Miami – Dade County
Kendall Corridor Alternatives Analysis

Purpose, Need, Goals and Objectives

FINAL

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1. PURPOSE

The purpose of the Kendall Corridor Alternatives Analysis is to identify cost-effective, productive and affordable means to use transit capital investments and service improvements to strengthen mobility connections between the Kendall area and other key regional activity centers in Miami-Dade County and the region. These mobility improvements are necessary to support existing travel demand and to support the rapid population, employment and commercial growth occurring in the Kendall area as well as throughout Miami-Dade County.

This study is a reevaluation and update of the findings that lead to the selected of the Locally Preferred Alternative recommended in the *Kendall-SR 826 Major Investment Study* (November 2002). This study will identify a major transit investment strategy for the study area with short, medium and long term improvements.

The purpose of this report is to demonstrate why transportation improvements are necessary in the Kendall area. This report will present the opportunities and deficiencies in the corridor that indicate new transit services are needed in the study area.

2. STUDY AREA

2.1 Project Location

The Kendall Corridor Alternatives Analysis study area is generally defined as follows:

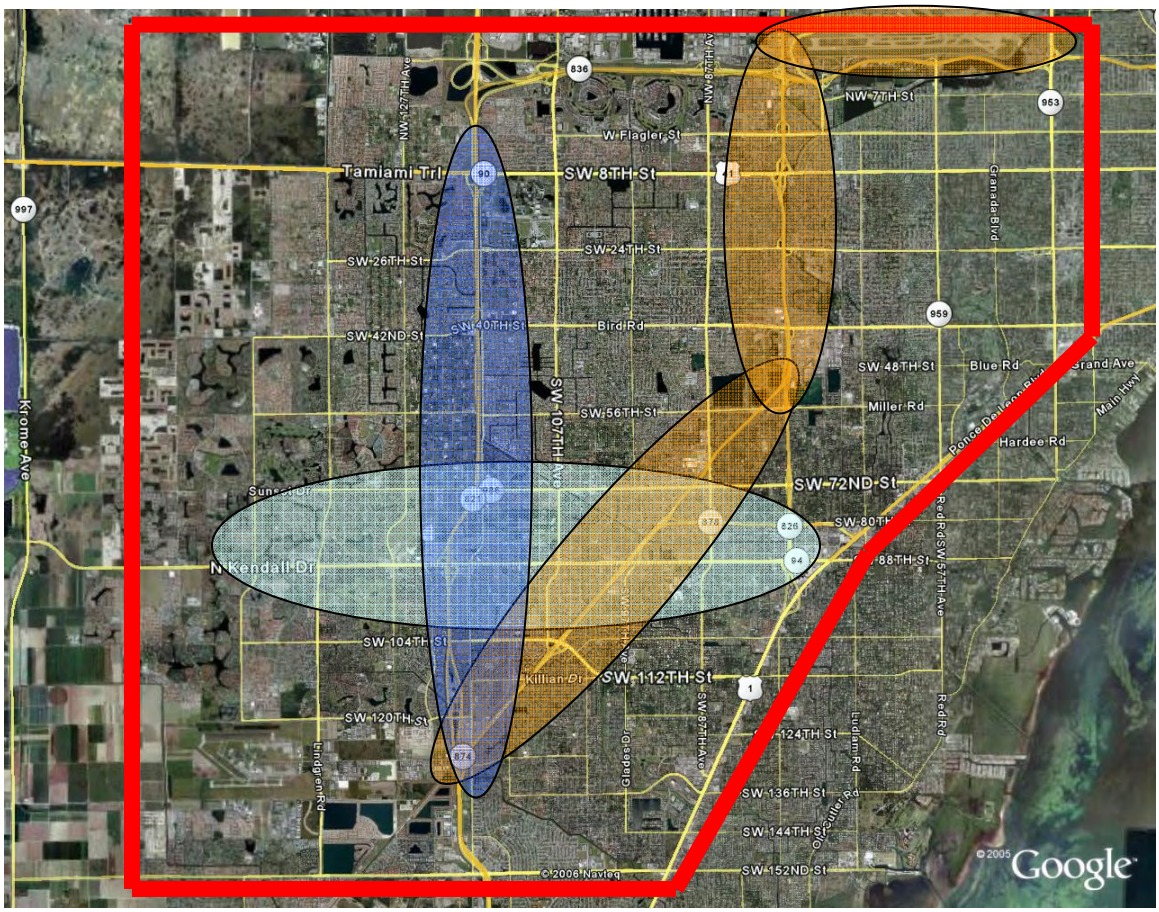
- Northern boundary - SR 836/ Dolphin Expressway
- Eastern boundary - US1/Dixie Highway/SR 826/Palmetto Expressway
- Southern boundary - SW 152nd Street
- Western boundary - SW 157th Avenue

At the center of the Kendall study area is Kendall Drive/SW 88th Street/SR 94. This road is one of the most significant east-west roadway corridors in Miami-Dade County. The boundary between what is commonly referred to as West Kendall and east Kendall is 107th Avenue.

The northern boundary of the study area was selected to provide the potential for connections to the East-West Corridor, the subject of a separate transit Alternatives Analysis under study by the Miami-Dade County MPO. This study corridor, unlike corridors under study in other Alternatives Analysis being undertaken by the Miami-Dade County MPO, covers a dispersed trip-making pattern, with both east-west and north-south oriented trips represented.

The study area is depicted in Figure 1.

