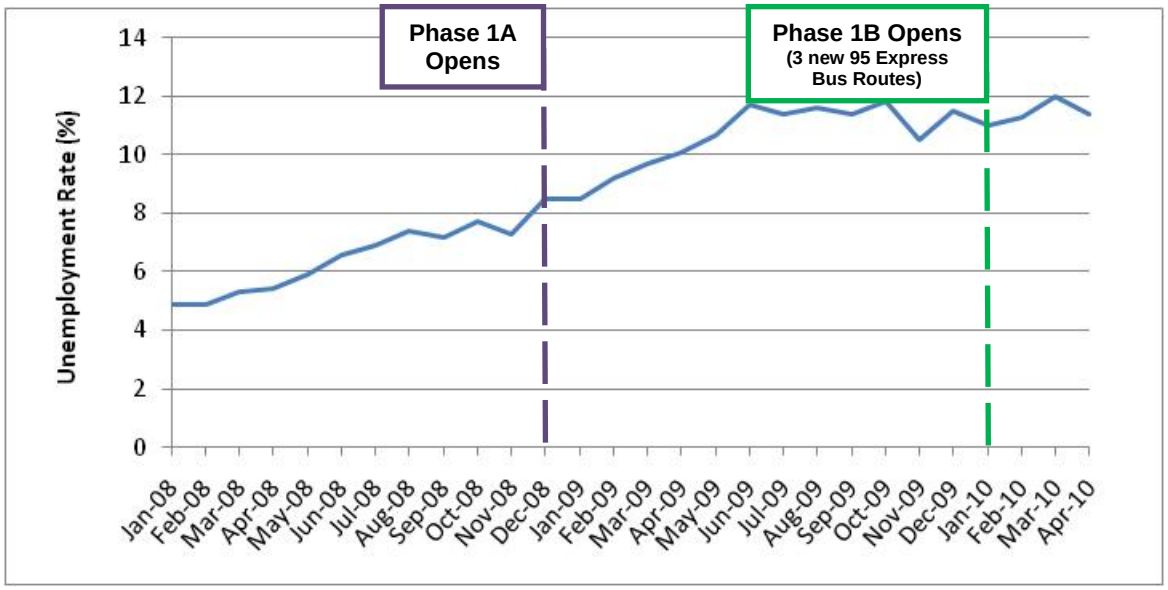


Figure 4: Unemployment Rates in Miami-Dade County
Source: U.S. Department of Labor

Table 4: Unemployment Rates in Miami-Dade County

Jan. – Apr. 2008	Jan. – Apr. 2009	Jan. – Apr. 2010	% change 08-10
5.1%	9.4%	11.4%	+123%

5 Ridership

Table 5 shows the average weekday ridership for the 95 Express Bus and the two control groups. The figures are four month averages based on data from January to April for the years 2008, 2009, and 2010. Between 2008 and 2010, average weekday ridership on the 95 Express Bus Service increased 57%. At the same time, combined ridership on the Routes 77 and 277 decreased 21%, and bus ridership system-wide on MDT decreased 15%.

Table 5: Average Weekday Ridership

	Jan. – Apr. 2008	Jan. – Apr. 2009	Jan. – Apr. 2010	% change 08-10
95 Express Buses	1,827	2,398	2,877	+57%
Routes 77 and 277	12,335	11,190	9,804	-21%
MDT Bus System-wide	264,470	251,875	225,900	-15%

Some of the 57% increase in ridership is attributable to the additional service that began in January 2010. While the 2008 and 2009 figures in Table 5 reflect only the Route 95X, the 2010 figure reflects the 95X and also the three new routes. However, the increase is not due entirely to the additional service. Table 6 shows the average weekday ridership for each of the individual 95 Express Bus routes (recall that MDT reports the ridership for the Broward Blvd. and Sheridan St, routes as one combined total for the Dade-Broward Express). As Table 6 shows, the Route 95X alone showed a 13% increase between 2008 and 2010.

Table 6: Average Weekday Ridership for 95 Express Bus Routes

	Jan. – Apr. 2008	Jan. – Apr. 2009	Jan. – Apr. 2010*	% change 08-10
95X	1,827	2,398	2,067	+13%
Dade-Broward Express	N/A	N/A	631	N/A
Pines Blvd. Express	N/A	N/A	239	N/A

* Note: The ridership total for 2010 in Table 6 (2,067 + 631 + 239 = 2,937) does not match the total in Table 5 (2,877). This is because the 239 figure for the Pines Blvd. Express shown above is a 3 month average while all of the other figures in Tables 6 and 5 are 4 month averages. Broward County Transit did not record ridership in January 2010 for the Pines Blvd. Express. No fare was charged for the first week of operation, which was the last week of January, and there was no GFI data for ridership.

Another part of the ridership increase was from former Tri-Rail riders who switched to the 95 Express Bus. In the May 2010 transit rider survey, 34% of new 95 Express Bus riders (269 out of 801) reported they used to take Tri-Rail and/or Metrorail. A trip to downtown Miami on Tri-Rail requires a transfer to Metrorail while the same trip on the 95 Express Bus is a direct connection. Therefore, it makes sense that these riders would switch. There was little evidence of riders switching to the 95 Express Bus Service from the Routes 77 and 277. Barely 1% (8 out of 801) reported diverting from the Routes 77 and 277.

What explains the opposite trends in ridership between the 95 Express Bus and the two control groups? Some of it could be due to service cuts in 2008 and 2009 although that cannot explain the ridership drop on the Routes 77 and 277. The only reported cut for the Route 77 was elimination of late night and early morning service, and there were no service cuts to the Route 277. It seems more likely that the ridership declines on the Routes 77 and 277 and MDT system-wide were due to a combination of high unemployment and the 2008 fare increase. In 2008, MDT raised the one-way fare for express buses 27% from $1.85 to $2.35, and it raised the price of a monthly Metropass 33% from $75 to $100. Unemployment in Miami-Dade County has increased steadily from 4.9% in January 2008 to 11.4% in April 2010.

If that is the case, the obvious question is why was the 95 Express Bus Service not also impacted negatively? It could be because the demographics of the 95 Express Bus riders are different than the demographics of the average MDT bus rider. Table 25 in Section 10.2.1 of this report compares the demographic profile of 95 Express Bus riders to riders of MDT system-wide. While 46% of 95 Express Bus riders have an annual household income of $60,000 or more, only 4% of MDT riders system-wide are in that income bracket. In contrast, 71% of MDT's riders system-wide have annual household incomes less than $20,000. It is conceivable that the 95 Express Bus riders were not as impacted by the fare increase and high unemployment rate as the average bus rider.

Figures 5 through 7 show the overall trend line in average weekday ridership for the 95 Express Bus Service and for the two control groups. They clearly show an overall upward trend in ridership for the 95 Express Bus Service and an overall downward trend for the control groups.

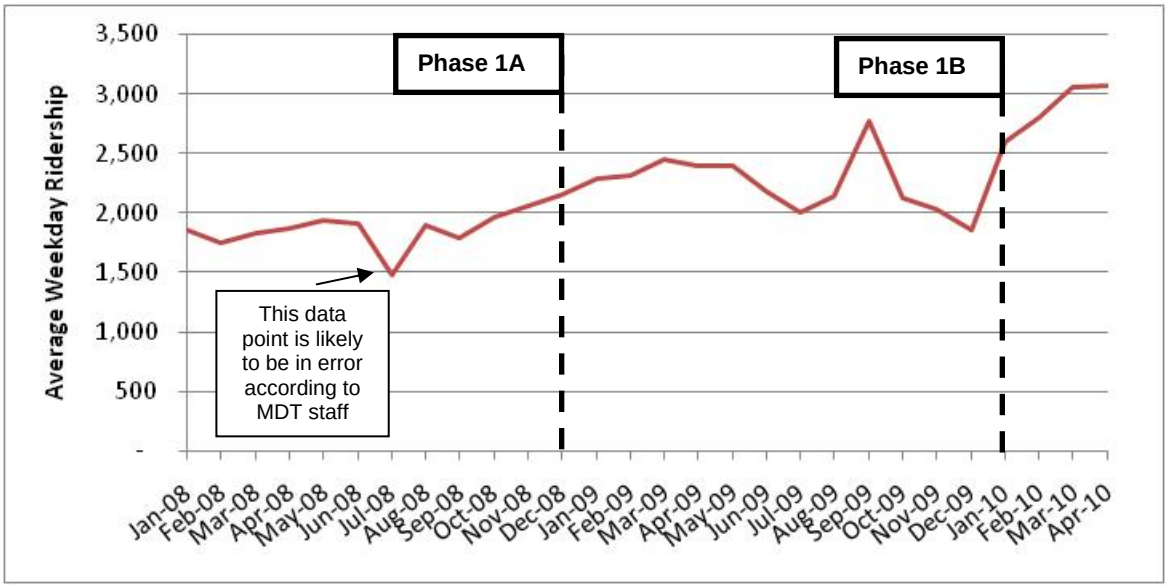


Figure 5: Average Weekday Ridership for 95 Express Bus Service

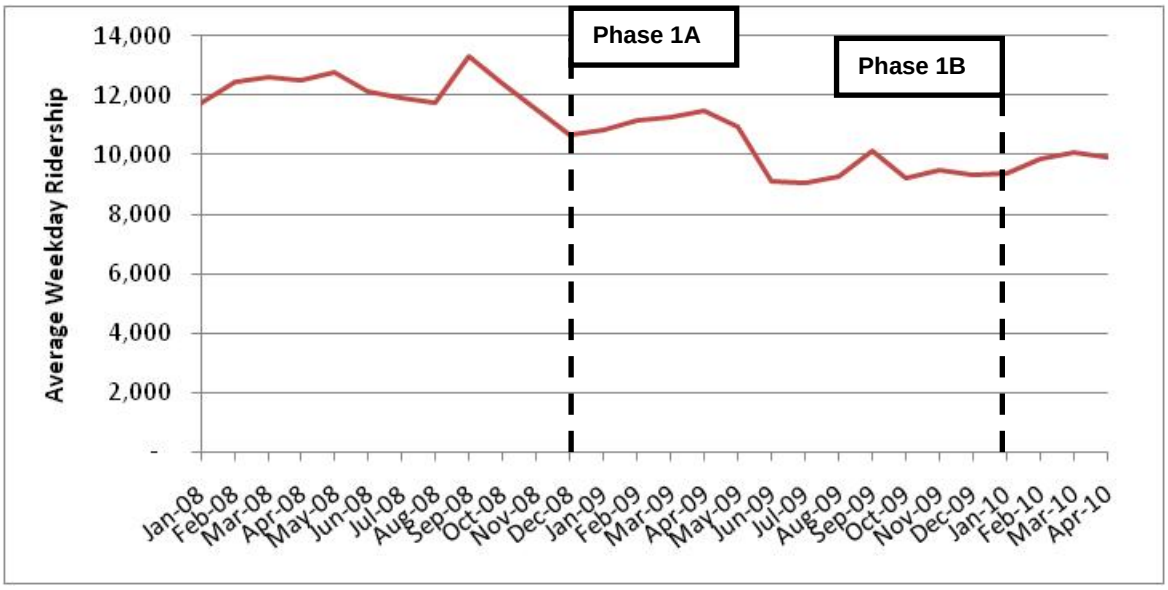


Figure 6: Average Weekday Ridership for Routes 77 and 277

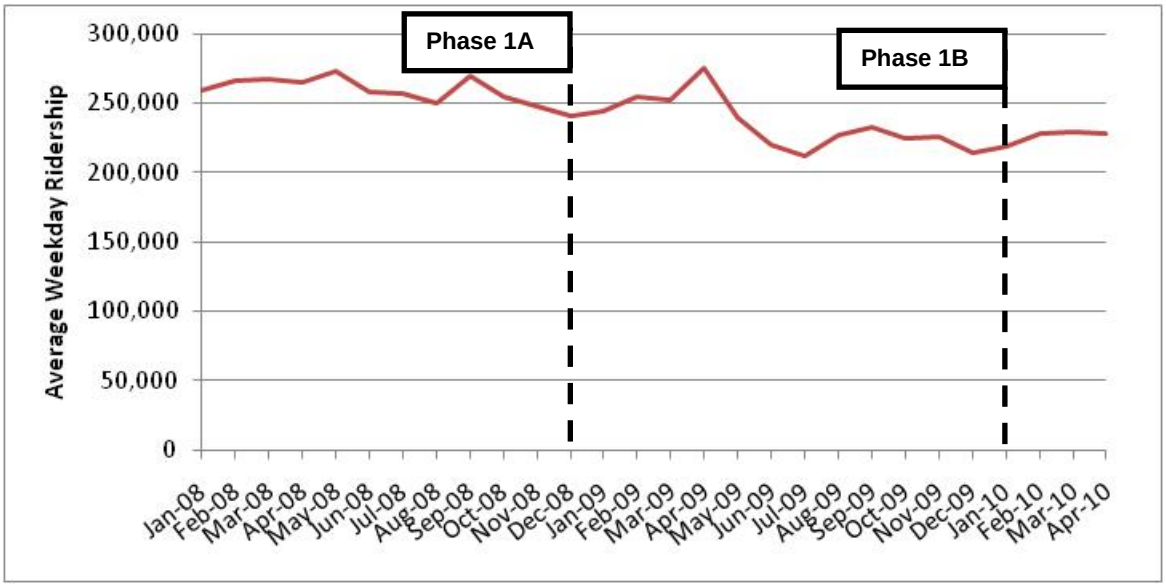


Figure 7: Average Weekday Ridership for MDT Bus System-wide

6 Productivity

Table 7 shows the average revenue miles for the 95 Express Bus and the two control groups. The 83% increase on the 95 Express Bus is due to the new service into Broward County that was added in January 2010. Likewise, the decreases on the Routes 77 and 277 and MDT system-wide are due to the service cuts in 2008 and 2009.

Table 7: Average Weekday Revenue Miles

	Jan. – Apr. 2008	Jan. – Apr. 2009	Jan. – Apr. 2010	% change 08-10
95 Express Buses	2,157	2,007	3,951	+83%
Routes 77 and 277	3,531	3,443	3,350	-5%
MDT System-wide	107,165	101,710	91,774	-14%

Table 8 shows the average boardings per revenue mile, which is a measure of productivity. At first glance, it appears the 95 Express Bus experienced a decline in productivity. Boardings per revenue mile dropped 14% between 2008 and 2010.

Table 8: Average Weekday Boardings per Revenue Mile

	2008	2009	2010	% change 08-10
95 Express Buses	0.85	1.19	0.73	-14%
Routes 77 and 277	3.49	3.25	2.93	-16%
MDT System-wide	2.47	2.5	2.5	+1%

However, when one breaks out the revenue miles and boardings per revenue mile for each of the 95 Express Bus routes, one sees a different picture. As Table 9 shows, there was actually a 25% decrease in revenue miles for the original Route 95X between 2008 and 2010. This came from the elimination of service to Carol City.

