Section 1: Data Inventory and Analysis

The data inventory was developed based on information collected from multiple sources. Field surveys were conducted in 2006 as part of the Tri-Rail Parking and Circulation Study. The other data sources include:

- Station Parking Capacity and Peak Utilization Counts
- Tri-Rail's Monthly Ridership Statistics
- Future Ridership Estimates from Double Track Corridor Improvement Program
- Origin/Destination Data from Transit Development Plans
- Park-and-Ride Lot Reports from Florida Department of Transportation
- Parking Project Information
- Transit System Information for Broward, Miami-Dade, and Palm Beach Counties

Station Parking Capacity and Peak Utilization Counts

This section presents existing parking capacity at Tri-Rail stations and a comparison of peak utilization counts from 2006 and 2008. The utilization data was used to identify overcapacity station parking facilities.

2008 Data

SFRTA provided parking capacity and peak utilization data (July 2008) for the 18 Tri-Rail stations. As Table 1 shows, the majority of stations have reached or exceeded capacity. The determination of overcapacity parking facilities was made based on the sliding scale adopted in the 2007 Parking and Circulation Study. The methodology used a parking capacity definition of between 85 to 95 percent utilization of the total parking spaces provided at a station, as recommended by FDOT, to account for parking turnover. The three stations that presently have the most excess capacity are Cypress Creek, Fort Lauderdale, and Hialeah Market.

Table 1: 2008 Tri-Rail Station Parking Capacity and Peak Utilization

Station	Available Tri-Rail Spaces	Vehicles Observed	Overflow And Nearby Street Parking	Total	Utilization Rate	Status
Mangonia Park	272	272	5	277	102%	Over Capacity
West Palm Beach	114	111	55	166	146%	Over Capacity
Lake Worth	225	200	6	206	92%	Over Capacity
Boynton Beach	324	288	0	288	89%	Over Capacity
Delray Beach	129	127	2	129	100%	Over Capacity
Boca Raton	159	148	0	148	93%	Over Capacity
Deerfield Beach	236	159	15	174	74%	Approaching Capacity
Pompano Beach	259	193	0	193	75%	Approaching Capacity
Cypress Creek	560	232	0	232	41%	Space Available
Fort Lauderdale	875	276	1	277	32%	Space Available
Fort Lauderdale Airport Station	183	171	0	171	93%	Over Capacity
Sheridan Street	592	412	0	412	70%	Approaching Capacity
Hollywood	150	139	0	139	93%	Over Capacity
Golden Glades	1027	1025	16	1041	101%	Over Capacity
Opa-locka	72	69	7	76	106%	Over Capacity
MetroRail Transfer	44	43	13	56	127%	Over Capacity
Hialeah Market	123	78	0	78	63%	Space Available
Miami Airport	143	125	10	135	94%	Over Capacity
Total	5487	4068			74%	Approaching Capacity

Note: parking utilization in July 2008

Comparison of 2006 and 2008 Station Parking Utilization

A comparison of the 2006 and 2008 parking utilization is presented in Figure 1 and Table 2. Both utilize data collected during the month of July.

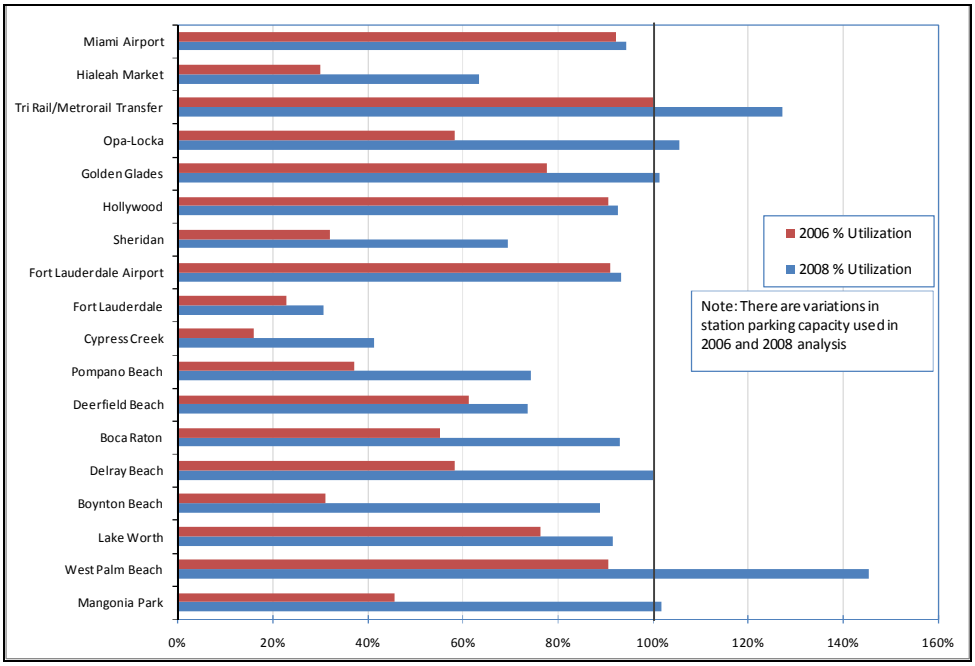


Figure 1: Comparison of 2006 and 2008 Station Parking Utilization

Table 2: Comparison of 2006 and 2008 Station Parking Utilization

Station	2006 Capacity	2006 Utilization	2006 % Utilization	2008 Capacity	2008 Utilization	2008 % Utilization
Mangonia Park	274	125	46%	272	277	102%
West Palm Beach	139	126	91%	114	166	146%
Lake Worth	85	65	76%	225	206	92%
Boynton Beach	330	103	31%	324	288	89%
Delray Beach	130	76	58%	129	129	100%
Boca Raton	163	90	55%	159	148	93%
Deerfield Beach	255	156	61%	236	174	74%
Pompano Beach	272	101	37%	259	193	75%
Cypress Creek	556	89	16%	560	232	41%
Fort Lauderdale	394	90	23%	875	269	31%
Fort Lauderdale Airport	180	164	91%	183	171	93%
Sheridan	475	152	32%	592	412	70%
Hollywood	141	128	91%	150	139	93%
Golden Glades	216	168	78%	1027	1041	101%
Opa-Locka	72	42	58%	72	76	106%
Tri Rail/Metrorail Transfer	41	41	100%	44	56	127%
Hialeah Market	70	21	30%	123	78	63%
Miami Airport	181	167	92%	143	135	94%

locations with notable variation in parking capacity

Notes:

(1) Lake Worth - opened a new lot under I-95; previously under construction
(2) Fort Lauderdale - In 2006 counted only 100 spaces north of Broward Boulevard as other area was being used for construction staging.
(3) Sheridan Street – FDOT opened sections that were previously being used for construction staging.
(4) Golden Glades – In 2006, only lots close to Tri-Rail were counted
(5) Hialeah Market – 2006 capacity only included closest spaces, not spaces adjacent to SE 10th Court; 2008 took into account these parking spaces.

There were minor variations in the total number of parking spaces used in the 2006 and 2008 analysis. These variations are most notable at Ft. Lauderdale, Sheridan, and Golden Glades, where stations are located adjacent to large park-and-ride lots. At these locations, it is difficult to determine the parking spaces that are used by Tri-Rail patrons. The parking capacity at the Lake Worth Station was increased with the opening of the parking facility under I-95.