Figure 1
Kendall Link Transportation Alternatives Analysis Study Area



As illustrated in Figure 1, the thick border represents the study area boundary while the ovals represent the three general corridors in the study area that are being examined for appropriate transportation improvement alternatives.

Based on the preliminary review of travel patterns and regional activity centers and a cursory review of existing transportation infrastructure in the Kendall area, there are three primary corridors that require focused examination. The three primary corridors under study in the Kendall area are:

- **Kendall Drive** – this corridor is defined as the area from SW 175th Avenue to the west east to US 1/Dixie Highway and bounded to the north by SW 72nd Street and to the south by SW 104th Street.

- **HEFT** – this corridor is defined by the area along the Homestead Extension of the Florida Turnpike (HEFT) from SW 152nd Street to the south and north to SR 836. This corridor then will connect to services proposed to run east west along the SR 836 corridor between Florida International University (FIU) and the Miami Intermodal Center (MIC) east of the Miami International Airport.

- **SR 874/CSXT** – this corridor is defined by the area along the CSX tracks and SR 874 from SW 152nd Street to SR 826 and north along the CSX tracks (Seaboard Coast Line) and/or SR 826 to SR 836/ Miami International Airport ending at the MIC.

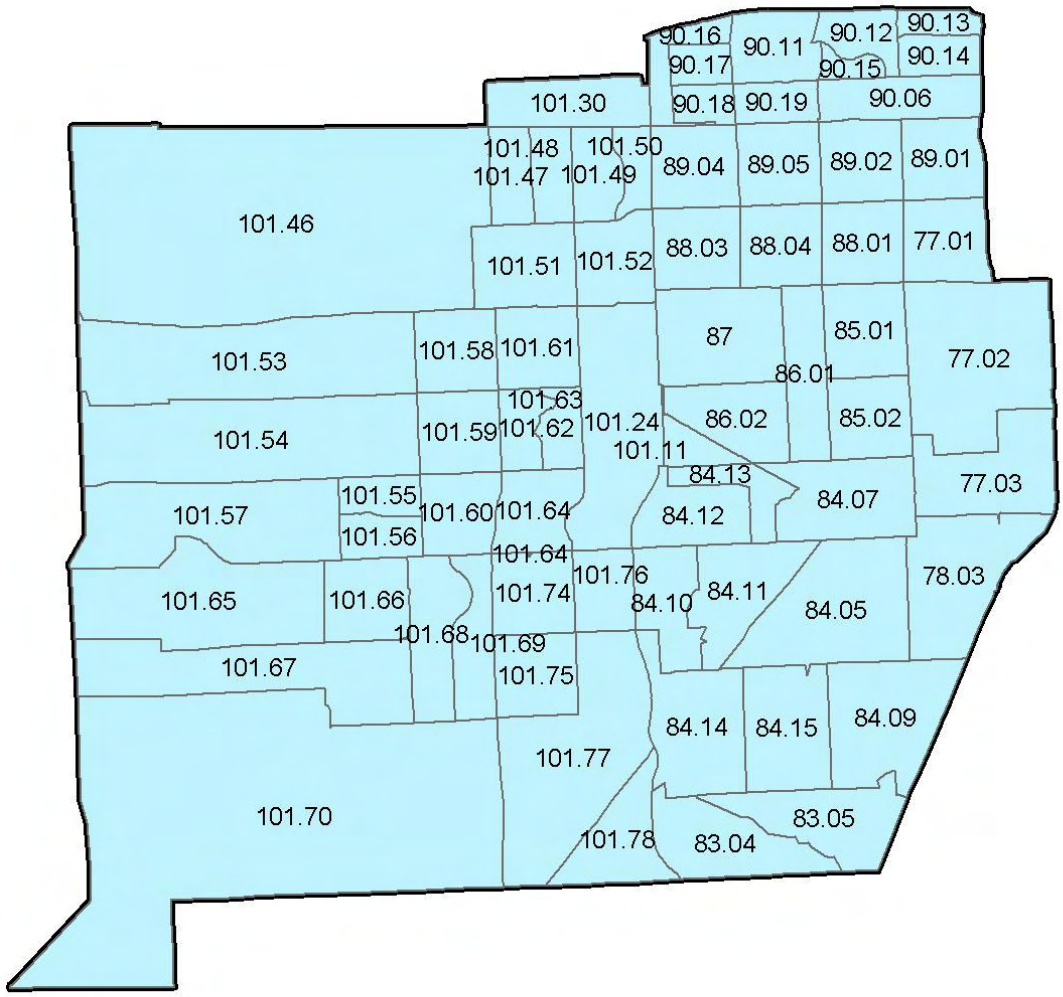
The Census tracts included in the study area are presented in Table 1. Census tract designations changed between 1990 and 2000. Names of many tracts were changed and several new tracts were created. During the period from the 1990 Census to the 2000 Census, the name of the County was changed from “Dade County” to “Miami-Dade County”.