Table 9: Average Revenue Miles for 95 Express Bus Routes

	Jan 08 - Apr 08	Jan 09 - Apr 09	Jan 10 - Apr 10	% change 08-10
95X	2,157	2,007	1,612	-25%
Dade-Broward Express	N/A	N/A	1,843	N/A
Pines Blvd. Express	N/A	N/A	661	N/A

Consequentially, productivity on the Route 95X increased 51% (see Table 10). Therefore, the 14% decrease in boardings per revenue mile reported in Table 8 needs to be kept in perspective. Yes, the three new routes into Broward County did add more riders, but these routes more than doubled the amount of revenue miles to the overall service.

Table 10: Average Boardings per Revenue Mile for 95 Express Bus Routes

	Jan 08 - Apr 08	Jan 09 - Apr 09	Jan 10 - Apr 10	% change 08-10
95X	0.85	1.19	1.28	+51%
Dade-Broward Express	N/A	N/A	0.34	N/A
Pines Blvd. Express	N/A	N/A	0.36	N/A

7 Transit Travel Times and On-Time Performance

7.1 Travel Times and Speeds

Table 11 shows average travel speeds and travel times in the northbound p.m. peak period for both the Express Lanes and general purpose lanes. The 2008 and 2009 results are taken from the 95 Express Lanes – Phase 1A Report prepared for the Florida Department of Transportation (FDOT) by Kimley-Horn and Associates. The travel speed data from that report was collected by using a floating car technique. The 2010 results are taken from the monthly 95 Express Operations Report for April prepared by FDOT. This data was collected from loop detectors. NBRTI converted the travel speed data into travel times for the 7.55 mile corridor. Only p.m. northbound data is shown since there was no a.m. southbound speed data in the 2009 Kimley-Horn Report.

Average speeds in the 95 Express Lanes have increased from 18 mph in 2008 to 55 mph in 2010 thereby reducing travel times from 25 minutes to just over 8 minutes.

Table 11: PM Peak Period Travel Speed Comparison (Northbound)

	Travel Speed (mph)		Travel Time (min:sec)	
	HOV/Express Lanes	General Purpose Lanes	HOV/Express Lanes	General Purpose Lanes
2008*	18.1	18.8	25:02	24:06
2009*	56.8	39.7	7:59	11:25
2010**	55	42	8:14	10:47

* Source: FDOT report *"2009 Evaluation Report. 95 Express Lanes – Phase 1A"*. Kimley-Horn and Cambridge Systematics. Travel time columns added by NBRTI.
**Source: FDOT District 6 – 95 Express Monthly Operations Report April 2010

As a result of the actual travel time savings provided by the Express Lanes, MDT has been able to reduce the scheduled travel times for the 95 Express Bus between downtown Miami and Golden Glades Interchange. Table 12 shows that scheduled travel times for the original Route 95X were decreased by 7 minutes in the southbound direction and 10 minutes in the northbound direction.

Table 12: Scheduled Travel Times for Route 95X

	Dec 2007	June 2008	June 2009	June 2010
Southbound AM Peak (GGI to SE 1st and 1st)	32 minutes	32 minutes	32 minutes	25 minutes
Northbound PM Peak (Courthouse to GGI)	32 minutes	24 minutes	22 minutes	22 minutes

7.2 On-Time Performance

Table 13 shows the 4 month averages for on-time performance for the 95 Express Bus Service. Figure 8 shows the overall trend line from January 2008 to April 2010. A trip is defined as late if the bus arrives at a scheduled stop more than 5 minutes after the scheduled time and early if it arrives more than five minutes ahead of schedule. It should be noted that these data represent the entire length of the 95 Express routes in both directions, as it was not possible to isolate the direction or the I-95 section of the routes. Also, the data is based on time-points along the route. Both Table 13 and Figure 8 show that the 95 Express Bus was already performing well, but there was also some improvement. Average on-time performance improved from 76% in 2008 to 81% in 2010.

Table 13: Route 95X On-Time Performance (Northbound and Southbound)

	Jan 08 - Apr 08	Jan 09 - Apr 09	Jan 10 - Apr 10
On Time	76.2%	75.5%	81.1%
Early	12.5%	14.5%	12.4%
Late	11.3%	10.0%	6.5%

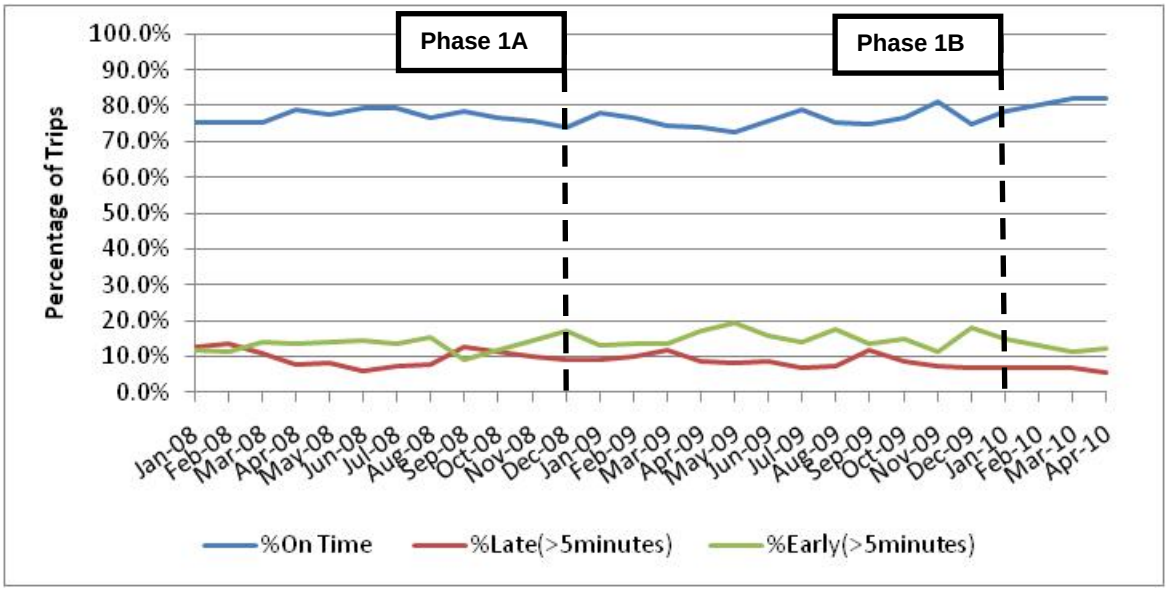


Figure 8: Route 95X On-Time Performance Trend Line

8 Park and Ride Lot Utilization

For the UPA evaluation, Miami-Dade Transit conducted occupancy counts once a month at the Golden Glades Park and Ride Lot. This lot lies southwest of Golden Glades Interchange where Highway U.S. 441 and State Road 9 converge. It provides parking for the Golden Glades Tri-Rail Station, Miami-Dade Transit, Broward County Transit, and Greyhound. For much of the evaluation period, the lot's capacity was 1,007 spaces. Then in December 2009, 535 spaces were added increasing the capacity to 1,542. Table 14 shows the four-month average utilization figures for the Golden Glades Park and Ride Lot.

Table 14: Average Utilization at Golden Glades P&R Lot

Jan - Apr 2008	Jan - Apr 2009	Jan - Apr 2010	% change 08-09	% change 09-10
899	1,036	797	+15%	-23%

Shortly after Phase 1A began in December 2008, lot utilization increased 15%. For the first half of 2009, the lot was operating at or over capacity. The 2009 Phase 1A transit report even speculated that the lot's capacity was hampering further ridership growth on the 95 Express Bus Service. However, utilization went on a downward trend beginning in the second half of 2009 and continued through the rest of the year. Average utilization from January to April 2010 was 23% lower compared to 2009.

Why did utilization drop between 2009 and 2010? At first glance, it would appear that declining ridership on Tri-Rail was the source. Table 15 shows that over the same time period that utilization dropped 23%, average weekday Tri-Rail boardings at Golden Glades Station dropped 17%.

Table 15: Golden Glades Lot Utilization vs. Tri-Rail Boardings

	Jan - Apr 2008	Jan - Apr 2009	Jan - Apr 2010	% change 09-10
Avg. Lot Utilization	899	1,036	797	-23%
Avg. Tri-Rail Boardings	2,709	2,681	2,213	-17%

However, when we looked at more detailed month-by-month data, it does not appear that the decline in Tri-Rail boardings was the contributing factor. Figure 9 compares by month the average weekday boardings for Tri-Rail at Golden Glades Station to the vehicle counts at Golden Glades Park and Ride Lot. The boardings are shown in blue. The vehicle counts are shown in red. One will notice that from August 2009 forward Tri-Rail boardings were fairly level even as the number of cars using the park and ride lot fluctuated back and forth. For this reason, Tri-Rail is not the source of the decline in lot utilization.

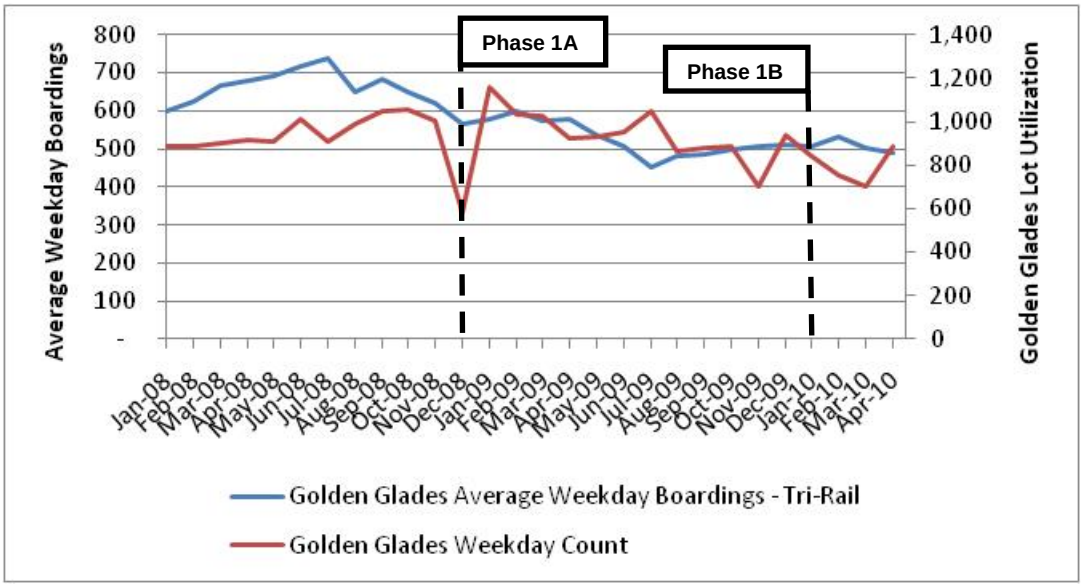


Figure 9: Golden Glades Lot Utilization vs. Tri-Rail Boardings

A more plausible answer is that some Broward County riders of the Route 95X switched to one of the three new routes because they can board them closer to home. When they switched routes, they switched park and ride lots too. Table 16 looks at ridership on just the Route 95X, which serves Golden Glades Park and Ride Lot. Ridership dropped 14% between 2009 and 2010.

Table 16: Golden Glades Lot Utilization vs. Route 95X Ridership

	Jan - Apr 2009	Jan - Apr 2010	% change 09-10
Avg. Lot Utilization	1,036	797	-23%
Avg. Ridership for 95X	2,398	2,067	-14%

When one looks at the month-by-month data in Figure 10, one sees a direct relationship between the average weekday ridership on the Route 95X and the utilization of the Golden Glades Park and Ride Lot. The ridership is shown in blue, and the vehicle counts for the parking lot are shown in red.

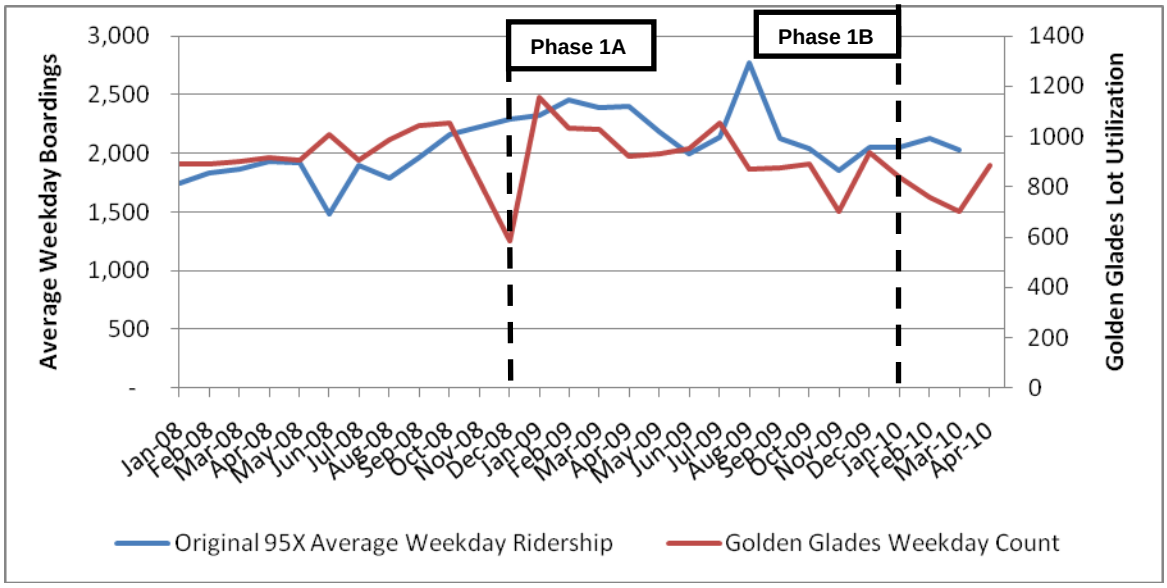


Figure 10: Golden Glades Lot Utilization vs. Route 95X Ridership

If it is true that some passengers on the Route 95X switched to the three new routes in Broward County, one would expect to see increased utilization at the park and ride lots served by these new routes. These lots include C.B. Smith, Sheridan Street, and Broward Boulevard Park and Ride Lots. Vehicle counts were conducted at these three lots in October 2009 (i.e., before the three new routes began) and again in March 2010 (i.e., after). Table 17 shows the vehicle totals and percentage changes alongside the figures for Golden Glades lot in the same months. Indeed, there was an increase in utilization at all three lots serviced by the new routes.

Table 17: Park and Ride Lot Utilization for New 95 Express Bus Routes

Park and Ride Lot	Route Served	Oct 2009	March 2010	% Change
CB Smith	Pines Blvd. Express	10	41	+310%
Broward Blvd.	Dade-Broward Express	185	297	+61%
Sheridan St.	Dade-Broward Express	365	395	+8%
Golden Glades	95X & Pines Blvd. Express	889	700	-21%

But did the increase come from passengers who had switched routes? Without a license plate survey, there is no way to be 100 percent positive. However, there is some evidence from the May 2010 survey of 95 Express Bus riders. One of the questions asked was, “Prior to using this Express Bus Service, how did you make this trip?” Almost 6% (64 respondents) stated that they had previously used the Route 95X meaning that they had switched to one of the three new routes and therefore one of the new lots. Putting all of the data together, it appears that the decline in utilization at Golden Glades was due largely to riders switching to one of the three new routes in Broward County. Therefore, the decline should not be regarded as a mark of failure for the 95 Express Bus but instead an indicator that riders are making rational travel adjustments.