Overall, an increase in parking utilization is evident along the entire Tri-Rail system.

Ridership Statistics

Operations Reports

Tri-Rail operations reports from January 2007 to July 2008 were obtained and reviewed. The average weekday boardings for each month were plotted in Figure 2. As Figure 2 indicates, there has been a notable increase in Tri-Rail boardings. Typically, there is a slight reduction in boardings during the months of June, July, and December due to

school closures and holidays. The average increase in weekday boardings in July 2008 in comparison to the corresponding time period in 2007 is 46 percent (approximately 4,800 more weekday boardings).

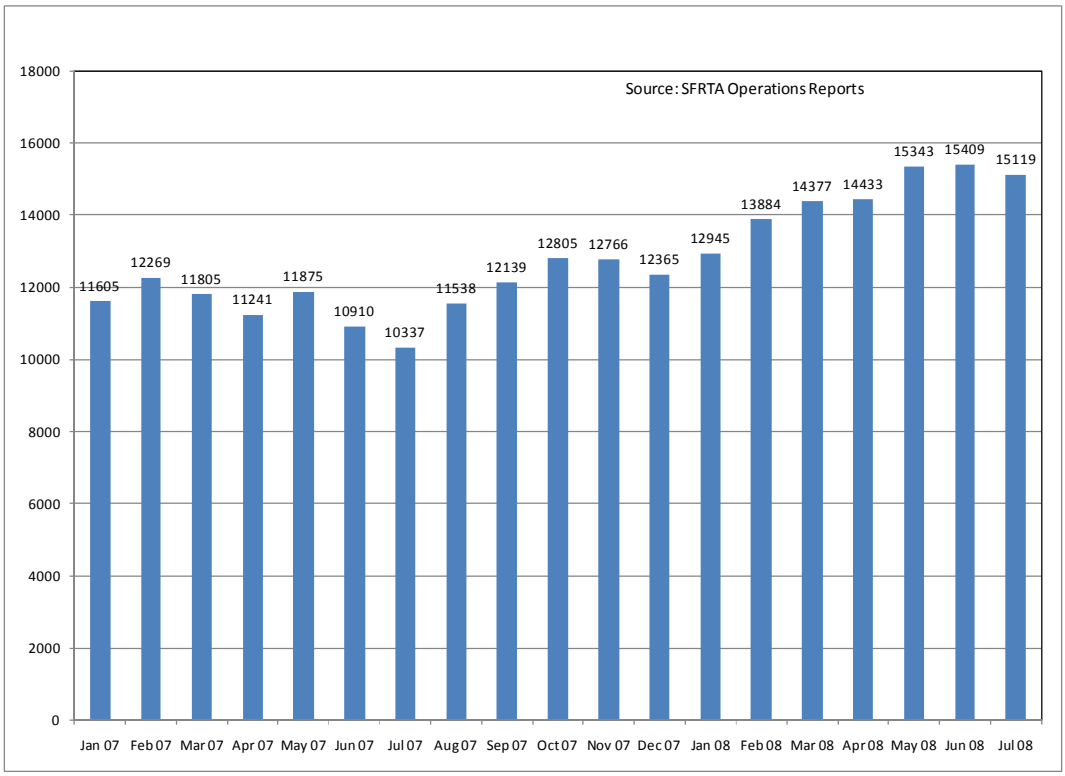


Figure 2: Average Weekday Boardings

Table 3 presents average AM, PM, Off-peak, and weekday boardings for each station based on the Tri-Rail operations report for July 2008. Based on Table 3, the stations with highest weekday boardings include Tri-Rail/Metrorail Transfer, Cypress Creek, Fort Lauderdale, Boca Raton, West Palm Beach, and Pompano Beach.

Table 3: Weekday Boardings by Station (July 2008)

Station	AM Peak	PM Peak	Off Peak	Total Weekday	Rank
Mangonia Park	311	227	137	675	15
West Palm Beach	325	445	192	962	5
Lake Worth	424	215	178	817	10
Boynton Beach	379	185	132	696	14
Delray Beach	255	224	109	588	16
Boca Raton	251	599	135	985	4
Deerfield Beach	329	362	164	855	8
Pompano Beach	340	382	179	901	6
Cypress Creek	427	542	230	1199	2
Fort Lauderdale	441	428	248	1117	3
Fort Lauderdale Airport	301	353	237	891	7
Sheridan	390	191	122	703	13
Hollywood	327	289	206	822	9
Golden Glades	326	202	206	734	12
Opa-Locka	122	83	71	276	17
Tri Rail/Metrorail Transfer	408	1043	461	1912	1
Hialeah Market	88	98	45	231	18
Miami Airport	187	343	230	760	11
				15124	

Comparison of Tri-Rail Boardings and Parking Utilization

A comparison was made between weekday boardings and parking utilization data for July 2008. The data was used to determine a ratio of parking utilization per boarding at each station. As Table 4 indicates, the ratio of parking utilization per boarding for the Golden Glades Station is unrealistic, indicating that the 2008 parking utilization data do not distinguish Tri-Rail riders parking from non-Tri-Rail park-and-ride at the facilities. The low percentage of park-and-ride for the Tri-Rail/Metrorail Transfer station is understandable given the high rate of transfer between Tri-Rail and Metrorail.

Table 4: Comparison of Parking Utilization and Weekday Boardings by Station

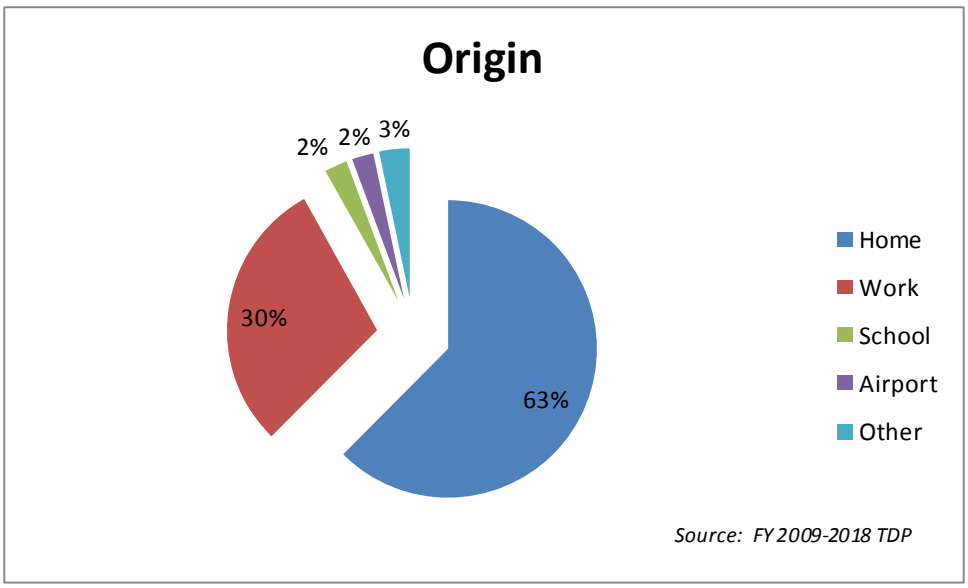
Station	Total Weekday Boardings	2008 Parking Utilization	% Parking Utilization per Boarding
Mangonia Park	675	277	41%
West Palm Beach	962	166	17%
Lake Worth	817	206	25%
Boynton Beach	696	288	41%
Delray Beach	588	129	22%
Boca Raton	985	148	15%
Deerfield Beach	855	174	20%
Pompano Beach	901	193	21%
Cypress Creek	1199	232	19%
Fort Lauderdale	1117	269	24%
Fort Lauderdale Airport	891	171	19%
Sheridan	703	412	59%
Hollywood	822	139	17%
Golden Glades	734	1041	142%
Opa-Locka	276	76	28%
Tri Rail/Metrorail Transfer	1912	56	3%
Hialeah Market	231	78	34%
Miami Airport	760	135	18%

Origin-Destination Data

SFRTA's *2007 Transit Development Plan (TDP) - Minor Update* and *Draft 2009-2018 Transit Development Plan – Major Update* were reviewed to determine origin-destination (O-D) characteristics of Tri-Rail commuters. The TDPs provide O-D data by type of origin and by geographic location.