Table 1
Kendall Study Area Census Tracts

1900 Census Tracts			
77.01	84.08	89.02	101.23
77.02	84.09	89.04	101.24
77.03	85.01	89.05	101.25
78.03	85.02	90.06	101.26
83.01	86	101.11	101.27
84.04	87	101.19	101.28
84.05	88.01	101.2	
84.06	88.02	101.21	
84.07	89.01	101.22	
2000 Census Tracts			
77.01	86.02	90.19	101.50
77.02	87.00	101.11	101.51
77.03	88.01	101.24	101.70
78.03	88.03	101.25	101.74
83.04	88.04	101.30	101.75
83.05	89.01	101.46	101.76
84.05	89.02	101.47	101.77
84.07	89.04	101.48	101.78
84.09	89.05	101.49	101.52
84.10	90.06	101.62	101.53
84.11	90.11	101.63	101.54
84.12	90.12	101.64	101.55
84.13	90.13	101.64	101.56
84.14	90.14	101.65	101.57
84.15	90.15	101.66	101.58
85.01	90.16	101.67	101.59
85.02	90.17	101.68	101.60
86.01	90.18	101.69	101.61

The following map depicts the 2000 Census tracts which make up the Kendall study area (Figure 2).

Figure 2
Kendall Area Census Tracts



Source: Miami-Dade County MPO; 2000 U.S. Census

The study area for the Kendall Corridor Alternatives Analysis is comprised of a wide range of land uses, development densities and socioeconomic characteristics. The area includes high-density mixed-use developments; single-family detached residential; multifamily residential; commercial and retail uses and government, educational and health care uses.

The study area includes several key regional activity centers which require linkages to other areas of Miami-Dade County. Major activity centers include:

- Miami International Airport
- Miami Intermodal Center
- Dadeland/Downtown Kendall
- Baptist Medical Center
- Florida International University
- Miami-Dade Community College

2.2 Historic Development Patterns

Historically, the Kendall area developed as an agricultural area on the fringe of Miami. Beginning in the 1970's and continuing to the present day, the area has developed to be major residential community in Miami-Dade County and is one of the fastest growing, most densely populated communities in all of Florida.

Development in the Miami region has spread from the eastern coastal areas toward the Everglades in the west. Drain canals and fill material made it possible to expand the urban area into this natural resource. Land use in the study area has been primarily low to medium-density, including single-family dwelling units, strip commercial development and office parks. These patterns of development increase the need for automobile use, and have therefore increased vehicular traffic volumes in the study area. Efforts to preserve agricultural areas and natural wetlands areas of the Everglades have tried to slow western expansion. These efforts have encouraged in-fill development in higher density, transit friendly patterns located within the already developed areas.

With the western spread of suburban development into the Kendall area, Kendall Drive has changed from a predominantly rural roadway to an urban principal arterial carrying large volumes of traffic. At between four and eight lanes in width, Kendall Drive is a significant barrier between communities on either side.

Residential uses in the western portion of the study area are typically in developments. Those developments closest to the road are usually townhouse and apartment complexes, while single family homes are closer to the interior of block, away from the major roadways. Developments are typically separated from adjacent roadways and neighborhoods by walls.

Commercial development in the western part of the study area typically includes shopping centers, big box retailers, fast food restaurants and sit-down chain restaurants. These uses are typically set back from the roadway and fronted by large parking areas.

Residential development in the study corridor between SR 874 and SR 826 is typically in smaller developments set closer to the road. There is less commercial development in this part of the study corridor; it is located primarily adjacent to highway interchanges.

The eastern end of study corridor is characterized by higher density commercial development, including the Dadeland Mall and surrounding office and residential developments of the downtown Kendall area.

There are many community facilities in the study area which derive a significant amount of their trips from special needs groups such as the elderly, population under 17 and those without a car. These groups have a need for transit services due to there dependency on others for their mobility. Examples of desirable destinations in the study corridor for these groups includes Miami-Dade College (MDC) Kendall Campus, which is attended by over 55,000 students, and Baptist Hospital, which servers over 95,000 patients per year.

2.3 Socioeconomic Conditions and Trends

2.3.1 Population

According to the 2000 U.S. Census, Miami Dade County continues to be the most populous County in the State of Florida, making up 14 percent of the population of the entire state. The County has been Florida's most populous since 1910. Miami Dade County is the eighth largest county in the United States and its population exceeds that of seventeen states and the District of Columbia. [1] The population of the Kendall study area is 518,874, representing a significant proportion of Miami Dade County (Table 2 and Figure 3).