9 Congestion Reduction

FDOT has monitored operations on the I-95 HOV facility on a biannual basis since 1995. Traffic volume counts, speed measurements, and vehicle occupancy counts are collected in both directions at 10 locations along the 60 miles of I-95 between downtown Miami and Palm Beach County. Two of these monitoring locations exist in the vicinity of the Express Lanes between Golden Glades Interchange and downtown Miami. The first count location, NW 146th Street, is just south of the Golden Glades Interchange. The second count station, NW 65th Street, is further south. Both of these count locations are shown in Figure 11 on the next page.

The data collection methodology is based on a sampling approach, with data collected over a two to three day period each spring. In 2008 and 2010, vehicle occupancy data was collected in both directions at both monitoring locations. However in 2009, data was collected only at the NW 146th Street location and only for the PM peak period in the northbound direction. No data was collected in 2009 at the NW 65th Street location. For consistency within the report, the subsequent tables for average vehicle occupancy (AVO), person throughput, and mode share use only the data from the NW 146th Street location. A detailed explanation of the how the AVO, person throughput, and mode share figures were calculated can be found in Appendix C.

Figure 11: HOV Lane Monitoring Locations

9.1 Average Vehicle Occupancy

The AVO figures in Table 18 include transit but do not include vanpools as vanpool data was not available for all three years. AVO in the Express Lanes has dropped in both directions, and there was a greater decline in the a.m. peak period. The decline in AVO is likely due to the combined effect of allowing single occupant vehicles to use the Express Lanes as well as raising the vehicle occupancy requirement from unregistered 2+ to registered 3+. This phenomenon can perhaps be better illustrated in the next section on person throughput.

Table 18: Average Vehicle Occupancy 2008 to 2010

		2008	2009	2010
Express Lanes	AM Southbound	2.20	-	1.36
	PM Northbound	1.95	1.39	1.50
General Purpose Lanes	AM Southbound	1.15	-	1.17
	PM Northbound	1.40	1.39	1.32
Facility	AM Southbound	1.38	-	1.23
	PM Northbound	1.50	1.39	1.37

9.2 Person Throughput

Tables 19 and 20 show the changes in person throughput by vehicle type from before the project began to the present. Both tables show an overall increase in throughput. Two things need to be kept in mind when reading the tables. First, it is important to remember that the 95 Express Lane Project added a second express lane in both directions. Therefore, the additional lane capacity contributed to greater person throughput. Second, any SOVs recorded in 2008 were violators. In 2008, the "Express Lanes" were still a single high occupancy vehicle lane open only to carpoolers (HOV 2+) and transit vehicles.

Total person throughput on the Express Lanes increased 42% in both the a.m. and p.m. peak periods between 2008 and 2010. The largest source of that increase came from toll paying SOVs. The other source was transit. Person throughput due to transit increased 23% in the a.m. period and 36% in the p.m. period. On the other hand, person throughput from HOV2's and 3's dropped. It was particularly severe in the a.m. peak period where HOV2's dropped 53% and HOV3's dropped 83%. These declines may be due to changes made to the eligibility requirements for free travel in the Express Lanes. In December 2008 at the beginning of the project, the requirements to use the lanes for free were changed from unregistered 2+ person carpools to registered 3+ carpools and vanpools in addition to other requirements based on the home and work location of each registrant.

Interestingly, while there was a drop in person throughput from HOV2's and 3's on the Express Lanes, there was an increase in HOV2's in the general purpose lanes. The amount of person throughput from HOV2's in the general purpose lanes increased 96% in the a.m. peak period and 16% in the p.m. peak period. It is possible that some HOV traffic has shifted from the Express Lanes to the general purpose lanes to avoid paying tolls or because they do not want to register.

Table 19: Person Throughput by Vehicle Type (Southbound AM Peak Period[1])

	Vehicle Type	2008[2]	2009[2,3]	2010[2]	% Change 08-10
Express Lanes	SOV	573	-	4,827	+742%
	HOV 2	3,624	-	1,702	-53%
	HOV 3	294	-	49	-83%
	Transit	1,026	-	1,259	+23%
	Total	5,517	-	7,837	+42%
General Purpose Lanes	SOV	7,599	-	10,982	+45%
	HOV 2	2,156	-	4,215	+96%
	HOV 3	358	-	155	-57%
	Transit[4]	-	-	-	-
	Total	10,113	-	15,352	+52%
Facility	SOV	8,172	-	15,809	+94%
	HOV 2	5,780	-	5,917	+2%
	HOV 3	652	-	204	-69%
	Transit	1,026	-	1,259	+23%
	Total	15,630	-	23,189	+48%

[1] A.M. Peak Period is 7:00 a.m. to 9:00 a.m.
[2] Units = total persons for the peak period.
[3] No data was available in 2009 for southbound.
[4] There is no transit service in the I-95 GP lanes.

Table 20: Person Throughput by Vehicle Type (Northbound PM Peak Period[1])

	Vehicle Type	2008[2]	2009[2]	2010[2]	% Change 08-10
Express Lanes	SOV	1,061	3,778	3,686	+247%
	HOV 2	3,040	1,899	2,566	-16%
	HOV 3	477	171	308	-35%
	Transit	810	821	1,099	+36%
	Total	5,388	6,669	7,659	+42%
General Purpose Lanes	SOV	8,080	8,428	9,300	+15%
	HOV 2	7,397	6,282	8,602	+16%
	HOV 3	1,858	2,387	108	-94%
	Transit[3]	-	-	-	-
	Total	17,335	17,097	18,010	+4%
Facility	SOV	9,141	12,206	12,986	+42%
	HOV 2	10,437	8,181	11,168	+7.0%
	HOV 3	2,335	2,558	416	-82%
	Transit	810	821	1,099	+36%
	Total	22,723	23,766	25,669	+13%

[1] P.M. Peak Period is 4:00 p.m. to 6:00 p.m.
[2] Units = total persons for the peak period.
[3] There is no transit service in the I-95 GP lanes.

9.3 Transit Mode Share

Table 21 shows the transit mode share between 2008 and 2010, defined as the proportion of peak period person throughput carried by the 95 Express bus service. Although ridership on the 95 Express Bus has increased between 2008 and 2010, transit's percentage of mode share in the Express Lanes has declined slightly. It declined 2 ½ percentage points in the a.m. and slightly less than 1 percentage point in the p.m. The decline is due mainly to the influx of toll paying single occupant vehicles in the Express Lanes.

Table 21: Transit Mode Share

		2008	2009*	2010
AM Southbound	Express Lanes	18.6%	-	16.1%
	Regular Lanes	-	-	-
	Facility	6.6%	-	5.4%
PM Northbound	Express Lanes	15.0%	12.3%	14.3%
	Regular Lanes	-	-	-
	Facility	3.6%	3.4%	4.3%

* No data available in 2009 for southbound direction.

9.4 Roadway Level of Service (LOS)

A common measure of traffic congestion is roadway level of service (LOS). It is a stratification of the quality of service to a typical traveler into six letter grade levels with "A" describing the highest quality and "F" describing the lowest quality. LOS data was collected separately by Kimley-Horn and Associates and Cambridge Systematics for the Florida Department of Transportation. Their analysis was based on the methodology used in the 2000 version of the Highway Capacity Manual. In essence, their calculations were based on vehicle density (passenger cars per lane per mile) using the LOS thresholds shown below in Figure 12.

LOS	Density Range (pc/ln/mi)
A	0-11
B	> 11-18
C	> 18-26
D	> 26-35
E	> 35-45
F	> 45

Figure 12: LOS Thresholds

Tables 22 and 23 below show the peak direction, peak period LOS results for two segments of I-95 where the Express Lanes are located. Between 2008 and 2010, LOS improved on both the express lanes and the general purpose lanes. Although the changes varied by peak period and direction, in general LOS went from F to C in the express lanes and from F to D in the general purpose lanes.

Table 22: Level of Service (A.M. Southbound)

Interstate 95 Segment	Express Lanes			General Purpose Lanes		
	2008	2009	2010	2008	2009	2010
SR 112 to NW 125th Street	F	N/A	D	F	N/A	E
NW 125th Street to Golden Glades Interchange	F	N/A	C	F	N/A	C

Sources: Table 2.6, 2008 I-95 High Occupancy Vehicle Lane Monitoring Report (Cambridge Systematics)
Table 7, 2009 Evaluation Report 95 Express Lanes – Phase 1A (Kimley-Horn)
Table 2.6, 2010 I-95 High Occupancy Vehicle Lane Monitoring Report (Cambridge-Systematics)

Table 23: Level of Service (P.M. Northbound)

Interstate 95 Segment	Express Lanes			General Purpose Lanes		
	2008	2009	2010	2008	2009	2010
SR 112 to NW 125th Street	F	C	C	F	E	D
NW 125th Street to Golden Glades Interchange	D	D	C	F	F	C

Sources: Table 2.6, 2008 I-95 High Occupancy Vehicle Lane Monitoring Report (Cambridge Systematics)
Table 7, 2009 Evaluation Report 95 Express Lanes – Phase 1A (Kimley-Horn)
Table 2.6, 2010 I-95 High Occupancy Vehicle Lane Monitoring Report (Cambridge-Systematics)

10 Transit User Perceptions

In May 2008, prior to the implementation of Phase 1A (opening of the northbound Express Lanes), a baseline survey was conducted to collect the demographic characteristics and travel behavior of the transit users riding the original 95X, their opinions of current transit service, and the factors that influence their mode choice decisions. In May 2009 and May 2010, post-implementation surveys were conducted for Phase 1A and Phase 1B respectively. Beginning in January 2010, three new express bus routes were implemented that provide service between Broward County and downtown Miami without the need of a transfer. For the May 2010 survey, these new routes were included. All three survey instruments are provided in Appendix B.

10.1 Survey Methodology

Table 24 summarizes the characteristics of the 2008, 2009, and 2010 survey samples. In all three surveys, passengers were surveyed on-board the express buses between downtown Miami and northern Dade and Broward Counties. There have been some methodology changes from year to year, primarily in the number of days the survey was collected, and the direction in which they were conducted.

Table 24: Survey Response Summary

Survey	Day/Period	Direction	Surveys Collected	Passenger Counts	Response Rate (%)
2008 Pre-Deployment	5/27; 6–9 am	S/B	266	1318*	20.2
	5/28; 6–9 am	S/B	213	1483*	14.4
	5/29; 4–6 pm	N/B	93	387**	24.0
	TOTAL		**572**	**3188**	**17.9**
2009 Post Phase 1A Deployment	5/13; 3-6 PM	N/B	277	414	66.9
	5/14; 3-6 PM	N/B	72	110	65.5
	TOTAL		**349**	**524**	**66.6**
2010 Post Phase 1B Deployment	5/11; 6-9 AM	S/B N/B	281	393	71.5
	5/11; 3-6 PM	S/B N/B	207	317	65.3
	5/12; 6-9 AM	S/B N/B	320	591	54.1
	5/12; 3-6 PM	S/B N/B	182	364	50.0
	5/13; 6-9 AM	S/B N/B	105	118	89.0
	5/13; 3-6 PM	S/B N/B	75	112	67.0
	TOTAL		**1,170**	**1,895**	**61.7**

* Passenger counts are for all 95 Express runs within the specified Day/Period/Direction
** MDT staff expressed concern that the passenger count on 5/29 appeared low and could be in error.

In 2008, buses were sampled over three days and in both directions. In 2009, buses were sampled over two days but only in the northbound direction, hence the smaller sample size when compared to 2008. In 2010, surveys were conducted in both the a.m. and p.m. peak periods. Most were collected in the peak direction (a.m. is southbound; p.m. is northbound). However, a small number of surveys were conducted in the non-peak direction as well. Hence both "S/B" and "N/B" are annotated in Table 24 for the 2010 survey. Passenger counts were collected on the individual buses for the 2009 and 2010 surveys, while in 2008, passenger counts were collected for all 95X runs during that day/period/direction. This led to a significant difference in calculated response rates. Finally, the 2010 survey included the new Broward County routes as well as the original Route 95X. The Sheridan Street and Broward Boulevard routes were identified collectively in the survey as the Dade-Broward Express. The Pines/Hollywood Express was identified as such, and the original Route 95X was identified as the Route 95 Express.

Expansion factors (typically used to correct for variation in levels of non-response on individual bus runs) were not applied to any dataset when comparing 2008 and 2009 due to the difference in passenger count collection. Sensitivity testing was done on the 2009 dataset, where individual run count data was collected and showed a negligible impact on the survey results. Therefore, while we would have preferred to apply expansion factors to all three datasets, we are confident that not doing so does not have a significant impact on the comparability of the surveys.

There are some comparability issues with the number of surveys collected in each direction over the years. In 2008, the southbound direction was primarily surveyed, while in 2009 the northbound direction was surveyed exclusively. While this difference limits the use of the complete 2008 dataset between 2008 and 2009, it is less of an issue when comparing 2008 with 2010.

10.2 Characteristics of 95 Express Bus Riders

10.2.1 Socio-Economic Profile

The socio-economic profile of 95 Express Bus Service passengers is provided in Table 25 below. For comparison purposes, the profile of the 2005 MDT's total ridership (from a 2005 system-wide survey) and the total population profiles of Miami-Dade and Broward Counties are also provided. The demographics of 95 Express Bus Service rides are quite different from the demographics of MDT as a whole which primarily consists of Hispanic, low income riders. The age demographic of 95 Express Bus Service users has remained the same from 2008 to 2010. In all three surveys, roughly 75% of the riders were between 35 and 64 years old. However, the demographics for gender, ethnicity, and income have been shifting. In the 2008 survey, 80% of the passengers were female, but in the 2009 and 2010 surveys, the percentage of female passengers dropped to 75% and 66% respectively. In the 2008 and 2009 surveys, roughly 68% and 70% of the passengers respectively were African American; however in the 2010 survey, that percentage dropped to about 50%. At the same time, the percentage of white passengers nearly doubled from 12% in 2008 to 22% in 2010. The average annual household income of 95 Express Bus Service passengers has been increasing. In the 2008 survey, 35% of passengers had annual incomes of $60,000 or more. In 2010, that figure rose to 46%.