O-D by Type

The types of origin or destination were broadly categorized as home, work, school, airport, and other. Tri-Rail serves Fort Lauderdale, Miami, and Palm Beach international airports. The figures shown below indicate that Tri-Rail is mostly used for work and school trips where fixed work hours/school schedules make it possible to use a mode such as Tri-Rail.



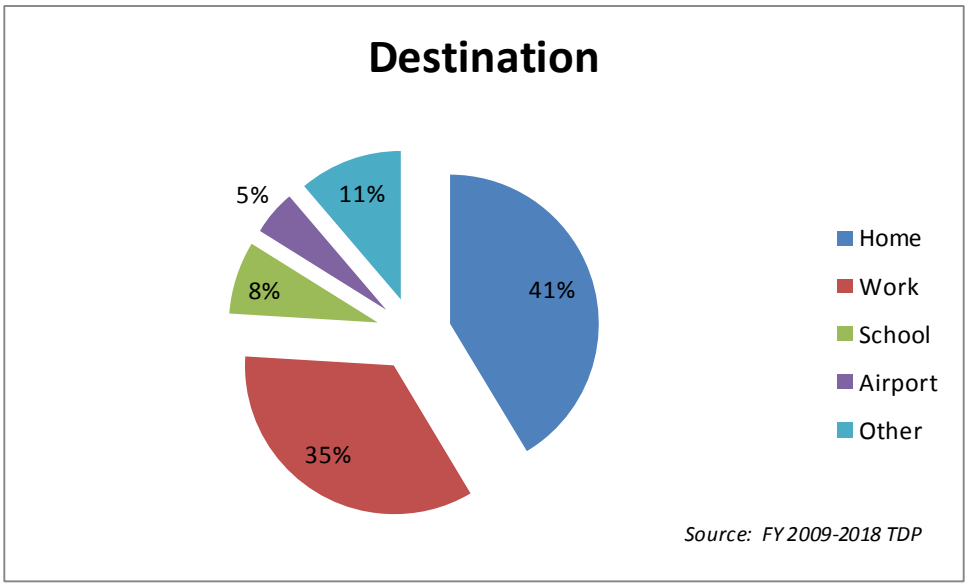
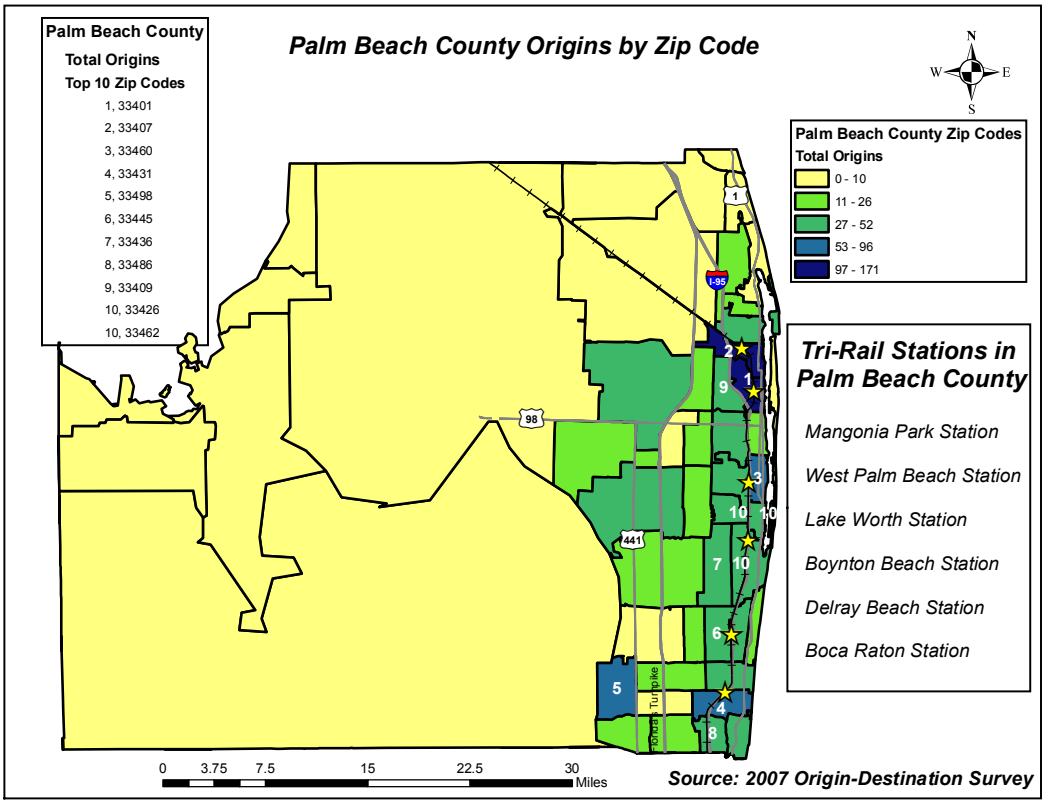


Figure 3: Origin and Destination of Tri-Rail Riders (2008)

O-D by Geographic Location

Based on an on-board survey conducted in 2007, the 2009-2018 TDP provides origins and destinations of Tri-Rail users by ZIP code. ZIP codes with highest trip origins and destinations are presented for each county. In general, the proximity of trip generators and attractors to stations appears to be a significant determinant of Tri-Rail usage. The highest origins and destinations are indicated at the termini of the corridor and in the Ft. Lauderdale area.