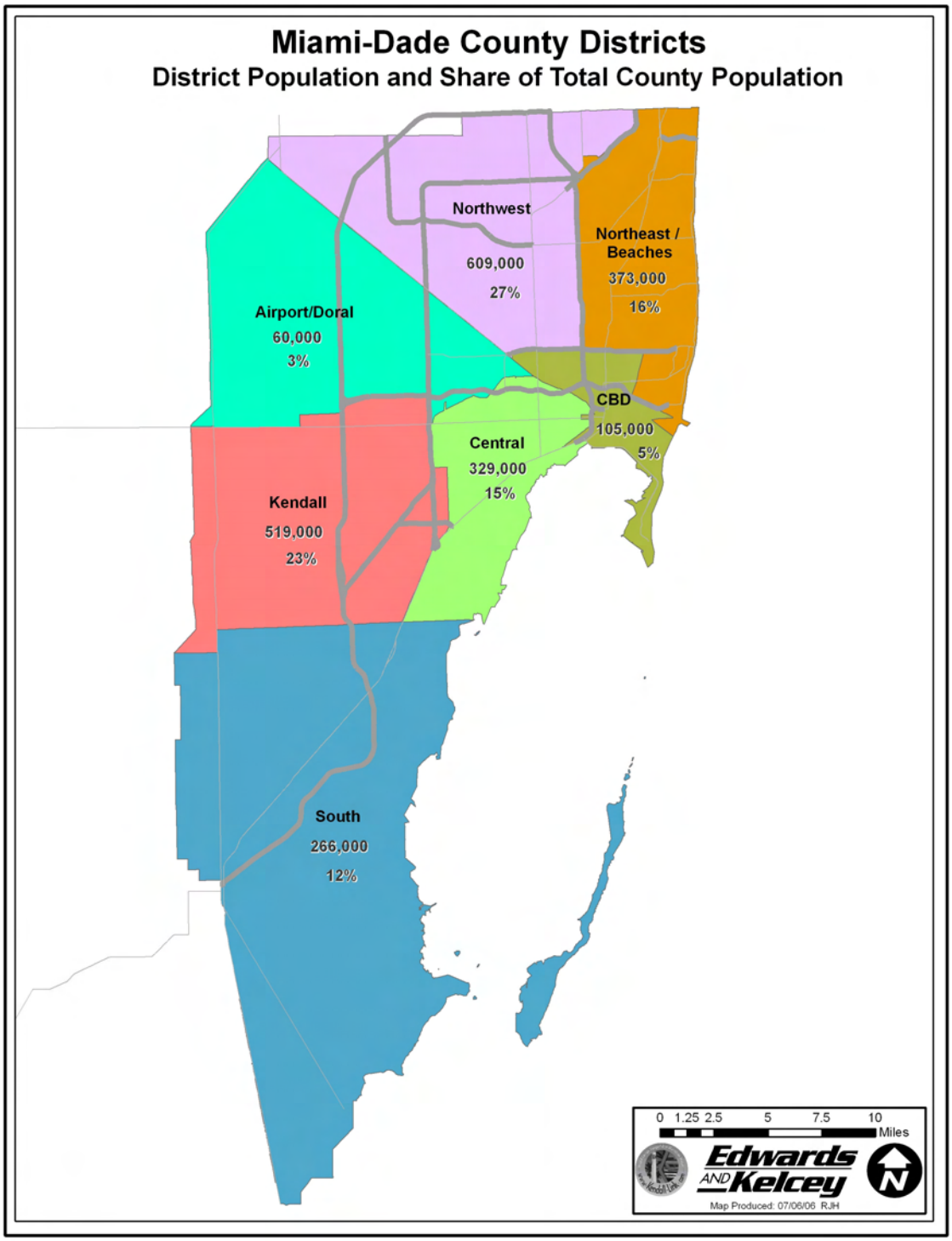
Table 2
2000 Population

Kendall Area	518,874
Miami-Dade County	2,253,362
State of Florida	15,982,378

Source: 2000 U.S. Census.

1 The largest counties were as follows: Los Angeles, CA; Cook, IL; Harris, TX; Maricopa, AZ; Orange, CA; San Diego, CA; and Kings, NY. The states that have a smaller population than Miami Dade County are Alaska, Delaware, Hawaii, Idaho, Maine, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Rhode Island, South Dakota, Utah, Vermont, West Virginia, and Wyoming.

Figure 3
Miami-Dade County Population



The Kendall study area is the second largest of the seven major areas that make up Miami Dade County (Table 3). Twenty-three percent of the population of the County resides in the Kendall area; the only area larger is the Northwest area, where 27 percent of the population lives.

The Kendall area has been steadily increasing area of the County. The Kendall area has increased four percent from 1990, when it only made up 19 percent of Miami Dade County.

Table 3
Major Areas of Miami Dade County, Percent of Total County Population

	2000 Population	Percent of Miami Dade County
Kendall	519,000	23%
Central Business District	105,000	5%
South	266,000	12%
Central	329,000	15%
Northwest	609,000	27%
Northeast/Beaches	373,000	16%
Airport/Doral	60,000	3%
Total	2,263,000	

Source: Miami Dade County MPO

The Kendall area has experienced dramatic change in the past decade. The population of the Kendall area grew by 43.2 percent from 1990 to 2000 (Table 4). This increase is dramatic compared with Miami Dade County as a whole, which experienced 16.3 percent growth, and the State of Florida, which experienced 23.5 percent growth.

Table 4
Population, 1990 to 2000

	1990 Population	2000 Population	Percent Growth 1990 to 2000
Kendall	362,371	518,874	43.2%
Miami-Dade County	1,937,094	2,253,362	16.3%
State of Florida	12,937,926	15,982,378	23.5%

Source: 1990 U.S. Census, 2000 U.S. Census.

Accompanying its population growth, the Kendall area also saw increases in households (39 percent) and workers (23.5 percent) (Tables 5 and 6). The growth in workers in the Kendall area is a contributing factor to the increase in travel in the study corridor, particularly during peak periods.

Table 5
Households, 1990 to 2000

	1990	2000	Percent Growth 1990 to 2000
Kendall	123,171	171,207	39.0%
Miami-Dade County	692,237	777,378	12.3%
State of Florida	5,138,360	6,337,929	23.3%

Source: 1990 U.S. Census, 2000 U.S. Census

Table 6
Workers over Age 16, 1990 to 2000

	1990	2000	Percent Growth 1990 to 2000
Kendall	188,716	233,023	23.5%
Miami-Dade County	887,996	899,323	1.3%
State of Florida	5,794,452	6,910,168	19.3%

Source: 1990 U.S. Census, 2000 U.S. Census.

Average household size in the Kendall study area is 3.0 persons, similar to the average household size for Miami-Dade County as a whole (2.9 persons) and larger than the average for the State of Florida (2.5 persons) (Table 7). Average household size in the Kendall area, County and State remained relatively constant from 1990 to2000.