Table 25: Comparison of Sample and Population Demographics

Demographic Variable	Categories	2010 UPA Survey	2009 UPA Survey	2008 UPA Survey	2005 MDT Survey (286 routes)	County Population (Census 2000)	
						Broward	Miami-Dade
Population/Sample Size		1,170	349	572	26,990	1,623,018	2,253,362
Age	No. of Responses	1,076	298	513	---	---	---
	Under 18	1.9%	1.0%	1.2%	Different categories used	23.6%	24.8%
	18 to 24	4.0%	3.7%	6.2%		7.2%	9.1%
	25 to 34	15.9%	16.1%	15.8%		14.2%	15.0%
	35 to 49	41.6%	44.3%	40.9%		24.3%	22.8%
	50 to 64	33.3%	30.9%	33.5%		14.6%	15.0%
	65 or over	3.3%	4.0%	2.3%		16.1%	13.3%
Ethnicity	No. of Responses	917	266	475	---	---	---
	Hispanic						
	- African American	1.6%	0.8%	1.3%	50.0%	0.7%	1.7%
	- White	14.5%	7.1%	7.8%		13.0%	49.2%
	- Other	3.2%	1.1%	2.5%		3.6%	6.7%
	Non-Hispanic						
	- African American	49.8%	69.5%	67.6%	31.0%	20.8%	19.1%
	- White	22.1%	10.9%	12.4%	10.0%	57.0%	20.4%
	- Other	8.7%	10.5%	8.4%	10.0%	5.0%	2.9%
Gender	No. of Responses	1,140	337	563	---	---	---
	Female	65.5%	75.4%	80.3%	54.0%	51.7%	51.7%
	Male	34.5%	24.6%	19.7%	46.0%	48.3%	48.3%
Annual Household Income*	No. of Responses	1,056	309	523	---	---	---
	Less than $20,000	5.7%	7.4%	7.8%	71.0%	22.0%	28.5%
	$20,000 to $29,999	8.0%	12.0%	12.8%	13.0%	13.3%	14.0%
	$30,000 to $39,999	13.5%	20.4%	17.0%	8.0%	12.3%	12.1%
	$40,000 to $59,999	26.7%	32.7%	27.2%	5.0%	19.3%	17.8%
	$60,000 or more	46.1%	27.5%	35.2%	4.0%	33.0%	27.7%

*Income figures are indicative only because (a) data has not been adjusted to account for inflation between 2000, 2005, and 2008, and 2009, and (b) because Census 2000 income data was collected at the household level, not at the person level.

10.2.2 Private Vehicle Availability

Given the focus of the UPA project on traffic congestion reduction and mode shift, a series of questions were asked regarding express bus users' level of access to a private vehicle. Responses are summarized in Table 26 below.

Table 26: Vehicle Availability

		2010 UPA Survey	2009 UPA Survey	2008 UPA Survey
Had access to a car or motor vehicle for surveyed trip	No. of responses	1,146	349	455
	Yes	77%	67%	80%
	No	23%	33%	20%
Level of access to a car or motor vehicle	No. of responses	1,120	323	549
	Always	74%	65%	79%
	Most of the time	12%	17%	10%
	Occasionally	8%	10%	5%
	Never	6%	8%	4%
	Don't know	-	-	2%

95 Express Bus riders were asked two different ways about their access to a personal vehicle. They were asked whether they had access to a personal vehicle for the trip they were making on the day of the survey. They were also asked what their normal level of access to a personal vehicle was. In both instances, it was clear that the majority of 95 Express Bus riders have regular access to a personal vehicle. This was the case before the project began, and it continues to be the case. This indicates that the 95 Express Bus Service has always attracted choice riders.

10.2.3 Main Reasons for Riding the 95 Express

Respondents were asked each year, "What is the main reason that you are riding this Express bus today?" Eight response options were provided, including a self-completion "other" category. Some respondents provided more than one answer and so an additional category is added for these multiple responses.

In the May 2008 survey, the most popular reason for taking the 95 Express Bus was to save money (26%). This is not surprising given that gas prices were on the rise at the time and went over $4.00 per gallon in June. By the May 2009 survey, saving money was no longer the most popular reason. Instead, the responses were more diverse with "more convenient than car" slightly edging out the other responses (17%). This also makes sense because by then gas prices had dropped to under $2.50 a gallon. In the May 2010 survey, "save time" was the most popular reason for taking the 95 Express Bus (20%).

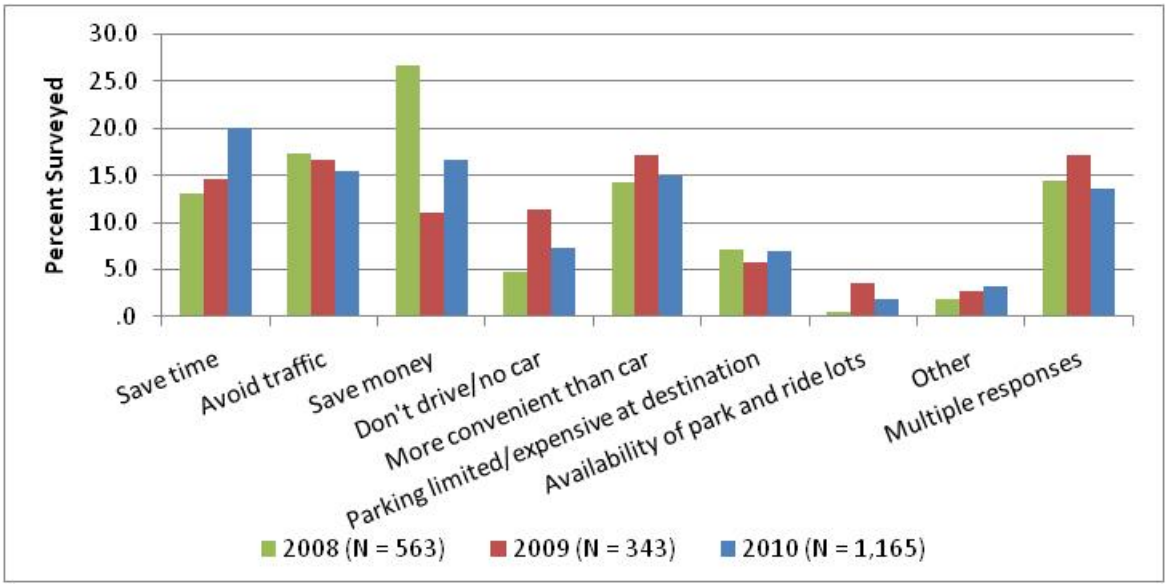


Figure 13: Main Reason for Riding the 95 Express Bus

10.2.4 Length of Service Use

In the May 2010 survey, respondents were asked "When did you start riding this Express bus service?" and were given three options:

- before December 2008 (prior to the Express Lanes)
- between December 2008 and December 2009 (i.e., during Phase 1A); or
- sometime during 2010 (i.e., after Phase 1B and the 3 new express routes began)

Table 27: When passengers began riding the 95 Express Bus

	Frequency	Percentage
Before December 2008	316	28.2%
Between December 2008 and December 2009	180	16.0%
Sometime during 2010	626	55.8%
Total	1,122	100.0%

As mentioned in Section 2 (Project Description), the 95 Express Bus was already in operation prior to the start of the Express Lanes project in December 2008. Only 28% of the respondents in the May 2010 survey said they have been riding the 95 Express Bus since before the project began while 72% began riding it sometime after Phase 1A implementation. This indicates that the 95 Express Bus has indeed attracted new riders.

10.3 95 Express Bus Service User Perceptions

10.3.1 Service Element Ratings

Respondents were asked to rate ten specific aspects of the 95 Express Bus Service on a scale of 1 (very poor) to 5 (very good) as well as their overall satisfaction with the service and with Miami-Dade Metrobus/Broward County Transit in general. Independent sample t-tests were conducted to assess the statistical significance of the differences from year to year in the calculated means. These results are provided in Table 28.

When comparing the mean scores for all three years, there has been improvement in almost all aspects of service. The only aspect of service that received a lower rating was “value for money of service”. It went from a rating of 3.84 in 2008 to a rating of 3.79 in 2009. However, the difference was not statistically significant, and it actually increased to 4.01 in the 2010 survey. The lower rating may have been due to the significant increase in fare and pass costs imposed in October 2008.

The service element with the greatest improvement in user rating was travel time. It went from a mean score of 4.05 in 2008 to 4.28 in 2009 to 4.51 in 2010. This change was statistically significant across all years.

When just comparing the 2010 survey results to the 2009 results, parking availability at Golden Glades Park and Ride lot had the greatest improvement. It went from a rating of 4.00 in 2009 to 4.38 in 2010. The explanation for the increased satisfaction is most likely two-fold. As indicated previously in Section 8, the capacity of the lot was increased in December 2009, and overall utilization dropped 23% from 2009 to 2010. Therefore, there were more parking spaces available.

Overall, it appears that the opening of the Express Lanes have improved user perceptions of what was already a highly rated bus service. All service elements received improved ratings from 2008 to 2010, and all of the increases were statistically significant at the 95% confidence level.

Table 28: Service Element Ratings for 95 Express Bus Service

Service Element	2008 Survey Mean Rating	2009 Survey Mean Rating	Sig. 2008 Sample Vs. 2009 Sample	2010 Survey Mean Rating	Sig. 2009 Sample Vs. 2010 Sample	Sig. 2008 Sample Vs. 2010 Sample
Travel Time	4.05	4.28	**0.000****	4.51	**0.000****	**0.000****
Service Reliability (on time performance)	4.06	4.19	**0.026***	4.37	**0.003****	**0.000****
Parking availability at Golden Glades***	NA	4.00	NA	4.38	**0.000****	NA
Wait time at station/stop	3.75	3.83	0.223	4.08	**0.000****	**0.000****
Value for money of service	3.84	3.79	0.476	4.01	**0.002****	**0.003****
Availability of seats	**3.59**	**3.76**	**0.019***	3.90	**0.048***	**0.000****
Frequency of service	3.51	3.62	0.141	3.86	**0.002****	**0.000****
Hours of service	3.54	3.57	0.670	3.68	0.158	**0.029***
Overall satisfaction with the 95X Bus	4.09	4.15	0.279	4.28	**0.027***	**0.000****
Overall Satisfaction with Metrobus (MDT) and BCT Service	3.83	3.85	0.699	4.06	**0.002****	**0.000****

*Significant at the 95% confidence level; ** Significant at the 99% confidence level;
*** This service element was not included in the 2008 survey

Survey scale:
5 - Very Good
4 – Good
3 – Fair
2 – Poor
1 – Very Poor

10.3.2 Changes in Travel Time

Respondents were asked in the 2009 and 2010 survey how their average travel time on the 95 Express Bus compares to before the Express Lanes opened in December 2008. In both years, over 80 percent of respondents indicate some travel time savings due to the implementation of the Express Lanes. In 2009, it was 86%. In 2010, it was 88%.

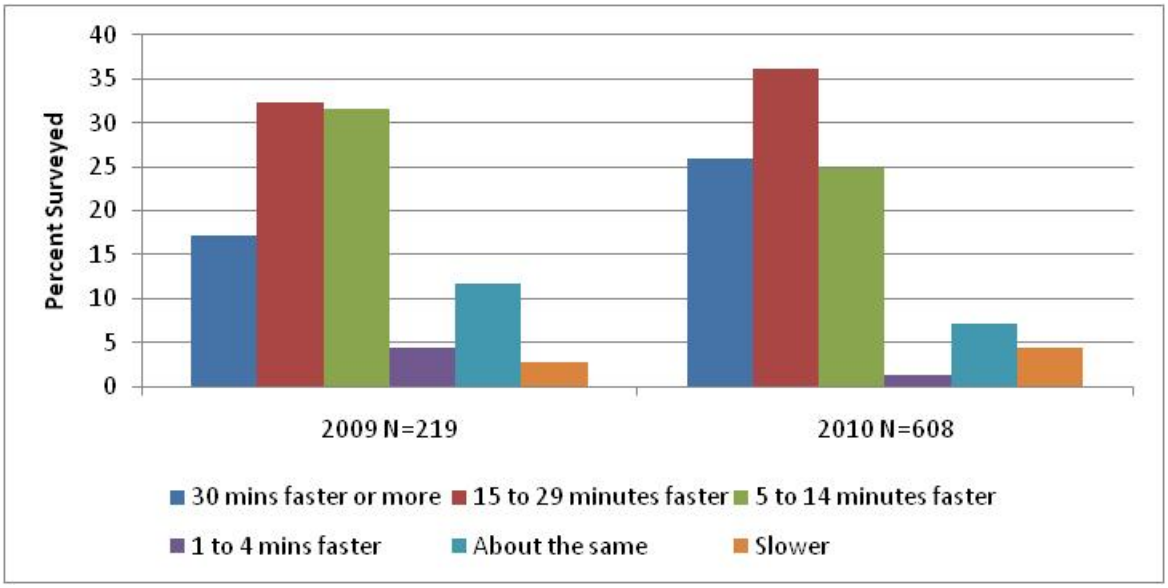


Figure 14: Perceived Travel Time Savings Since the Express Lanes Began

Table 29: Perceived Travel Time Savings Since the Express Lanes Began

	2009 (N=219)	2010 (N=608)
30 mins faster or more	17.2%	26.0%
15 to 29 minutes faster	32.3%	36.2%
5 to 14 minutes faster	31.6%	24.8%
1 to 4 mins faster	4.5%	1.3%
About the same	11.7%	7.2%
Slower	2.7%	4.4%

10.4 Impacts of Express Lanes on Transit Mode Share/Shift

Several questions in the 2009 and 2010 questionnaire were designed specifically to determine whether there was any mode shift to transit as a result of Express Lanes implementation. Respondents were asked how long they have been riding the 95 Express Bus Service. They were also asked how they made the trip prior to using the 95 Express Bus.

Table 30 below is a cross tab of new riders, that is to say riders that began using the 95 Express Bus Service after December 2008. The first column represents those who began riding the 95 Express Bus during Phase 1A. The second column represents those who began riding the 95 Express Bus during Phase 1B (i.e., after the 3 new routes began). The third column represents the total new riders.

Table 30: Previous Travel Modes of New 95 Express Bus Service Riders

How did you make this trip prior to riding the 95 Express bus?	When did you start riding the 95 Express Bus Service?					
	Between December 2008 and December 2009		Sometime during 2010		Total	
	N	% Total	N	% Total	N	% Total
Travelled alone by car in regular lanes	64	35.8%	163	26.2%	227	28.3%
Travelled alone by car in HOV/I-95 Express lanes	7	3.9%	57	9.2%	64	8.0%
*Travelled alone by car in regular and/or I-95 Express Lanes	0	0.0%	7	1.1%	7	0.9%
*Travelled alone by car in regular lanes and used other transit service	3	1.7%	7	1.1%	10	1.2%
Carpooled in regular lanes	5	2.8%	10	1.6%	15	1.9%
Carpooled in HOV/I-95 Express lanes	5	2.8%	6	1.0%	11	1.4%
Used other bus service	27	15.1%	52	8.4%	79	9.9%
Used other transit service (i.e. Tri-Rail/MetroRail)	25	14.0%	244	39.2%	269	33.6%
*Used other bus service and used other transit service	1	0.6%	12	1.9%	13	1.6%
Did not make this trip	4	2.2%	12	1.9%	16	2.0%
Have always used the 95 Express	23	12.8%	8	1.3%	31	3.9%
**Other	15	8.4%	44	7.0%	59	7.4%
Total	179	100.0%	622	100.0%	801	100.0%

*Multiple response categories
**Includes additional multiple responses

What the third column in the table shows is that 38% of all new 95 Express Bus riders used to drive alone in some form. It also shows that 45% used to take some other form of transit. Within that 45% figure are 34% who used to take Tri-Rail and Metrorail. The survey also asked respondents to indicate if the opening of the Express Lanes influenced their decision to ride the 95 Express Bus. As Table 31 below indicates, 53% of new 95 Express Bus riders said the opening of the Express Lanes did influence their decision to ride the 95 Express Bus. This is a positive indicator of the Express Lanes ability to influence mode choice.