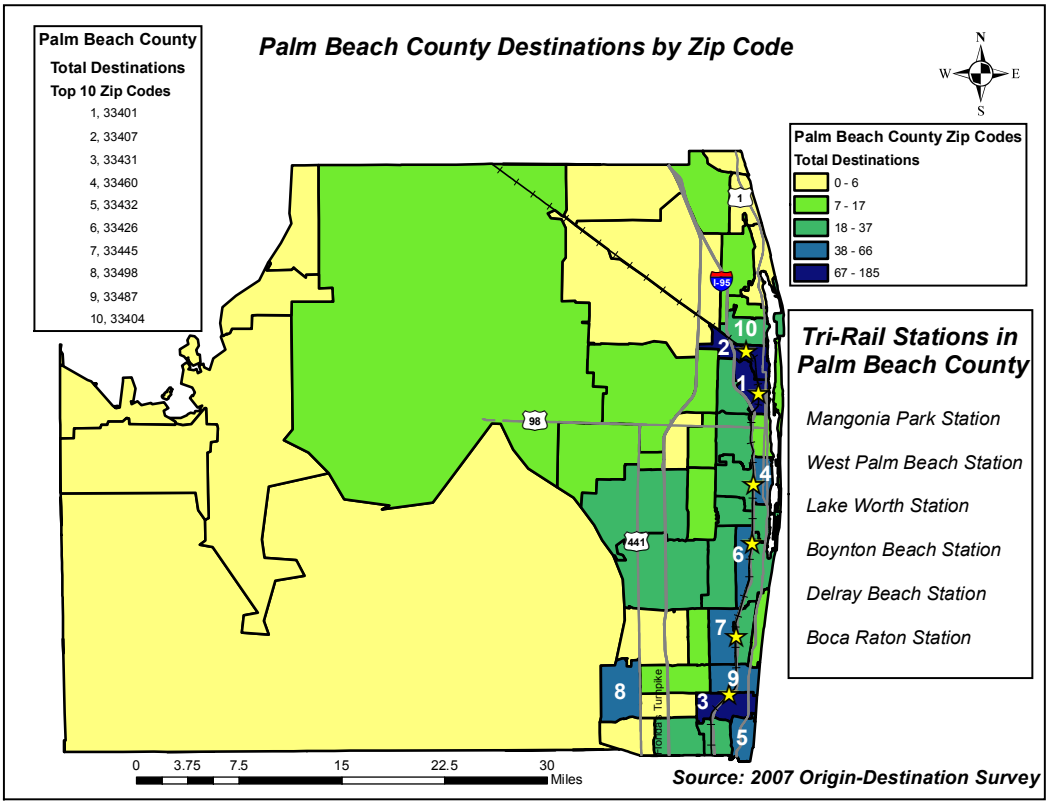
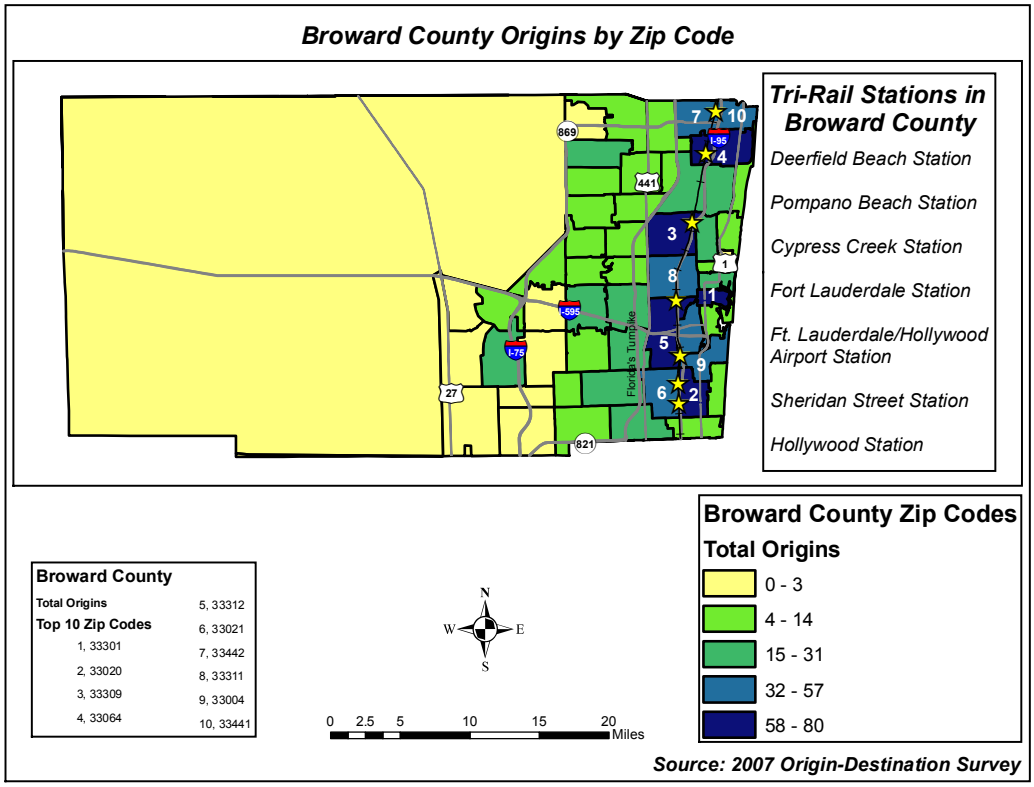


Figure 4: Origins and Destinations of Tri-Rail Riders in Palm Beach County



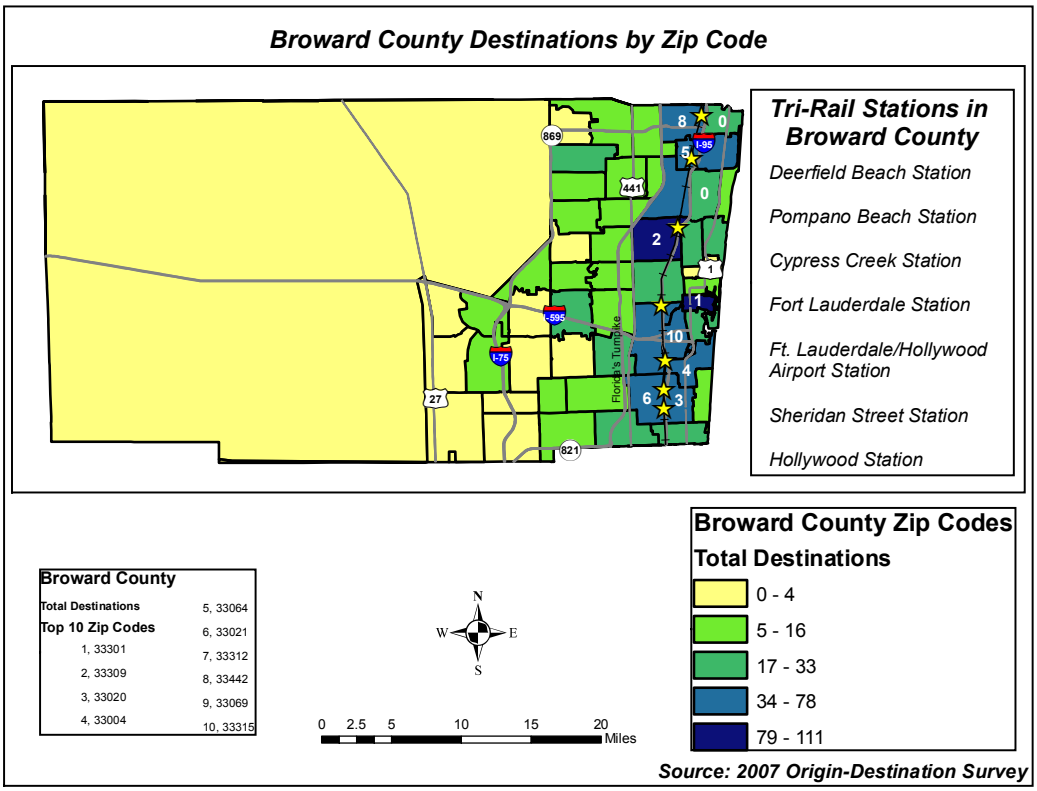
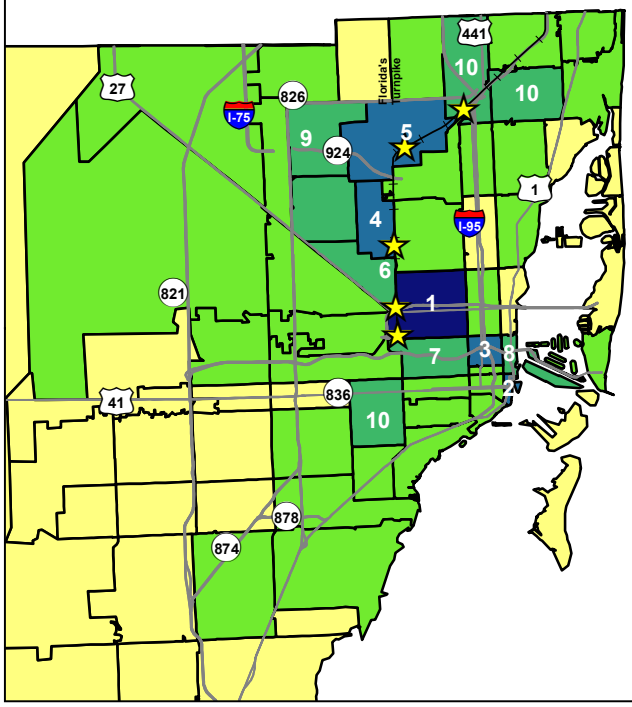