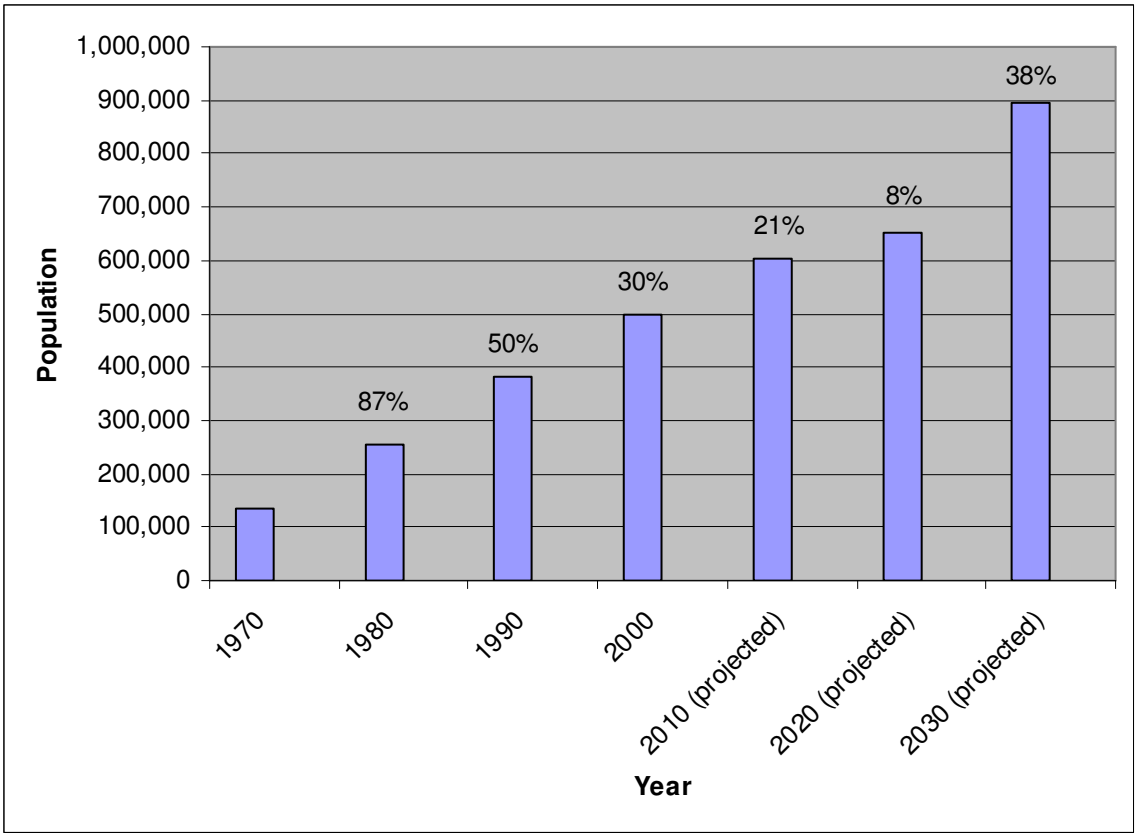
Table 7
Average Household Size, 1990 to 2000

	1990	2000	Percent Change 1990 to 2000
Kendall	2.9	3.0	1%
Miami-Dade County	2.8	2.8	0%
State of Florida	2.5	2.5	0%

Source: 1990 U.S. Census, 2000 U.S. Census

Population projections indicate that the Kendall area will continue to experience growth in the future, reaching approximately 897,000 residents by 2030 (Figure 4). The Miami region is anticipated to reach a population of 3,149,300 by 2030.

Figure 4
Kendall Area Population Trends and Projections



Source: Miami-Dade County Department of Planning and Zoning; U.S. Census.

2.3.2 Employment

Several large employers are located in the Kendall area. According to a countywide employment analysis, the area two miles of each side of SR 836/Dolphin Expressway, the northern boundary of the Kendall study area, has more than 50 percent of the total employment in the County.[2] These employers include Florida International University, Dolphin Mall/International Mall, Airport west industry area, and Miami International Airport.

One of the largest private employers in Miami-Dade County is located in the Kendall area, Baptist Hospital of Miami. Dadeland Mall/downtown Kendall area, at the eastern end of the study

[2] Miami-Dade County MPO, Kendall Drive Mobility Study, September 2002.

area, is home to many major retail, hotel and business employers. There are many new and existing commercial and retail developments along the length of Kendall Drive.

Over 422,901 jobs are projected in the study area by 2030 (Table 8). This is almost four times more than in the downtown Miami.

Table 8
Kendall Area Employment

	1990	1995	1999	2030
Industrial	12,214	14,021	24,288	22,328
Commercial	32,607	44,638	81,363	135,041
Service	92,066	115,950	197,645	265,532
Total	136,887	174,609	303,296	422,901
Percent Change	--	21.6%	42.43%	28.28%

Source: Miami-Dade MPO.

2.3.3 Journey to Work

The Kendall study area generates a significant proportion of all the work trips in Miami-Dade County – 28 percent (Table 9). With 221,000 work trips per day, this area creates the greatest number of work trips compared to the other areas of the region.