Table 31: Influence of 95 Express Lanes on decision to ride the 95 Express Bus

Did the opening of the I-95 Express Lanes influence your decision to ride the 95 Express bus?	When did you start riding the 95 Express Bus Service?					
	Between December 2008 and 2009		Sometime during 2010		Total	
	N	%	N	%	N	%
Yes	48	43.6	102	59.3	150	53.2
No	62	56.4	70	40.7	132	46.8
Total	110	100.0	172	100.0	282	100.0

11 Conclusions

Five main conclusions can be drawn from the I-95 Express Lanes Project and the 95 Express Bus Service.

1. The 95 Express Bus Service has benefitted from the implementation from the HOV to HOT conversion in the areas of travel times and on-time performance.
2. The 95 Express Bus Service has attracted choice riders and seen an increase in ridership despite rising unemployment in Miami-Dade County.
3. The transit surveys revealed that the UPA Project did influence people's decision to use the 95 Express Bus Service.
4. The decreases seen in average vehicle occupancy and transit mode share in the I-95 Express Lanes are due to the influx of toll paying single occupant vehicles.
5. The 95 Express Bus Service contributed to increased total person throughput in the Express Lanes while HOV2 and 3 person throughput dropped in these lanes.

The 95 Express Bus Service had a modest on-time performance record prior to the HOT lane conversion. In 2008, it was on-time 76.2% of the time. By 2010, on-time performance improved to 81.1%. Actual travel times on the Express Lanes improved over the course of the project from 25 minutes to around 8 minutes. As a result, Miami-Dade Transit was able to trim the scheduled travel times of the original Route 95X between downtown Miami and the Golden Glades Interchange. The scheduled travel times were reduced from 32 minutes to 22 minutes in the northbound direction and from 32 minutes to 25 minutes in the southbound direction. These travel time improvements are borne out in the transit surveys as well. Of all the service attributes that were rated by the riders, the one with the greatest improvement was travel time. On a scale of 1 (Very Poor) to 5 (Very Good), it went from a mean score of 4.05 in the 2008 survey to 4.28 in 2009 and 4.51 in 2010. This change was statistically significant across all three years.

The 95 Express Bus Service attracts choice riders. A full 86% of riders in the May 2010 survey said they had access to a vehicle always or most of the time and 46% have annual household incomes of $60,000 or more. In the same survey, 72% of the respondents could be classified as new riders, meaning they began riding the 95 Express Bus sometime after Phase 1A in December 2008. Of those new riders, 38% said they used to drive alone to work before switching to the 95 Express Bus. Some of the new riders shifted from other modes of transit. For example, 34% said they used to use Tri-Rail and Metrorail. This is understandable given that a trip to downtown Miami on Tri-Rail requires a transfer to Metrorail whereas a trip on the 95 Express Bus is a direct trip into downtown.

Fifty-three percent (53%) of new riders said the Express Lanes project influenced their decision to take transit. Between 2008 and 2010, average weekday ridership on the 95 Express Bus Service increased 57% even as ridership declined for the control groups in the study. Some of the ridership increase came from the addition of three new routes in January 2010. However, there was a 13% increase just on the original Route 95X alone. In fact, ridership on the 95 Express Bus Service has increased despite a 123% jump in unemployment in Miami-Dade County.

Despite the ridership increase on the 95 Express Bus Service, there was a decrease in average vehicle occupancy and transit mode share in the Express Lanes. Between 2008 and 2010, AVO in the Express Lanes dropped from 2.20 to 1.36 in the a.m. peak period southbound and from 1.95 to 1.50 in the p.m. peak period northbound. Likewise, transit mode share decreased from 18.6% to 16.1% in the a.m. peak period southbound and from 15.0% to 14.3% in the p.m. peak period northbound. In some ways, this is to be expected with HOV to HOT conversions where there is an influx of toll paying single occupant vehicles. Simply put, the transit ridership increases were diminished by the larger volumes of toll paying single occupant vehicles. Nevertheless, it should be noted that the 95 Express Bus Service did contribute to increased person throughput on the Express Lanes while person throughput from HOV2's and HOV3's decreased. The tables on the next two pages summarize the main conclusions of this report and relate them to the overarching hypotheses/questions posed in the National Evaluation Framework document.

Results Summary in Relation to NEF Hypotheses/Questions

Hypothesis/ Question	Measures of Effectiveness	Results
The UPA project will enhance transit performance in the UPA/CRD corridors (through reduced travel times, increased reliability, increased capacity, etc.)	– On-time performance – Scheduled travel times – Actual travel times – Travel speeds – Park and Ride Lot utilization	– On-time performance increased from 76% (2008) to 81% (2010) – Scheduled end to end travel times decreased by 7 minutes (southbound) and 10 minutes (northbound) – Actual travel times in the northbound Express Lanes decreased from 25 minutes (2008) to 8 minutes (2010) – Travel speeds during the p.m. peak period (northbound) in the Express Lanes increased from 18 mph (2008) to 55 mph (2010) – Utilization of Golden Glades Park and Ride lot decreased 23% between 2009 and 2010; partly caused by riders shifting to lots served by the 3 new routes
The UPA project will increase ridership and facilitate a mode shift to transit.	– Average weekday ridership – Boardings per revenue mile (productivity measure) – Average vehicle occupancy – Transit mode share	– Average weekday ridership for increased 57% between 2008 and 2010 – Boardings per revenue mile for the entire 95 Express Bus Service decreased 14% between 2008 and 2010 from 0.85 to 0.73 – Boardings per revenue mile for the original Route 95X increased 51% from 0.85 to 1.28 – Express Lanes AVO declined between 2008 and 2010 from 2.20 to 1.36 (a.m. southbound) and from 1.95 to 1.50 (p.m. northbound) – AVO for the I-95 facility as a whole (Express + GP Lanes) declined from 1.38 to 1.23 (a.m. southbound) and from 1.50 to 1.37 (p.m. northbound) – Transit mode share in the Express Lanes decreased from 18.6% to 16.1% (a.m. southbound) and from 15.0% to 14.3% (p.m. northbound)

Results Summary in Relation to NEF Hypotheses/Questions

Hypothesis/ Question	Measures of Effectiveness	Results
Mode shift to transit / increased ridership will contribute to congestion mitigation	– Person throughput – Roadway Level of Service (LOS)	– Total person throughput on the Express Lanes from all modes increased 42% for both the a.m. and p.m. peak periods between 2008 and 2010 – Total person throughput on the I-95 facility as a whole increased 48% (a.m. southbound) and 13% (p.m. northbound) – Person throughput in the Express Lanes from transit increased 23% in the a.m. peak southbound and 36% in the p.m. peak northbound. – Roadway LOS improved between 2008 and 2010. In general LOS went from F to C in the Express Lanes and from F to D in the GP Lanes
What was the contribution of each UPA project element to increased ridership and/or mode shift to transit?	– Percentage of transit riders who chose transit because of the Express Lanes	– 53% of new transit riders on the 95 Express Bus Service said the Express Lanes influenced their decision to use transit – 38% of new transit riders on the 95 Express Bus Service used to drive alone

Appendix A: Master Transit Evaluation Matrix

Transit Improvement	Mechanisms for Congestion Reduction/Hypotheses	Indicators	Measures	Data Source / Agency	NBRTI Action Items
New transit services in HOT Lanes	Transit in HOT lanes will create a virtual bus way, which increases transit travel speeds and improves reliability, thereby increasing passenger throughput on the facility.	**Travel Time**	Max/Min Travel Time Minutes per mile Average Dwell time, signal delay time, Pull-out time Door-to-Door Travel Time	Travel Time Comp. Analysis or:	– Assist in developing data collection methodology – Conduct data analysis and reporting
		Reliability/ Schedule Adherence	Running time reliability On-time performance	AVL data (MDT/BCT)	– Assist in data mining – Check data for quality, quantity, and format. – Conduct data analysis and reporting
		Ridership	Ridership change over time Boardings/deboardings by stop Ridership by route segment Passenger trip length Linked and unlinked trips	Ridecheck (MDT/BCT) APCs (MDT/BCT)	– Assist in data mining – Check data for quality, quantity, and format. – Conduct data analysis and reporting
New transit services in General Purpose lanes	Improved transit network coverage will enhance area-wide access to transit services and service connectivity. This is a service improvement, which ultimately will attract choice riders.	**Mode shift**	Mode access (captive/choice) Mode use history Average vehicle occupancies and traffic volumes in HOT lanes and GP lanes	On-Board Survey Traffic Man. Center (FDOT)	– Assist in developing data collection methodology – Conduct data analysis and reporting – Assist in data mining – Check data for quality, quantity, and format. – Conduct data analysis and reporting
		Safety/security	Transit incidents / accidents Perceptions of safety	Safety data (MDT/BCT) On-Board Survey	– Assist in data mining – Check data for quality, quantity, and format. – Conduct data analysis and reporting – Assist in developing data collection methodology – Conduct data analysis and reporting
Increases in existing transit service capacity/quality	Increasing existing service can bring modal shifts, create operational impacts on associated transit corridors, and increase transit ridership during congested periods.	**Capacity**	Vehicle capacity Corridor transit service capacity Revenue hours/Revenue miles Frequency/span/days of service Level of Service information for HOT lanes and GP lanes	Ridecheck (MDT/BCT) APCs (MDT/BCT) AVL (MDT/BCT)	– Assist in data mining – Check data for quality, quantity, and format. – Conduct data analysis and reporting
		Image/perception	Awareness User perceptions Demographics	On-Board Survey	– Assist in developing data collection methodology – Conduct data analysis and reporting
		Cost	Capital Cost Operating cost Farebox data Cost effectiveness/efficiency	Transit cost and fare info (MDT/BCT) HOT lane / P&R lot costs info (FDOT)	– Assist in data mining – Check data for quality, quantity, and format. – Conduct data analysis and reporting

Transit Improvement	Mechanisms for Congestion Reduction/Hypotheses	Indicators	Measures	Data Source	NBRTI Action Items
Park-and-Ride Capacity/Facility Improvements	Increased park-and-ride capacity will attract more commuters to transit, thereby taking more vehicles off the road.	**Lot Utilization**	Lot usage/occupancy Occupancy/loading by hour/day Ridership	Parking Lot Survey (FDOT)	– Assist in data mining – Check data for quality, quantity, and format. – Conduct data analysis and reporting
			Awareness User perceptions demographics	On-Board Survey	– Assist in developing data collection methodology – Conduct data analysis and reporting
Stationary transit infrastructure improvements (ADA enhancements, stations, shelters, depots, amenities)	Depots and bus layup facilities will improve operational efficiencies. Customer amenities will improve comfort, accessibility, safety/security, and other intangible factors that are important to attracting choice riders.	**ADA Compliance**	Station compliance (ADA) Vehicle compliance (ADA)	Transit agency docs (MDT/BCT)	– Obtain and synthesize transit agency docs
		Customer Impact	Awareness User perceptions demographics	On-Board Survey	– Assist in developing data collection methodology – Conduct data analysis and reporting
ITS – Bus arrival, Transit signal priority, etc.	These technologies provide service quality enhancements and improve operational efficiencies, travel times, and reliability.	**Operational Impact**	Service performance (reliability / schedule adherence)	Travel Time Comp. Analysis or: AVL data (MDT/BCT)	– Assist in developing data collection methodology – Conduct data analysis and reporting – Assist in data mining – Check data for quality, quantity, and format. – Conduct data analysis and reporting
			Operating cost efficiency	Transit agency docs (MDT/BCT)	– Obtain and synthesize transit agency docs
		Customer Impact	Awareness User perceptions demographics	On-Board Survey	– Assist in developing data collection methodology – Conduct data analysis and reporting
Marketing / Branding	Effective marketing and attractive branding schemes will increase awareness and improve the image of public transit, broadening the appeal to commuter markets.	**Awareness and perception of service**	Awareness User perceptions Demographics	On-Board Survey	– Assist in developing data collection methodology – Conduct data analysis and reporting

Appendix B: Survey Questionnaires

Figure 15: 2008 Survey Questionnaire

95 EXPRESS - CUSTOMER SURVEY (la version en Español al dorso)

Survey #:

DEAR VALUED CUSTOMER: We would like information about your trip on the **95 EXPRESS** to help improve the transit service. PLEASE take a few minutes to complete the following survey. Please check (x), write out, or circle your responses as appropriate. Even if you do not complete the survey, please return it to a surveyor or leave in your seat as you exit the bus. Please do not put your name or other identifying marks on the survey. THANKS FOR YOUR HELP.

Your trip on the 95 Express

1. What is the MAIN REASON that you are riding the **95 EXPRESS** today? (Check ONE only)
   1___ Save time
   2___ Avoid traffic
   3___ Save money
   4___ Don't drive / no car
   5___ More convenient than car
   6___ Parking limited/expensive at destination
   7___ Availability of Park and Ride lots
   8___ Other (specify:_____)

2a. Where did you come from?
   1___ Home
   2___ Work
   3___ School (student)
   4___ Shopping
   5___ Recreation/visit friends, family
   6___ Other (specify: _____)

2b. What is the Zip Code or community name of that place?
   _____

3a. Where are you going to?
   1___ Home
   2___ Work
   3___ School (student)
   4___ Shopping
   5___ Recreation/visit friends/family
   6___ Other (specify: _____)

3b. What is the Zip Code or community name of that place?
   _____

4. How did you get to the bus stop for this bus trip? (Check ONE only)
   1___ Walked (#___ blocks)
   2___ Bicycled
   3___ Drove alone (& parked)
   4___ Drove with others (& parked)
   5___ Dropped off by car
   6___ Jitney
   7___ Transfer from Metrobus (Route #___)
   8___ Transfer from BCT bus (Route #___)
   9___ Transfer from Metrorail
   10__ Transfer from Tri-Rail
   11__ Transfer from MetroMover
   12__ Other (specify: _____)

5. How will you get to your final destination after this bus trip? (Check ONE only)
   1___ Walk (#___ blocks)
   2___ Bicycle
   3___ Drive alone (& park)
   4___ Drive with others (& park)
   5___ Picked up by car
   6___ Jitney
   7___ Transfer to Metrobus (Route #___)
   8___ Transfer to BCT bus (Route #___)
   9___ Transfer to Metrorail
   10__ Transfer to Tri-Rail
   11__ Transfer to MetroMover
   12__ Other (specify): _____

6. Please indicate **all** payment methods used to complete this trip. If you pay any cash fares, including transfer fees, please enter the total amount you will pay.
   1___ Cash (total cash paid $ _____)
   2___ Pass (specify pass type _____ pass cost $_____)
   3___ Don't pay a fare
   4___ don't know

7. Did you have a car/motor vehicle available for this trip? Yes ___ No___

8. How often do you typically ride the **95 EXPRESS**?
   1___ 4-5 days per week
   2___ 1-3 days per week
   3___ Less than once a week
   4___ First time riding

9. Consider the time it takes to make your entire trip from door to door. What is your typical total travel time in minutes? ____mins

10. Do you consider riding the **95 EXPRESS** to be:
   1___ Much faster than driving alone in the non-HOV lanes
   2___ About the same time as driving alone in the non-HOV lanes
   3___ Much slower than driving alone in the non-HOV lanes
   4___ Don't drive
   5___ Don't know

Your views on the 95 EXPRESS

11. How would you rate each of the following aspects of the **95 Express** service?

Please circle the number that best reflects your opinion		Very Good	Good	Fair	Poor	Very Poor	Don't Know
a.	Service reliability (on time performance)	5	4	3	2	1	0
b.	Travel time	5	4	3	2	1	0
c.	Hours of service (how long buses run)	5	4	3	2	1	0
d.	Frequency of service (how often buses run)	5	4	3	2	1	0
e.	Convenience of service (where buses run)	5	4	3	2	1	0
f.	Wait time at station/stop	5	4	3	2	1	0
g.	Value for money of service	5	4	3	2	1	0
h.	Availability/clarity of service information	5	4	3	2	1	0
i.	Availability of seats	5	4	3	2	1	0
j.	Personal safety on buses	5	4	3	2	1	0
k.	Personal safety at bus stations/stops	5	4	3	2	1	0
l.	Smoothness of ride	5	4	3	2	1	0
m.	The look/design of buses	5	4	3	2	1	0
n.	Ease of access to/from buses	5	4	3	2	1	0
o.	Your overall satisfaction with the **95 EXPRESS**	5	4	3	2	1	0
p.	Your overall satisfaction with **Metrobus/BCT service**	5	4	3	2	1	0

12. Using the letters in the table above, please indicate the THREE (3) aspects of the **95 EXPRESS** service that you think most need to be improved?
   1._____ 2._____ 3._____

Please tell us a little about yourself. All replies are strictly confidential.