Figure 5: Origins and Destinations of Tri-Rail Riders in Broward County

Miami-Dade County Origins by Zip Code



Tri-Rail Stations in Miami-Dade County

Golden Glades Station

Opa Locka Station

Metrorail Transfer Station

Hialeah Market Station

Miami Airport Station

Miami-Dade County

Total Origins

Top 10 Zip Codes

1, 33142
2, 33131
3, 33136
4, 33013
5, 33054
6, 33010
7, 33125
8, 33132
9, 33014
10, 33134
10, 33169
10, 33162

N
W E
S

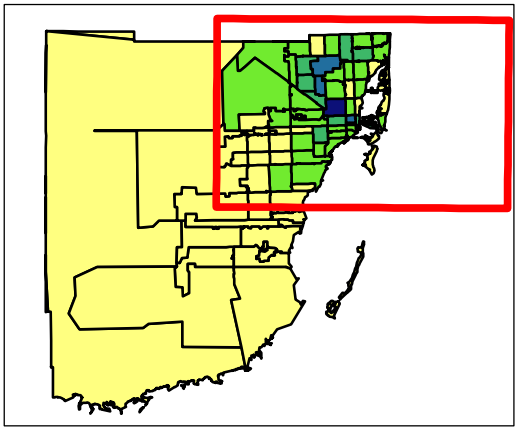
0 1.5 3 6 9 12 Miles

Miami-Dade County Zip Codes

Total Origins

- 0 - 4
- 5 - 13
- 14 - 28
- 29 - 81
- 82 - 146

Location Map



Source: 2007 Origin-Destination Survey

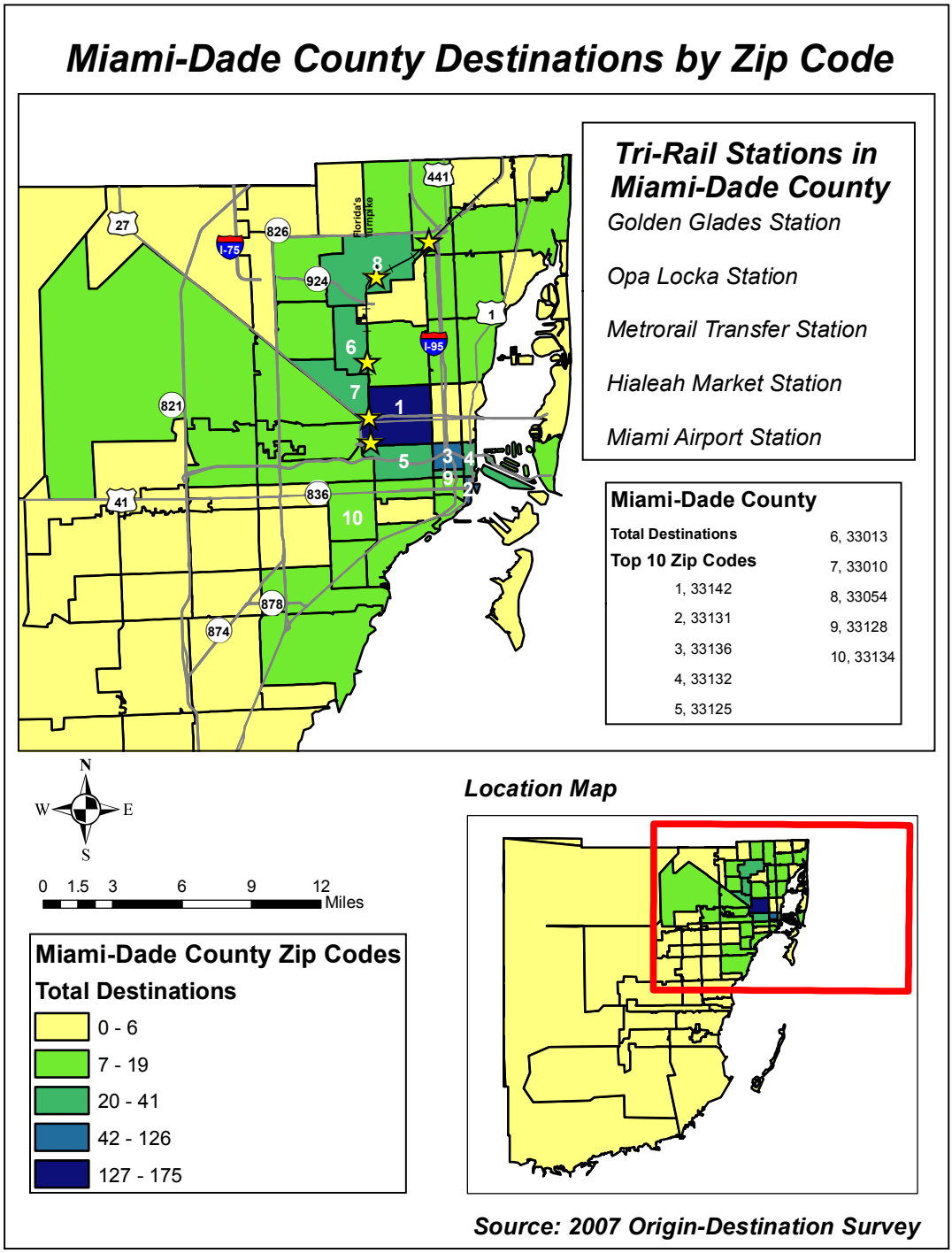
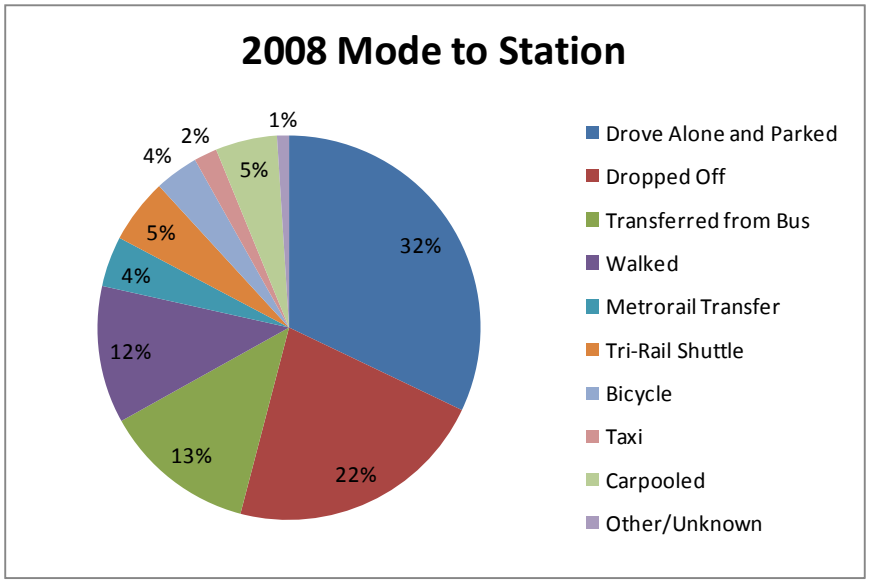