Only 30 percent of workers from the Kendall study area remain in the Kendall area for employment (Table 10). This is a smaller percentage than any other region in Miami-Dade County; other areas range between 37 percent and 44 percent of workers remaining in the same area for employment. This means that 70 percent of the Kendall area workforce (154,000) is commuting to another area for employment.

The largest destinations for Kendall work trips is the Central area (20 percent) followed by the Airport/Doral (17 percent) and the Central Business District (16 percent).

Table 9
Work Trip Flows between Miami-Dade County Areas

	Kendall	CBD	Central	Northwest	Northeast/Beaches	Airport/Doral	South	Total	Percent of County Work Trips from Origin
Kendall	66,959	36,097	44,008	16,461	10,179	37,910	9,406	221,020	27.75%
CBD	1,846	13,366	5,871	3,238	3,448	3,752	507	32,028	4.02%
Central	12,575	27,392	48,014	10,491	7,933	16,195	2,500	125,100	15.71%
Northwest	10,135	15,713	15,713	78,002	22,295	29,461	3,088	174,407	21.90%
Northeast/ Beaches	4,799	28,456	11,044	15,609	57,455	10,869	1,591	129,823	16.30%
Airport/ Doral	2,443	3,438	3,092	3,056	1,257	9,062	257	22,605	2.84%
South	15,325	12,622	13,092	5,071	3,503	9,283	32,466	91,362	11.47%
Total	114,082	137,084	140,834	131,928	106,070	116,532	49,815	796,345	

Source: Miami-Dade County MPO; 2000 U.S. Census

Table 10
Percentage of Work Trip Flows Between Miami-Dade County Areas

	Kendall	CBD	Central	Northwest	Northeast/ Beaches	Airport/ Doral	South
Kendall	30.30%	16.33%	19.91%	7.45%	4.61%	17.15%	4.26%
CBD	5.76%	41.73%	18.33%	10.11%	10.77%	11.71%	1.58%
Central	10.05%	21.90%	38.38%	8.39%	6.34%	12.95%	2.00%
Northwest	5.81%	9.01%	9.01%	44.72%	12.78%	16.89%	1.77%
Northeast/ Beaches	3.70%	21.92%	8.51%	12.02%	44.26%	8.37%	1.23%
Airport/ Doral	10.81%	15.21%	13.68%	13.52%	5.56%	40.09%	1.14%
South	16.77%	13.82%	14.33%	5.55%	3.83%	10.16%	35.54%
Percentage of County Work Trips to Destination	14.33%	17.21%	17.69%	16.57%	13.32%	14.63%	6.26%

Source: Miami-Dade County MPO; 2000 U.S. Census

2.3.4 Travel Time to Work

The average travel time to work for Kendall area commuters is 32.8 minutes, higher than the average for Miami-Dade County (30.1 minutes) and the State of Florida (26.2 minutes) (Table 11). In fact, commuters from the western part of the study area are commuting an average of up to 39 minutes (Figure 5).

Table 11
Average Travel Time to Work, 1990 to 2000

	1990	2000	Change 1990 to 2000
Kendall	28.7	32.8	14.3%
Miami-Dade County	24.8	30.1	21.5%
State of Florida	21.8	26.2	19.9%

Source: 1990 U.S. Census, 2000 U.S. Census.

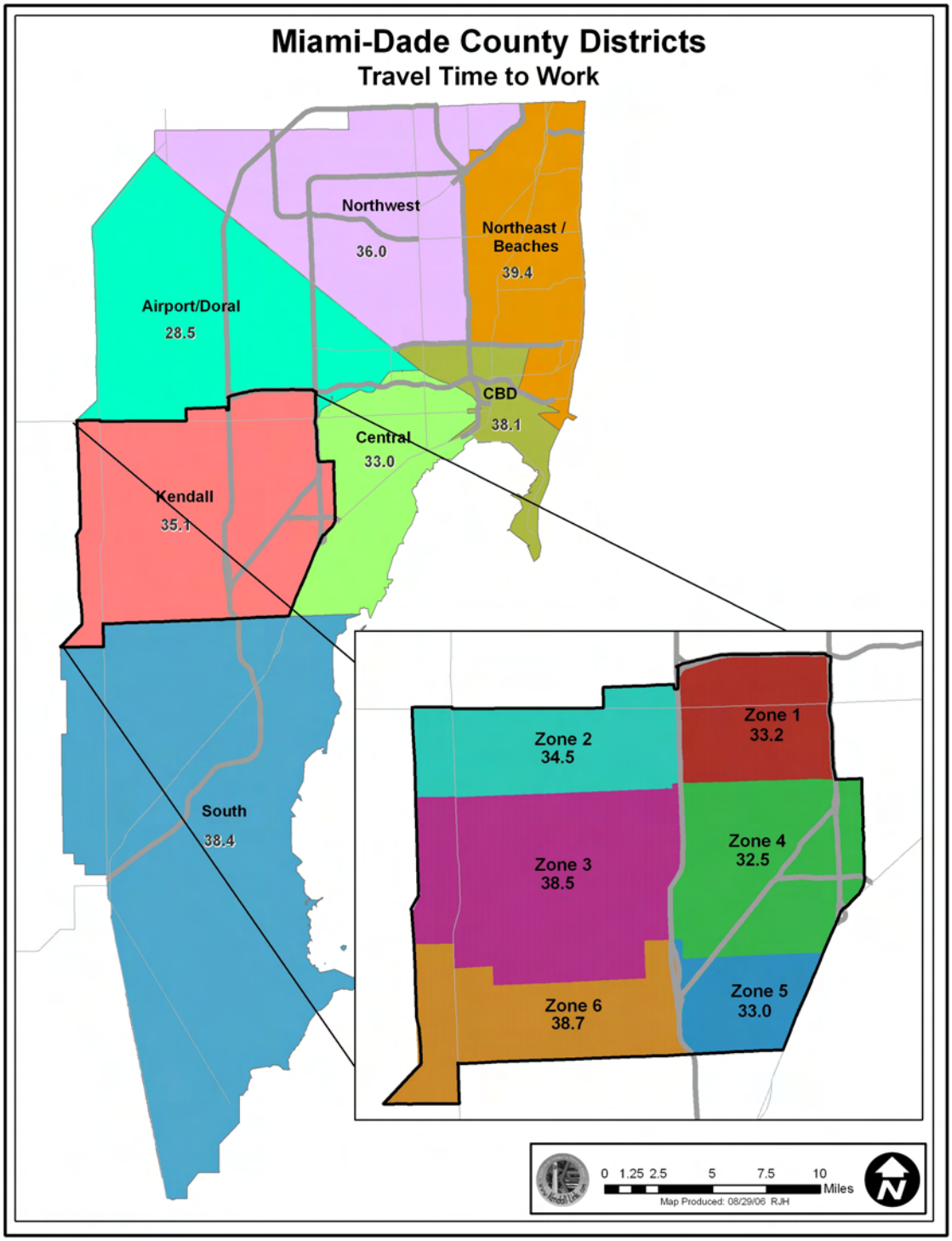
Travel time to work is growing. The largest growth is in the 60 to 81 minutes travel time period (Table 12). All time periods from 45 minutes and up are seeing growth, while the number of people traveling less than 45 minutes to work is declining (Figure 6). The number of people traveling 90 minutes or more to work in the study area increased 355 percent from 1990 to 2000.