13. Are you female or male? 1___ Female 2___ Male

14. How old are you? _____ years old

15. Are you Hispanic/Latino? 1___ Yes 2___ No

16. Are you...
   1___ African American/Black
   2___ White
   3___ Other (specify:_____)

17. Please check all of the following that apply to you. Are you:
   1___ Employed for pay outside your home
   2___ Employed for pay at home
   3___ Unemployed
   4___ Retired
   5___ Homemaker
   6___ Student

18. What is your level of education? (please check ONE only)
   1___ Some high school
   2___ High school diploma
   3___ Some college
   4___ College degree
   5___ Post-graduate degree

19. What is your household's approximate total annual income?
   1___ Less than $10,000
   2___ $10,000 to $19,999
   3___ $20,000 to $29,999
   4___ $30,000 to $39,999
   5___ $40,000 to $59,999
   6___ $60,000 or more

20. Do you own or lease a car? 1___ Yes 2___ No

21. What is the total number of cars or other motor vehicles owned or leased by your household?
   0 (none)___ 1___ 2___ 3___ 4___ 5 or more___

22. Do you have a valid driver's license? 1___ Yes 2___ No

23. Please indicate your level of access to a car/motor vehicle. "A car/motor vehicle is available for my personal use.....
   1___ Always
   2___ Most of the time
   3___ Occasionally
   4___ Never
   5___ Don't Know

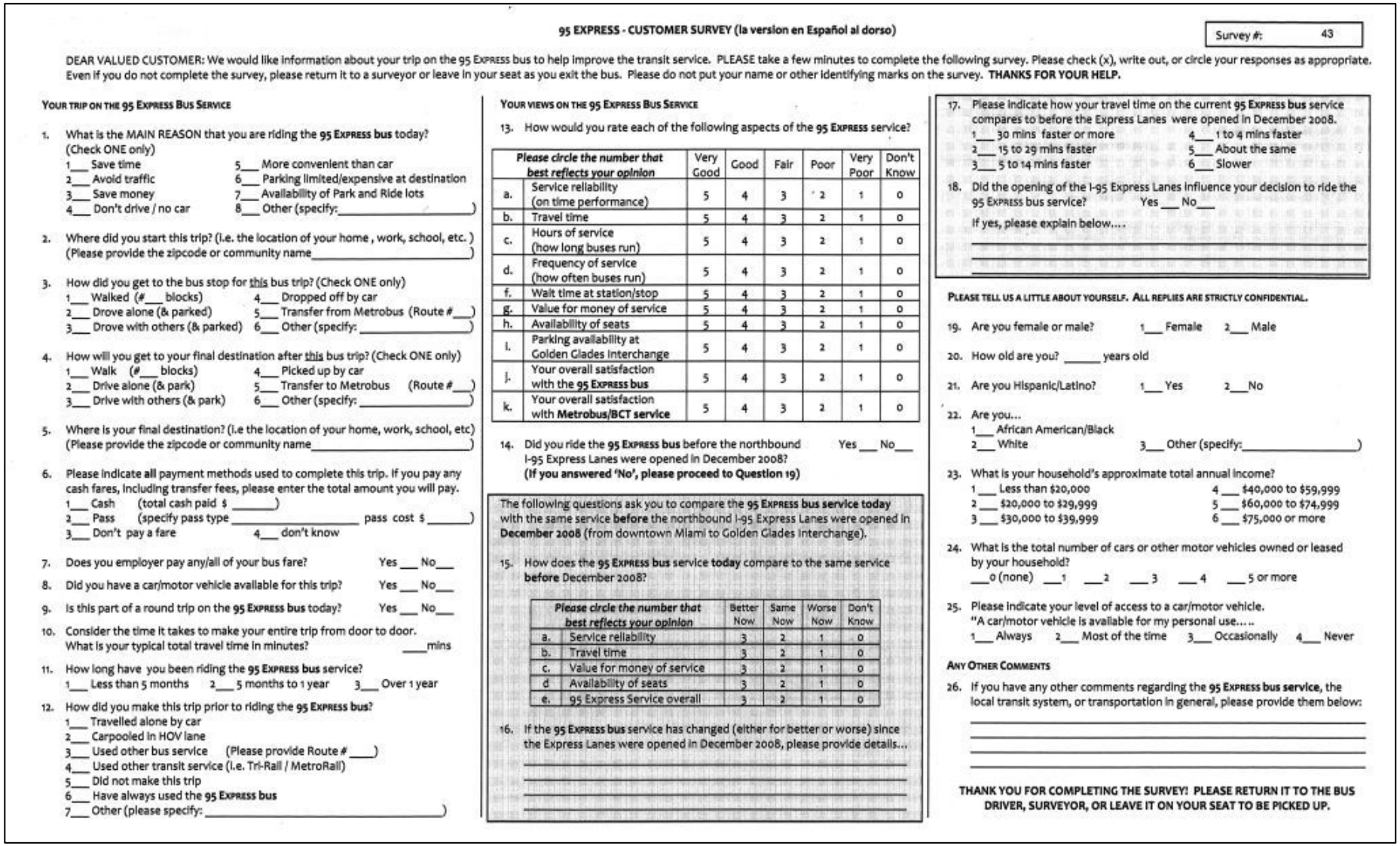
Any other comments

24. If you have any other comments regarding the **95 EXPRESS**, the local transit system, or transportation in general, please provide them below:

_____
_____
_____

THANK YOU FOR COMPLETING THE SURVEY! PLEASE RETURN IT TO THE BUS DRIVER, SURVEYOR, OR LEAVE IT ON YOUR SEAT TO BE PICKED UP.

Figure 16: 2009 Survey Questionnaire



95 EXPRESS - CUSTOMER SURVEY (la version en Español al dorso)

Survey #: 43

DEAR VALUED CUSTOMER: We would like information about your trip on the 95 Express bus to help improve the transit service. PLEASE take a few minutes to complete the following survey. Please check (x), write out, or circle your responses as appropriate. Even if you do not complete the survey, please return it to a surveyor or leave in your seat as you exit the bus. Please do not put your name or other identifying marks on the survey. **THANKS FOR YOUR HELP.**

YOUR TRIP ON THE 95 EXPRESS BUS SERVICE

1. What is the MAIN REASON that you are riding the **95 Express bus** today? (Check ONE only)
   1___ Save time
   2___ Avoid traffic
   3___ Save money
   4___ Don't drive / no car
   5___ More convenient than car
   6___ Parking limited/expensive at destination
   7___ Availability of Park and Ride lots
   8___ Other (specify:_____)
2. Where did you start this trip? (i.e. the location of your home , work, school, etc.) (Please provide the zipcode or community name_____)
3. How did you get to the bus stop for this bus trip? (Check ONE only)
   1___ Walked (#___ blocks)
   2___ Drove alone (& parked)
   3___ Drove with others (& parked)
   4___ Dropped off by car
   5___ Transfer from Metrobus (Route #___)
   6___ Other (specify: _____)
4. How will you get to your final destination after this bus trip? (Check ONE only)
   1___ Walk (#___ blocks)
   2___ Drive alone (& park)
   3___ Drive with others (& park)
   4___ Picked up by car
   5___ Transfer to Metrobus (Route #___)
   6___ Other (specify: _____)
5. Where is your final destination? (i.e the location of your home, work, school, etc) (Please provide the zipcode or community name_____)
6. Please indicate **all** payment methods used to complete this trip. If you pay any cash fares, including transfer fees, please enter the total amount you will pay.
   1___ Cash (total cash paid $ _____)
   2___ Pass (specify pass type _____ pass cost $_____)
   3___ Don't pay a fare
   4___ don't know
7. Does you employer pay any/all of your bus fare? Yes ___ No___
8. Did you have a car/motor vehicle available for this trip? Yes ___ No___
9. Is this part of a round trip on the **95 Express bus** today? Yes ___ No___
10. Consider the time it takes to make your entire trip from door to door. What is your typical total travel time in minutes? ____mins
11. How long have you been riding the **95 Express bus** service?
    1___ Less than 5 months
    2___ 5 months to 1 year
    3___ Over 1 year
12. How did you make this trip prior to riding the **95 Express bus**?
    1___ Travelled alone by car
    2___ Carpooled in HOV lane
    3___ Used other bus service (Please provide Route # ___)
    4___ Used other transit service (i.e. Tri-Rail / MetroRail)
    5___ Did not make this trip
    6___ Have always used the **95 Express bus**
    7___ Other (please specify: _____)

YOUR VIEWS ON THE 95 EXPRESS BUS SERVICE

13. How would you rate each of the following aspects of the **95 Express** service?

Please circle the number that best reflects your opinion		Very Good	Good	Fair	Poor	Very Poor	Don't Know
a.	Service reliability (on time performance)	5	4	3	2	1	0
b.	Travel time	5	4	3	2	1	0
c.	Hours of service (how long buses run)	5	4	3	2	1	0
d.	Frequency of service (how often buses run)	5	4	3	2	1	0
f.	Wait time at station/stop	5	4	3	2	1	0
g.	Value for money of service	5	4	3	2	1	0
h.	Availability of seats	5	4	3	2	1	0
i.	Parking availability at Golden Glades Interchange	5	4	3	2	1	0
j.	Your overall satisfaction with the **95 Express bus**	5	4	3	2	1	0
k.	Your overall satisfaction with **Metrobus/BCT service**	5	4	3	2	1	0

14. Did you ride the **95 Express bus** before the northbound I-95 Express Lanes were opened in December 2008? Yes ___ No___
    (If you answered 'No', please proceed to Question 19)

The following questions ask you to compare the **95 Express bus service today** with the same service **before** the northbound I-95 Express Lanes were opened in **December 2008** (from downtown Miami to Golden Glades Interchange).

15. How does the **95 Express bus** service **today** compare to the same service **before** December 2008?

Please circle the number that best reflects your opinion		Better Now	Same Now	Worse Now	Don't Know
a.	Service reliability	3	2	1	0
b.	Travel time	3	2	1	0
c.	Value for money of service	3	2	1	0
d	Availability of seats	3	2	1	0
e.	95 Express Service overall	3	2	1	0

16. If the **95 Express bus** service has changed (either for better or worse) since the Express Lanes were opened in December 2008, please provide details...
    _____
    _____
    _____
    _____

17. Please indicate how your travel time on the current **95 Express bus** service compares to before the Express Lanes were opened in December 2008.
    1___ 30 mins faster or more
    2___ 15 to 29 mins faster
    3___ 5 to 14 mins faster
    4___ 1 to 4 mins faster
    5___ About the same
    6___ Slower
18. Did the opening of the I-95 Express Lanes influence your decision to ride the 95 Express bus service? Yes ___ No___
    If yes, please explain below....
    _____
    _____
    _____

PLEASE TELL US A LITTLE ABOUT YOURSELF. ALL REPLIES ARE STRICTLY CONFIDENTIAL.

19. Are you female or male? 1___ Female 2___ Male
20. How old are you? _____ years old
21. Are you Hispanic/Latino? 1___ Yes 2___ No
22. Are you...
    1___ African American/Black
    2___ White
    3___ Other (specify:_____)
23. What is your household's approximate total annual income?
    1 ___ Less than $20,000
    2 ___ $20,000 to $29,999
    3 ___ $30,000 to $39,999
    4 ___ $40,000 to $59,999
    5 ___ $60,000 to $74,999
    6 ___ $75,000 or more
24. What is the total number of cars or other motor vehicles owned or leased by your household?
    ___0 (none) ___1 ___2 ___3 ___4 ___5 or more
25. Please indicate your level of access to a car/motor vehicle. "A car/motor vehicle is available for my personal use... ..
    1___ Always 2___ Most of the time 3___ Occasionally 4___ Never

ANY OTHER COMMENTS

26. If you have any other comments regarding the **95 Express bus service**, the local transit system, or transportation in general, please provide them below:
    _____
    _____
    _____
    _____

THANK YOU FOR COMPLETING THE SURVEY! PLEASE RETURN IT TO THE BUS DRIVER, SURVEYOR, OR LEAVE IT ON YOUR SEAT TO BE PICKED UP.