Figure 6: Origins and Destinations of Tri-Rail Riders in Miami-Dade County

Access Mode of Tri-Rail Commuters

The 2007 TDP and the 2009-2018 Draft TDP were reviewed to determine frequently used modes to access Tri-Rail stations. The survey results from these reports were compared to examine changes in modal shares that would potentially indicate if there has been an increase in Tri-Rail usage by choice riders. The data for this survey was collected during the peak and off-peak periods.

Access Modes to Station



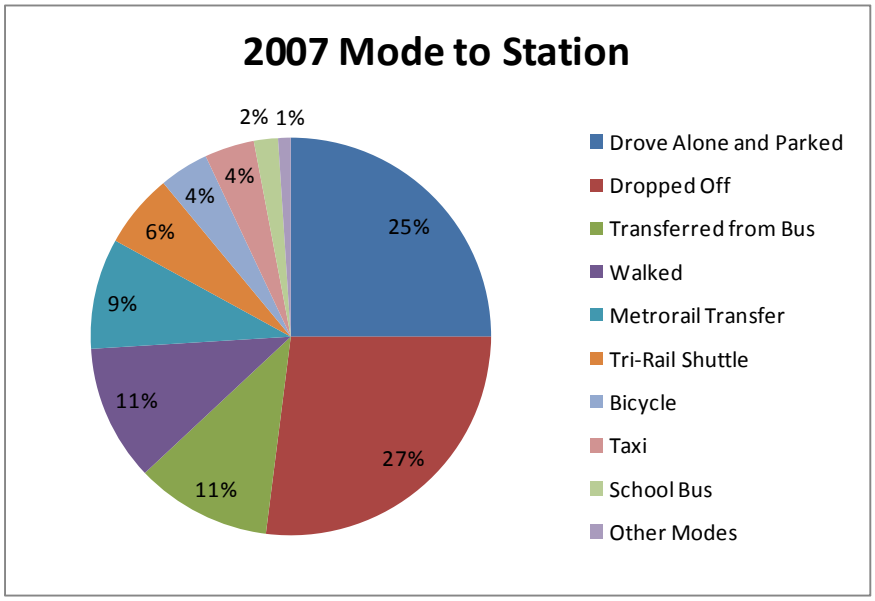


Figure 7: Access Modes to Station

A comparison of modes of arrival by individual modes is difficult since there can be variations in the data collection methodologies. Therefore, a comparison was made between three broad categories: private vehicle, transit, and other modes. The results of comparison are listed below.

- In 2008, modal share of private vehicles, including carpools and taxi is approximately 61 percent and in 2007 the corresponding modal share was approximately 56 percent.
- In 2008, modal share of transit vehicles is 22 percent and in 2007 the corresponding modal share was approximately 26 percent.
- In 2008, modal share of modes such as walking, bicycling, and other/unknown modes is approximately 17 percent and in 2007 the corresponding modal share is 18 percent.

Overall, data indicates a slight increase in the modal share of private vehicles in 2008 compared to 2007. The increase in private vehicle mode share might have contributed to the slight reduction in transit modal share. The increase in private vehicle modal share is consistent with the increase in utilization of Tri-Rail parking facilities that was presented in previous sections. Therefore, trends in parking utilization and mode of arrival data indicates that a substantial portion of the increase in the use of Tri-Rail has come from choice riders.

Access Mode to Station during A.M. Peak Period

As part of the Tri-Rail Parking and Circulation Study, a survey was conducted at each station to determine the mode of arrival to station during the AM peak period (6:00 AM to 9:00 AM). The data collected during the AM peak period typically captures the "first trip" of the Tri-Rail users and may be the best indicator of park-and-ride propensity, as the majority of trips are home based. The percentage of pedestrian arrivals, as noted in Figure 8 and Table 5, is likely inflated at the stations (Cypress Creek, Tri-Rail/Metrorail Transfer, and Lake Worth) where the location of the station platform in relation to the parking lot made it difficult to eliminate duplication of counts between modes.

The results of the study are presented for each station and systemwide. Overall, the primary access mode to stations was driving to the station, parking, and then boarding the train, which is identified as "Park-and-Ride." The percentage of park-and-rides is approximately two times higher during the AM peak period in comparison to the daily percentage, which is provided in the TDP surveys. It can be deducted that a lesser percentage of riders have access to a private vehicle for their "second trip," and this is reflected in the daily survey results.

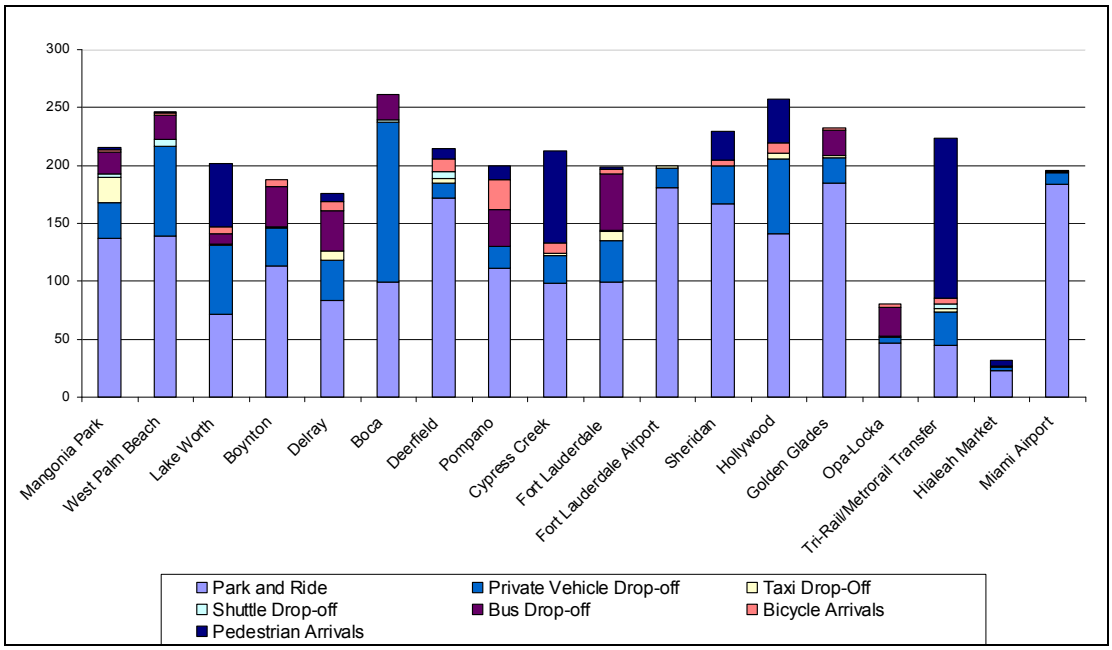


Figure 8: Access Modes to Station during AM Peak Period (2006)