Table 12
Travel Time to Work

	Kendall	Miami-Dade County	State of Florida
Less than 5 minutes	2,041	11,481	155,487
5 to 9 minutes	10,043	49,971	595,769
10 to 14 minutes	18,625	90,487	922,343
15 to 19 minutes	27,344	123,790	1,085,636
20 to 24 minutes	29,380	126,890	1,040,084
25 to 29 minutes	12,233	48,772	404,902
30 to 34 minutes	44,497	173,451	1,078,082
35 to 39 minutes	7,071	25,342	182,138
40 to 44 minutes	11,808	39,425	237,660
45 to 59 minutes	33,904	95,732	534,237
60 to 89 minutes	22,779	63,477	303,002
90 or more minutes	6,449	26,356	163,739
Worked at home	6,849	24,149	207,089
Total	233,023	899,323	6,910,168

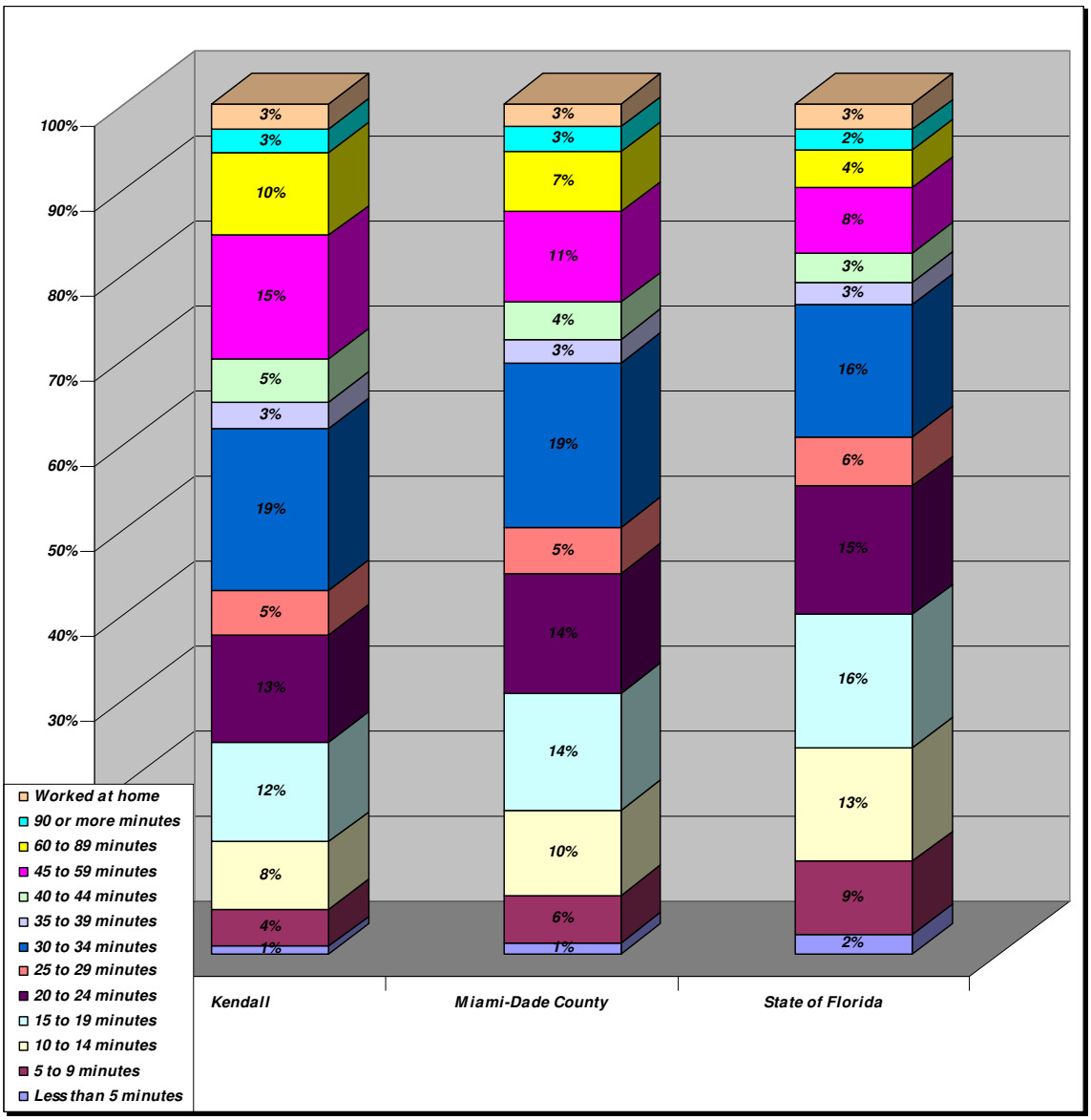
Source: 1990 U.S. Census, 2000 U.S. Census