Figure 17: 2010 Survey Questionnaire

I-95 EXPRESS BUS CUSTOMER SURVEY (la version en Español al dorso)

Survey #:

DEAR VALUED CUSTOMER: We would like information about your trip on this I-95 **Express bus** to help improve the transit service. PLEASE take a few minutes to complete the following survey. Please check (x), write out, or circle your responses as appropriate. Even if you do not complete the survey, please return it to a surveyor or leave in your seat as you exit the bus. Please do not put your name or other identifying marks on the survey. **THANKS FOR YOUR HELP.**

TODAY'S TRIP ON THIS I-95 EXPRESS BUS SERVICE

1. What is the MAIN REASON that you are riding this **Express bus** today? (Check ONE only)
   1___ Save time
   2___ Avoid traffic
   3___ Save money
   4___ Don't drive / no car
   5___ More convenient than car
   6___ Parking limited/expensive at destination
   7___ Availability of Park and Ride lots
   8___ Other (specify:_____)

2. Please provide the zipcode or community name of where you **started** this one way trip (i.e. the location of your home, work, school, etc.)
   (zipcode or community name_____)

3. How did you get to the bus stop for this one-way bus trip? (Check ONE only)
   1___ Walked (#___ blocks)
   2___ Drove alone (& parked)
   3___ Drove with others (& parked)
   4___ Dropped off by car
   5___ Transfer from other bus (Route #___)
   6___ Other (specify: _____)

4. How will you get to your final destination after this one-way bus trip? (Check ONE only)
   1___ Walk (#___ blocks)
   2___ Drive alone (& park)
   3___ Drive with others (& park)
   4___ Picked up by car
   5___ Transfer to other bus (Route #___)
   6___ Other (specify: _____)

5. Please provide the zipcode or community name of your **final destination** on this one-way trip (i.e the location of your home, work, school, etc.)
   (zipcode or community name_____)

6. Please indicate **all** payment methods used to complete this one-way trip. Please enter the total amount you will pay including any cash fares and transfer fees.
   1___ Cash (total cash paid $ _____)
   2___ Pass (specify pass type _____ pass cost $ _____)
   3___ Don't pay a fare
   4___ Don't know

7. Did you have a car/motor vehicle available for this trip? Yes ___ No___

8. Is this journey part of a round trip on the **Express bus** today? Yes ___ No___

9. Prior to using this **Express bus** service, how did you make this trip?
   1___ Travelled alone by car in regular lanes
   2___ Travelled alone by car in the HOV lane/95 Express Lanes
   3___ Carpooled in regular lanes
   4___ Carpooled in the HOV lane/95 Express Lanes
   5___ Used other bus service (Route # or name_____)
   6___ Used other transit service (i.e. Tri-Rail / MetroRail)
   7___ Did not make this trip
   8___ Have always used this **Express bus** service
   9___ Other (please specify: _____)

YOUR VIEWS ON THIS I-95 EXPRESS BUS SERVICE

10. How would you rate each of the following aspects of this **Express bus** service?

	Please circle the number that best reflects your opinion	Very Good	Good	Fair	Poor	Very Poor	Don't Know
a.	Service reliability (on time performance)	5	4	3	2	1	0
b.	Travel time	5	4	3	2	1	0
c.	Hours of service (how long buses run)	5	4	3	2	1	0
d.	Frequency of service (how often buses run)	5	4	3	2	1	0
f.	Wait time at station/stop	5	4	3	2	1	0
g.	Value for money of service	5	4	3	2	1	0
h.	Availability of seats	5	4	3	2	1	0
i.	Parking availability at the Park and Ride lots	5	4	3	2	1	0
j.	Your overall satisfaction with this Express bus service	5	4	3	2	1	0
k.	Your overall satisfaction with **Metrobus/BCT service**	5	4	3	2	1	0

11. Did you ride the **95 Express bus** service on I-95 **before** the 95 Express Lanes were opened in December 2008? Yes ___ No___
    (If you answered 'No', please proceed to Question 15)

The following questions ask you to compare the **Express bus** service **today** with the service **before** the 95 Express Lanes were opened in **December 2008** between downtown Miami to Golden Glades Interchange.

12. Please indicate how your **average travel time** on this **Express bus** service compares to before the 95 Express Lanes were opened in December 2008.
    1___ 30 mins faster or more
    2___ 15 to 29 mins faster
    3___ 5 to 14 mins faster
    4___ 1 to 4 mins faster
    5___ About the same
    6___ Slower

13. If your **Express bus** service has changed (either for better or worse) since the Express Lanes were opened in December 2008, please provide details…
    _____
    _____
    _____

14. Did the opening of the 95 Express Lanes influence your decision to ride this **Express bus** service? Yes ___ No___ If yes, please explain…
    _____
    _____
    _____

YOUR TYPICAL TRIP ON THIS I-95 EXPRESS BUS SERVICE

15. Does your employer pay any/all of your bus fare? Yes ___ No___

16. Consider the average time it takes to make your entire one-way trip from door to door. What is your typical total travel time in minutes? ____mins

17. When did you start riding this **Express bus** service?
    1___Sometime during 2010
    2___Between December 2008 and December 2009
    3___Before December 2008

PLEASE TELL US A LITTLE ABOUT YOURSELF. ALL REPLIES ARE STRICTLY CONFIDENTIAL.

18. Are you female or male? 1___ Female 2___ Male

19. How old are you? _____ years old

20. Are you Hispanic/Latino? 1___ Yes 2___No

21. Are you…
    1___ African American/Black
    2___ White
    3___ Other (specify:_____)

22. What is your household's approximate total annual income?
    1___ Less than $20,000
    2___ $20,000 to $29,999
    3___ $30,000 to $39,999
    4___ $40,000 to $59,999
    5___ $60,000 to $74,999
    6___ $75,000 or more

23. What is the total number of cars or other motor vehicles owned or leased by your household?
    ___0 (none) ___1 ___2 ___3 ___4 ___5 or more

24. Please indicate your level of access to a car/motor vehicle.
    "A car/motor vehicle is available for my personal use….."
    1___Always 2___ Most of the time 3___ Occasionally 4___ Never

ANY OTHER COMMENTS

25. If you have any other comments regarding this **Express bus** service, the local transit system, or transportation in general, please provide them below:
    _____
    _____
    _____
    _____

THANK YOU FOR COMPLETING THE SURVEY! PLEASE RETURN IT TO THE BUS DRIVER, SURVEYOR, OR LEAVE IT ON YOUR SEAT TO BE PICKED UP.

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Appendix C: Average Vehicle Occupancy, Person Throughput, and Transit Mode Share Methodology

Average vehicle occupancy (AVO), person throughput, and mode share all use the same source data. AVO is the total person throughput divided by the total vehicles in the observation period. Mode share is the percentage of person throughput attributed to each mode. To calculate these three figures for the report, we relied on vehicle occupancy count data collected by Cambridge Systematics under a sub-contract with the Florida Department of Transportation, loop detector data from FDOT, and bus passenger data provided by Cambridge Systematics.

The data provided by Cambridge Systematics is used by FDOT in its High Occupancy Vehicle Lane Monitoring Report. Although this report includes data on AVO, it does not include figures for person throughput and mode share for the a.m. and p.m. peak periods. Therefore, we calculated our own figures for AVO, person throughput, and mode share. A few of the AVO figures in this report differ slightly from the HOV Lane Monitoring Report because our report used a slightly different methodology. Specifically, the HOV Lane Monitoring Report calculated AVO for just the outside express lane and the adjacent general purpose lane. Our report calculated AVO for both express lanes and all general purpose lanes. Also, the AVO's reported in the HOV Lane Monitoring Report are taken directly from the vehicle occupancy counts. Our methodology includes a conversion to total traffic by applying the percentage of each occupancy category to the total volumes reported by the loop detectors. What follows below is a step by step recreation of the method that was used to calculate the figures for AVO, person throughput, and transit mode share for the northbound HOV/Express Lane during the PM peak period.

Step One – Vehicle Occupancy Counts and Percentages

We start with the vehicle occupancy count data collected by Cambridge Systematics. As stated earlier in Section 9, only the data from the NW 146th Street monitoring location was used. That is for consistency purposes across the three analysis years. In 2009, no data was collected from the other monitoring location, NW 65th Street.

NORTHBOUND HOV LANE			
TIME	1 PERSON	2 PERSON	3 OR MORE
4:00 PM	275	80	1
4:15 PM	220	71	5
4:30 PM	254	110	8
4:45 PM	197	111	7
5:00 PM	218	65	2
5:15 PM	245	52	9
5:30 PM	213	82	14
5:45 PM	214	68	2
TOTAL	**1836**	**639**	**48**
Percent	**72.8%**	**25.3%**	**1.9%**

Vehicle Occupancy Count Data

Step 2 – Expansion of vehicle percentages to total volume

The vehicle volumes shown in Step 1 are only for one lane of traffic in the Express Lanes. There are two lanes in the Express Lanes. The loop detectors provide the combined volumes for both Express Lanes. The table below shows the total Express Lane volume for the p.m. peak period in the northbound direction.

Time	HOV 15 Minute Volume
16:00:00	620
16:15:00	646
16:30:00	643
16:45:00	685
17:00:00	654
17:15:00	493
17:30:00	627
17:45:00	697
TOTAL	**5,065**

Loop Detector Data (Northbound I-95 South of NW 148th Street)

We took the total volume and applied the percentages from Step 1. This gives us a breakdown of SOV, HOV2 and HOV3+ volumes for both Express Lanes.

Total Express Lane Volume	SOV	2 Person HOV	3+ Person HOV
5,065	72.8%	25.3%	1.9%
	3,686	1,283	96

Step 3 – Calculation of person throughput (not including transit)

To calculate person throughput, we took the vehicle volumes from the table above and multiplied the number of 1-person vehicles by 1 person each; the number of 2-person vehicles by 2 persons each; and the number of 3-person (or more) vehicles by 3.2. This last number (3.2) was used because this was the factor used in the FDOT HOV Lane Monitoring Report. The results were as follows:

	1-Person Throughput	2-Person Throughput	3-Person(or more) Throughput
Vehicles	3,686	1,283	96
Throughput Factor	1	2	3.2
Person Throughput	3,686	2,566	308

What's missing from this table is person throughput from transit. That leads to Step 4.

Step 4 – Addition of transit ridership to person throughput figures

Cambridge Systematics provided transit data on the number of buses, the number of passengers, and the average number of passengers per bus in the Express Lanes for the peak periods. These figures are shown in the table below.

	Number of Vehicles	Passengers	Passenger/Bus
Dade-Broward Express	16	244	15.3
95X	35	740	21.1
Pines/Hollywood Blvd Express	5	115	23.0
TOTAL	**56**	**1,099**	**19.6**

95 Express Bus Passenger Data P.M. Peak Period

Using this information, we were able to update the total number of vehicles and total person throughput to include transit as shown in the table below. These person throughput figures match the ones shown in Table 20 of the report.

	Vehicles	Person Throughput
1-Person Vehicle	3,686	3,686
2-Person Vehicle	1,283	2,566
3-Person Vehicle	96	308
Transit	56	1,099
TOTAL	5,121	7,659

Person Throughput Totals by Mode

Step 5 – Computation of Mode Share

Mode share in the context of this report is defined as the proportion of persons utilizing each type of vehicle. This is determined by dividing the number of persons who utilized a particular type of vehicle by the total person throughput. The results of these calculations are found below. The transit mode share figure in this table matches the transit mode share reported in Table 21 of the report.

	Person Throughput	Mode Share
1-Person Vehicle	3,686	48.1%
2-Person Vehicle	2,566	33.5%
3-Person Vehicle	308	4.0%
Transit	**1,099**	**14.3%**
TOTAL	7,659	

Express Lanes Mode Share P.M. Peak Period Northbound

Step 6 – Computation of Average Vehicle Occupancy

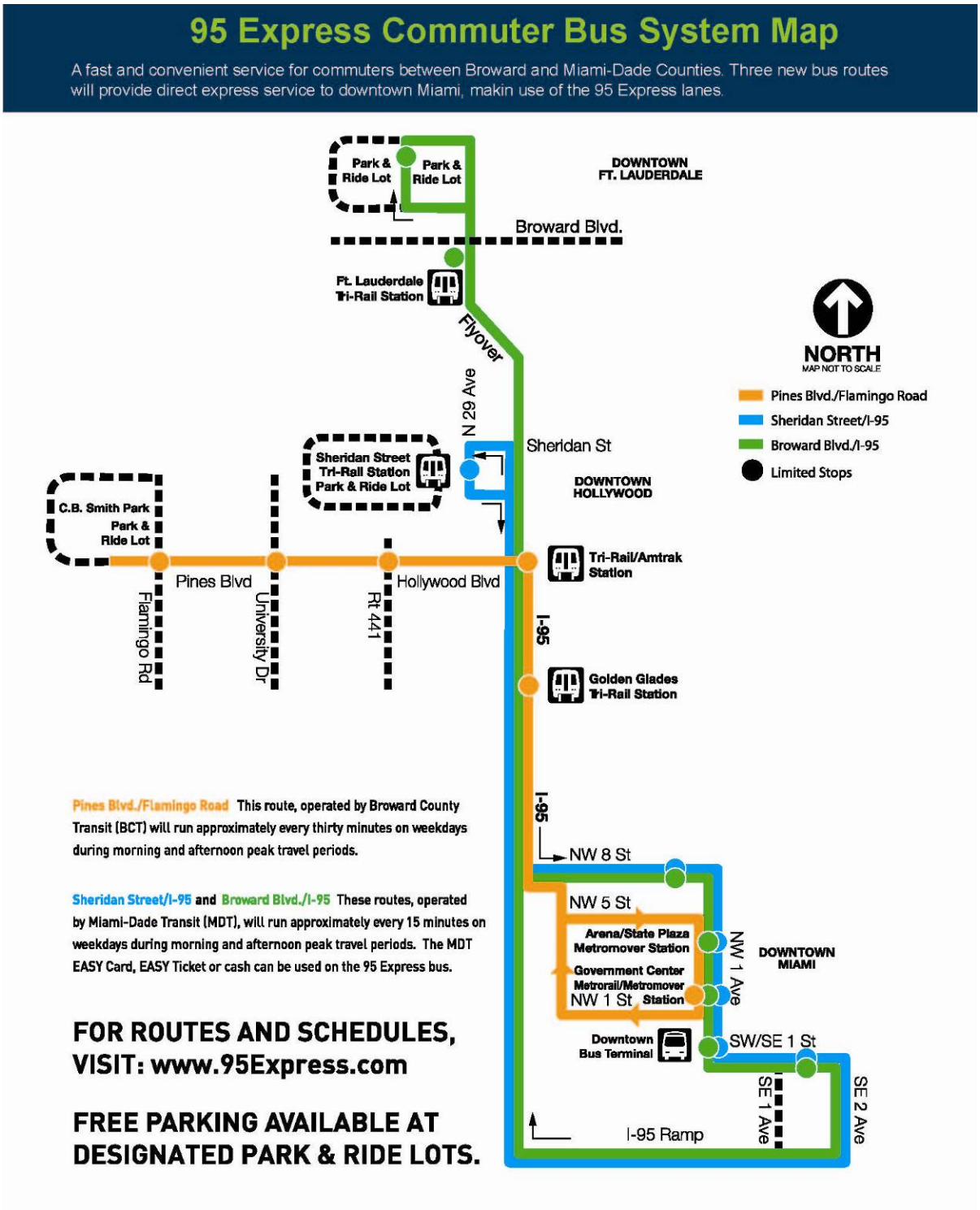
Average vehicle occupancy (AVO) is simply defined as the average number of persons per vehicle. To find the AVO, the equation found below is used. The AVO figure of 1.50 for the Express Lanes in the p.m. peak period northbound matches the AVO figure reported in Table 18 of the report.

$$AVO = \frac{Total\ Person\ Throughput}{Total\ Volume} = \frac{7{,}659\ persons}{5{,}121\ vehicles} = 1.50\ persons\ per\ vehicle$$