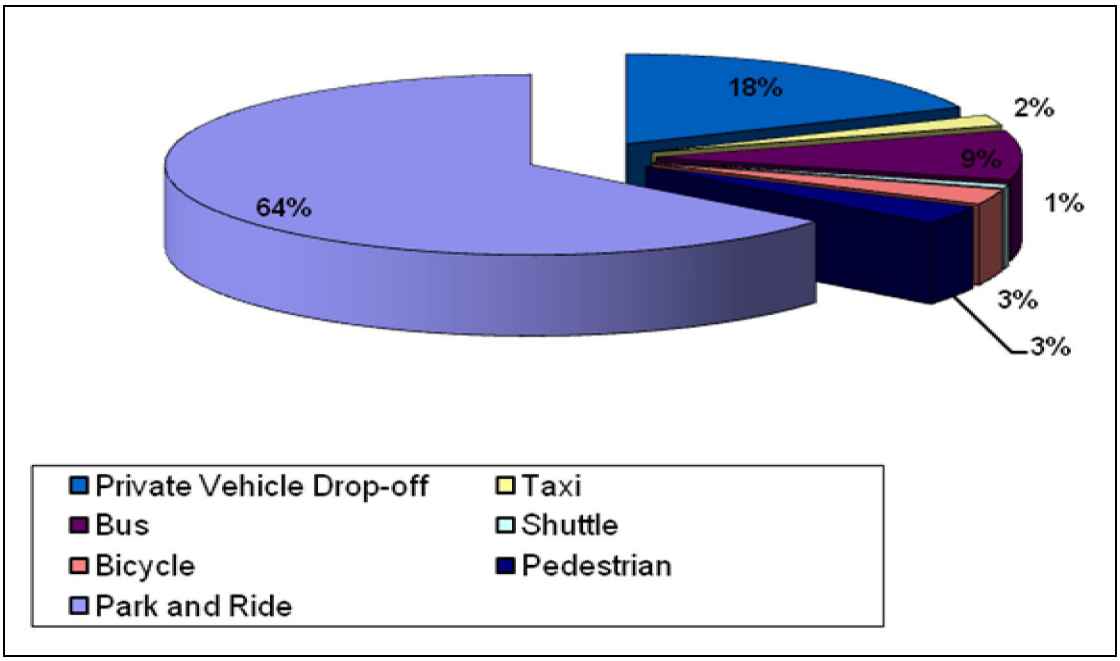


Figure 9: Access Modes to Station during AM Peak Period System-wide (2006)

Table 5: Person Trips by Access Mode, AM Peak (2006)

Station	Park and Ride	Private Vehicle Drop-off	Private Vehicle Pick-Up	Taxi Drop-Off	Shuttle Drop-off	Bus Drop-off	Bicycle Arrivals	Pedestrian Arrivals	Total
Mangonia Park	138	30	22	26	3	19	2	2	242
West Palm Beach	139	78	27	0	6	21	2	1	274
Lake Worth*	72	60	4	1	0	9	6	54	206
Boynton Beach	113	33	10	0	1	34	6	0	197
Delray Beach	84	35	13	8	0	34	8	7	189
Boca Raton	99	138	0	0	2	22	0	0	261
Deerfield Beach	172	13	5	4	6	0	11	9	220
Pompano Beach	111	19	10	0	0	32	26	12	210
Cypress Creek*	98	24	7	2	0	0	9	80	220
Fort Lauderdale	99	36	5	8	1	49	4	2	204
Fort Lauderdale/Hollywood International Airport	180	17	7	2	0	0	0	0	206
Sheridan Street	167	32	3	0	0	0	5	25	232
Hollywood	141	65	22	5	0	0	9	37	279
Golden Glades	185	22	2	2	0	22	2	0	235
Opa-Locka	46	5	3	1	0	25	3	0	83
Tri-Rail/Metrorail Transfer**	45	28	6	3	4	0	5	138	229
Hialeah Market	23	3	0	0	0	0	1	5	32
Miami Airport	184	10	0	1	0	0	1	0	196
Total	**2096**	**648**	**146**	**63**	**23**	**267**	**100**	**372**	**3715**

*Pedestrians likely also include passengers who parked across the street or were dropped-off on site.

**Pedestrians likely include passengers transferring from Metrorail.

Field Inventories

The tables below provide an overall summary of items inventoried during the field observations conducted as part of the 2007 Tri-Rail Parking and Circulation Study. The items listed are those found in the parking lots and drop-off/pick-up waiting areas for each station. A description of "Yes" or "No" in Table 6 indicates the presence or absence of the specific amenity in these areas for each station

Table 6: Passenger Amenities

Station	Bicycle Racks	Bus Shelters	Benches	Crossing Bridge Present	Platform Closest to Parking Area	Ticket Machines
Mangonia Park	3	0	Yes	Yes	West	2
West Palm Beach	1	0	Yes	Yes	East	2
Lake Worth	1	0	Yes	Yes	West	4
Boynton Beach	1	1	Yes	Yes	West	4
Delray Beach	2	3	Yes	Yes	West	2
Boca Raton	2	6	Yes	Yes	West	1
Deerfield Beach	4	0	Yes	No	Both	4
Pompano Beach	2	7	Yes	No	East	3
Cypress Creek	4	5	Yes	Yes	East	4
Fort Lauderdale	2	0	No	Yes	West	3
Fort Lauderdale/Hollywood International Airport	2	0	Yes	No	Both	4
Sheridan Street	2	4	Yes	Yes	East	2
Hollywood	4	0	Yes	Yes	West	2
Golden Glades	1	1	No	Yes	East	1
Opa-Locka	2	3	Yes	No	West	2
Tri-Rail/Metrorail Transfer	4	0	Yes	Yes	West	1
Hialeah Market	2	4	Yes	No	West	2
Miami Airport	1	0	Yes	Yes	West	2
Total	**40**	**34**	**-**	**-**	**-**	**45**

In Table 7, accessibility to each station is described. The presence of signed Tri-Rail Drop-off/Pick-up locations are noted in Table 7 with a "Yes" or "No" designation. At some stations, as also listed in Table 7, drop-off/pick-up areas are signed as "Kiss and Ride" areas. The availability of sidewalks, and the adequacy and clear presence of crosswalks for pedestrians entering the stations were also documented. Please see Section 3 for pictures outlining the issues and concerns per station.

Table 7: Station Accessibility

	Station Access					Traveling Distance (Feet)	
Station	**Signed Tri-Rail Drop-off/Pick-Up Locations**	**Signed Kiss and Ride Locations**	**Connected Sidewalks into Station**	**Crosswalks Present**	**Pedestrian Signals**	**Farthest Parking Space to Station (ft)**	**Closest Disabled Parking Space to Platform (ft)**
Mangonia Park	Yes	No	Yes	Yes	Yes	676	218
West Palm Beach	No	No	Yes	Yes	Yes	780	NA
Lake Worth	No	No	Yes	No	No	439	271
Boynton Beach	Yes	Yes	Yes	Yes	No	550	100
Delray Beach	Yes	No	Connection broken from Atlantic Ave. None off of Congress.	No	No	543	439
Boca Raton	No, Firelane Used	No	Yes	No	No	642	167
Deerfield Beach	Yes (disabled)	No	No	No	No	422	273
Pompano Beach	Yes	No	Yes	Yes	No	576	209
Cypress Creek	Yes	No	Yes	Yes	Yes	1430	110
Fort Lauderdale	No	No	No	No	No	*	132
Fort Lauderdale/Hollywood International Airport	Yes	No	Yes	Yes	No	403	158
Sheridan Street	No	No	Yes, but without ADA Ramps	Yes	No	*	172
Hollywood	No	No	Not at driveway into station.	Yes	No	301	120
Golden Glades	Yes	No	No	No	No	*	720
Opa-Locka	Yes	Yes	Yes	Yes	No	392	108
Tri-Rail/Metrorail Transfer	No		Yes (only from middle of site)	Yes	No	122	146
Hialeah Market	No	No	Yes	No	No	230	160
Miami Airport	Yes	No	Yes	No	No	398	88

Transit Access to Tri-Rail Stations

The existing transit routes of several modes of transit including Metrobus, Broward County Transit, Palm Tran, Metrorail, SFRTA's shuttle bus services, and local municipality circulators were examined to determine the transit accessibility to Tri-Rail stations. The objective of this evaluation is to determine the areas where remote parking facilities may be provided for Tri-Rail commuters. Where transit service is available, Tri-Rail commuters could park at the remote parking facilities and use transit to access the Tri-Rail stations.

Appendix A presents transit routes that provide access to Tri-Rail stations and Table 8 provides a summary of connecting transit routes by station and operating agency.

Table 8: Transit Access to Tri-Rail Stations

Connecting Transit Routes					
Station	**Palm Tran Route**	**Broward County Transit Route**	**Miami-Dade County Transit Route**	**Tri-Rail Connector**	**Other**
Mangonia Park	20, 31, 33				
West Palm Beach	2, 31, 40, 43, 44, 46, 50				
Lake Worth	61, 62				
Boynton Beach	70, 71				Boynton Beach Trolley
Delray Beach	2, 70, 81				Roundabout Shuttle; Amtrak
Boca Raton	2, 94			Boca Center Shuttle	
Deerfield Beach		92, 93		DB1, DB2	Amtrak
Pompano Beach		34, 93, 95		PB1	
Cypress Creek		14, 60, 62		CC1, CC2, CC3	Coconut Creek Shuttle
Fort Lauderdale		9, 22, 81		FL1	Sun Trolley
Fort Lauderdale/Hollywood International Airport		3, 6, 15, 18		FLA1, FLA2	Sun Trolley, Convention Connection, North-South Downtown Circulator
Sheridan Street		3, 12, 17		SS1	City of Dania Beach Shuttle (Blue)
Hollywood		7			Amtrak
Golden Glades		441 Breeze	E, V, 22, 42, 77, 241, 246, 95 Express		
Opa Locka			E, 32, 42		
Tri-Rail/Metrorail Transfer			L, 42, 500		Metrorail, Amtrak
Hialeah Market			J, 1, 36, 42, 46	Koger Shuttle	
Miami International Airport			37, 133, 238		

Source: 2008 Transit Development Plan

Park-and-Ride Lot Reports

FDOT District 4 and 6 were contacted to obtain information on park-and-ride facilities. Both capacity and utilization data were available for District 4, whereas only capacity data was available for District 6. A summary of available data is presented below. As the utilization data for District 4 indicates, the park-and-ride lot at Lake Worth Road and Florida's Turnpike is the only location that indicates significant usage. The park-and-ride facility at Congress Avenue and I-95 was recently closed and the land is currently reverting to the former owner. The proximity of the available lots to the Tri-Rail stations will be considered when additional parking facilities are examined later during the study. The FDOT park-and-ride facilities at Golden Glades, Sheridan Street, Broward Boulevard, and Cypress Creek are heavily used by bus and carpool users, as well as the Tri-Rail commuters. These facilities are not included in the table below because they already serve as Tri-Rail park-and-ride lots.

Table 9: FDOT Maintained Park-and-Ride Facilities

District 4

		Lake Worth Road and Turnpike	Congress Ave and I-95	Okeechobee Blvd and SR 7	Commercial Blvd and I-95
Spring 2005	Total Spaces	68	365		84
	Occupied Spaces	51	13		0
	Percent Occupied	75%	4%		0%
Fall 2005	Total Spaces	76	365		N/A
	Occupied Spaces	30	11		N/A
	Percent Occupied	39%	3%		N/A
Spring 2006	Total Spaces	76	365		68
	Occupied Spaces	54	14		1
	Percent Occupied	71%	4%		1%
Fall 2006	Total Spaces	76	377		68
	Occupied Spaces	54	17		1
	Percent Occupied	71%	5%		1%
Fall 2007	Total Spaces	76	390	46	73
	Occupied Spaces	56	13	19	7
	Percent Occupied	74%	3%	41%	10%

Table 9 continued…

District 6

Location	Total Spaces	Occupied Spaces	Percent Occupied
Golden Glades	1036	N/A	N/A

SFRTA's Planned Parking Projects

SFRTA provided details of the following parking improvement projects. The majority of these projects are identified in the SFRTA's Capital Improvement Program (CIP). The status of funding and information on grant applications are also provided.

Table 10: SFRTA's Planned Parking Projects

Project	Phase	Fiscal Year	Funding	# of Spaces Added
Pompano Beach New West Lot	Construction	2009		Approximately 40
Dania Beach Interim Lot	Planning; Design; Construction	2009		To be determined
Dania Beach Parking Deck	Design; Construction	2009/2010	Not in the CIP; funded project	To be determined
Boca Raton TOD Parking Lot	Design; Construction	2010		To be determined
Cypress Creek West Parking Lot	Construction	2009		Approximately 350
West Palm Beach	Design; Construction	2009/2010		Approximately 120
Boynton Beach Lot Expansion	Construction	2009	Unfunded; applied for TRIP funds	To be determined
Delray Beach Parking Deck	Construction	2009		Approximately 230-360
Opa-Locka Lot Expansion	Construction	2010	Unfunded; applied for TRIP funds	To be determined
Golden Glades Park-and-Ride (East Lot)	Construction	2009	FDOT	To be determined
Golden Glades Intermodal Terminal	Planning	2013		To be determined

Note: Transportation Regional Incentive Program (TRIP)