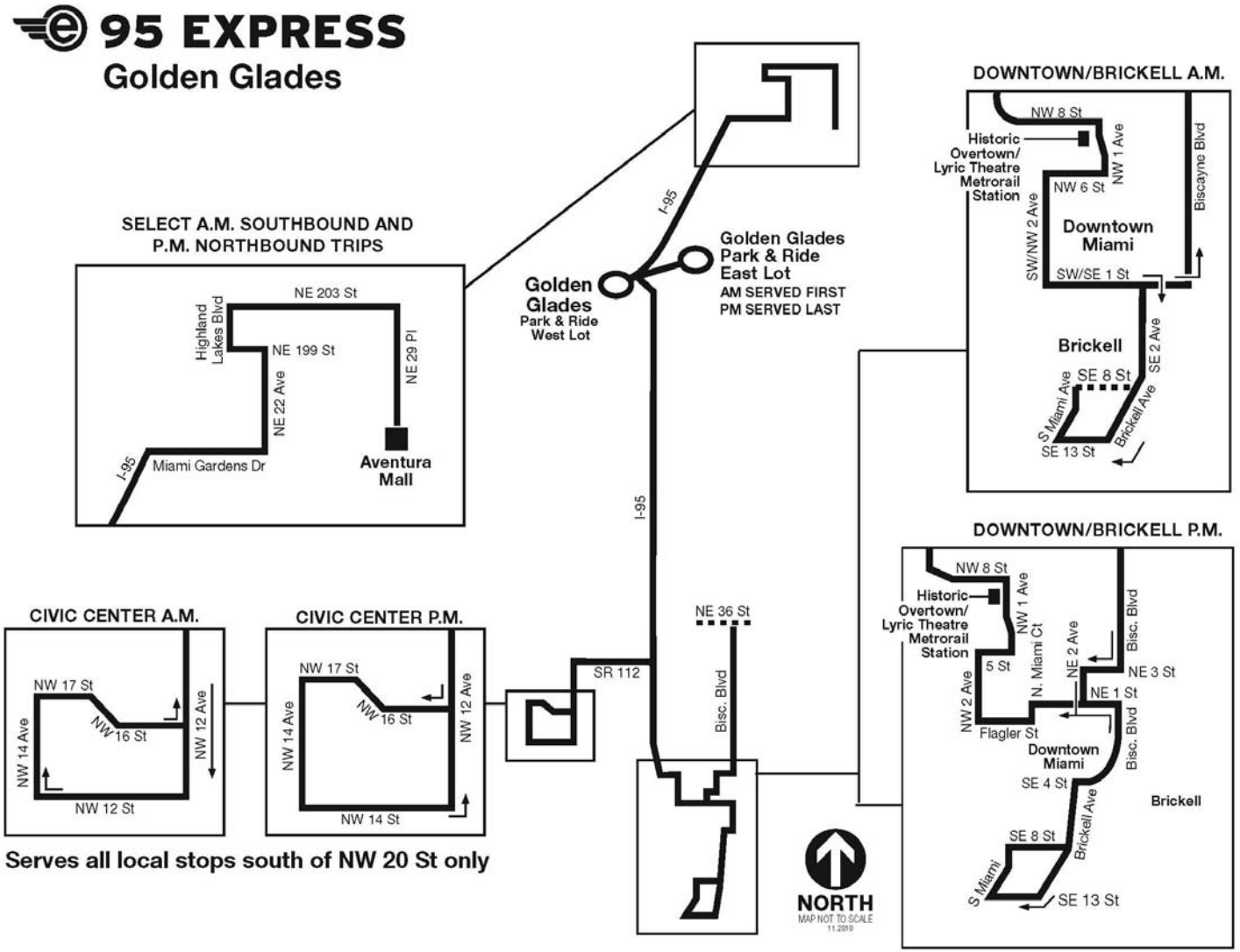
These six steps were repeated for the a.m. peak period in the southbound direction as well as for the general purpose lanes and the facility as a whole.

Appendix D: 95 Express Bus Route Maps

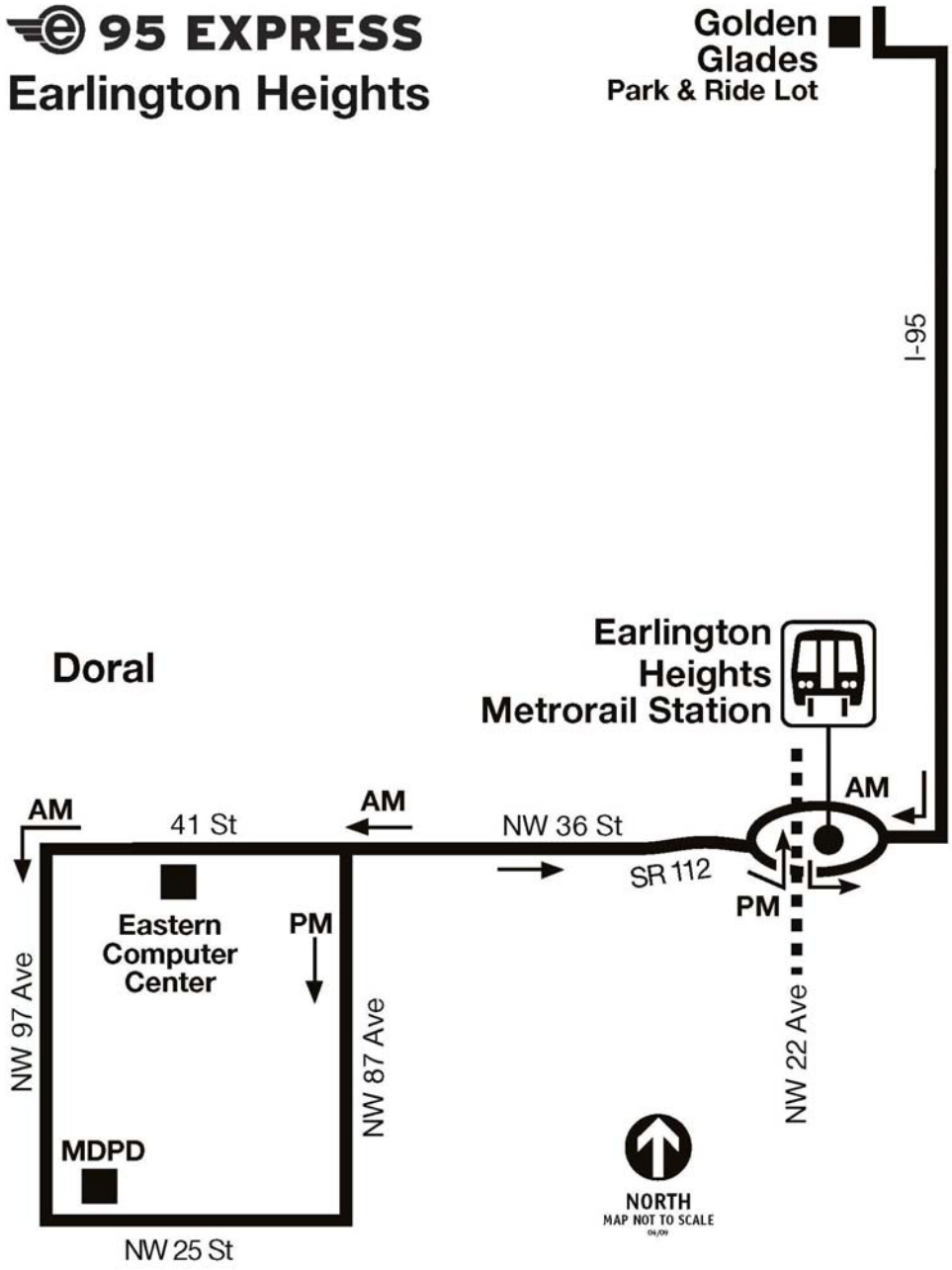
Current Route Map for the Pines Blvd. Express, Dade-Broward Express (Broward Blvd.) and Dade-Broward Express (Sheridan St.)



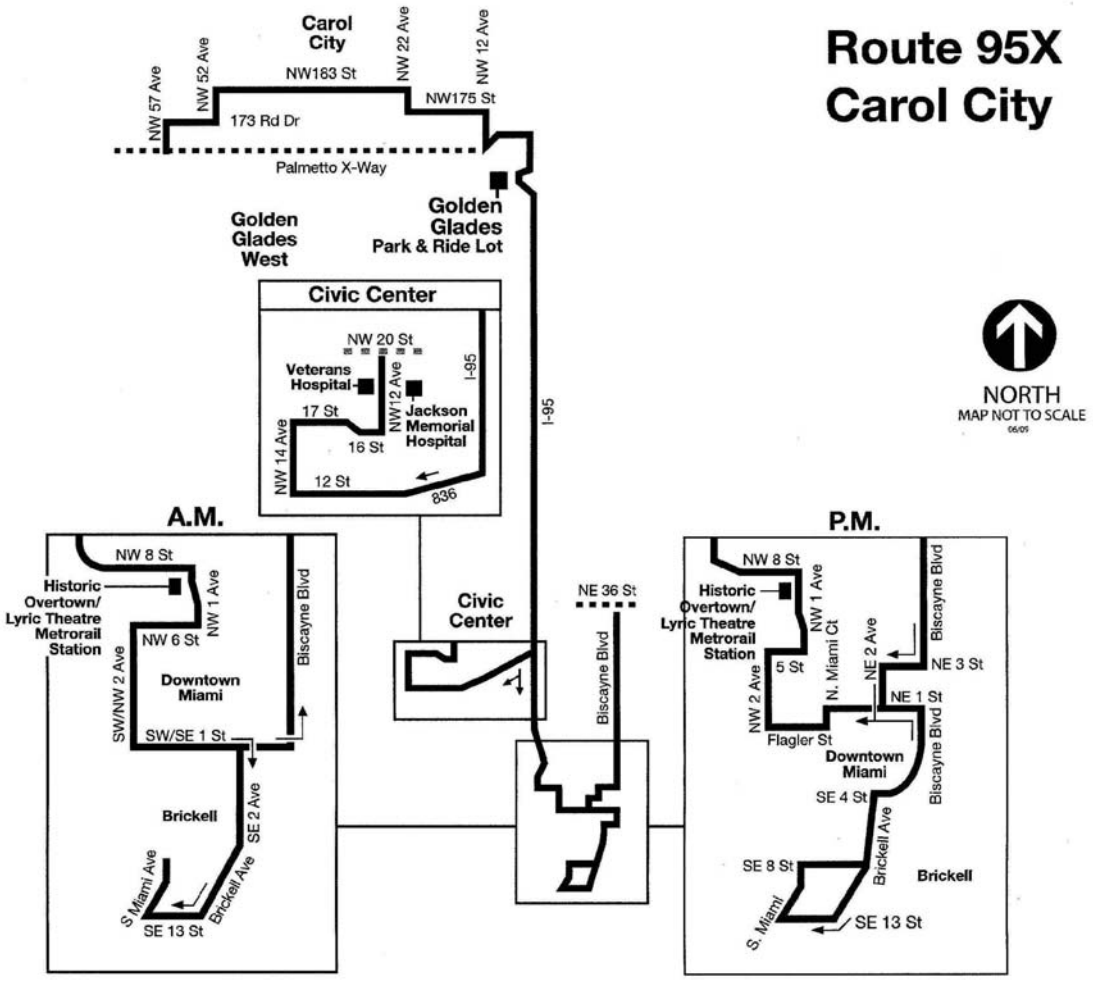
Current route map for the 95X to Golden Glades



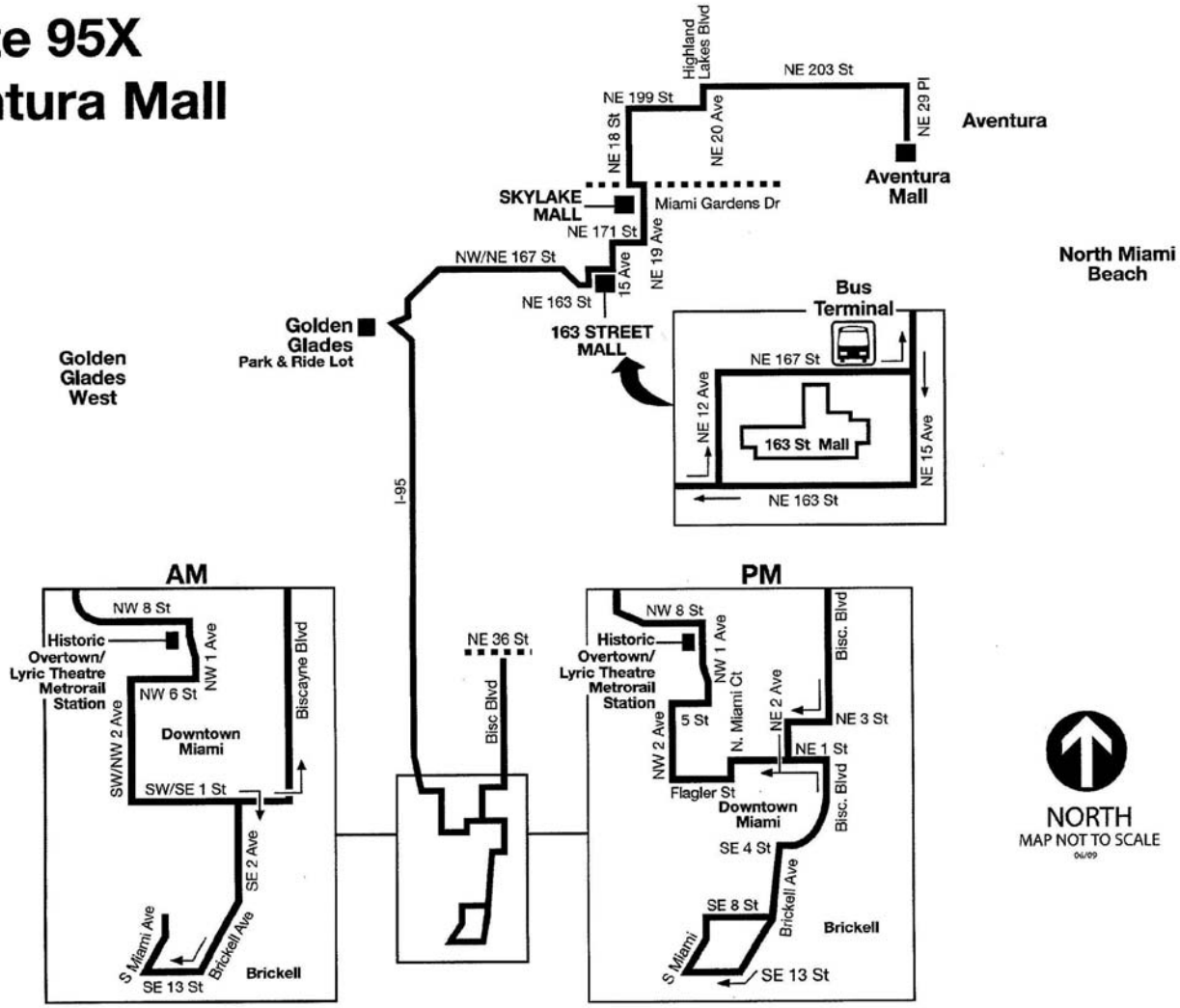
Current Route Map for the 95X (Earlington Heights Segment)



Former Route Map for 95X (this page and next)



Route 95X
Aventura Mall



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