Figure5
Travel Time to Work for Zones within the Kendall Study Area



Source: Miami-Dade County MPO; 2000 U.S. Census

Figure 6
Travel Time to Work



Source: 1990 U.S. Census, 2000 U.S. Census

2.3.5 Time Leaving to go to Work

Forty-thousand Kendall area commuters (17.6 percent) leave between 7:00 am and 7:30 am, making it the busiest half-hour of the day for commuting (Table 13). The peak half hour in the Kendall Corridor is more heavily "peaked" than in Miami-Dade County as whole (15.5 percent) or for the State of Florida (15.9 percent) (Figure 7). Thirty-one percent of all Kendall area workers leave home in the hour between 7:00 am and 8:00 am. These travel habits focused on a

narrow commuting period are an indicator that the Kendall area may be a good candidate for increased transit service. Transit services in heavily "peaked" commuter markets typically perform well, attracting significant numbers of riders, assuming other conditions necessary for transit service are also present.

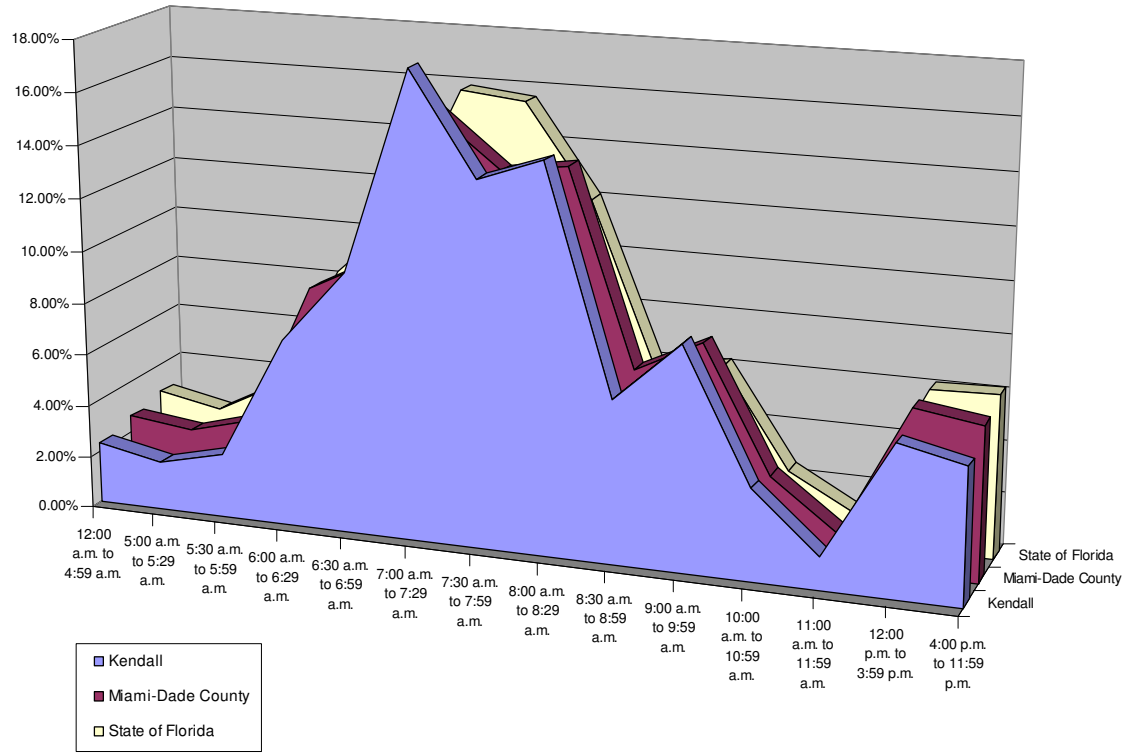
The peaking trend has increase in the Kendall area. From 1990 to 2000, the percent of Kendall area commuters leaving for work for each half hour period from 6:30 am to 8:30 has increased by two percent.

Table 13
Time Leaving Home to Go to Work

	Kendall	Miami-Dade County	State of Florida
12:00 a.m. to 4:59 a.m.	5,250	23,078	195,491
5:00 a.m. to 5:29 a.m.	4,157	20,377	162,873
5:30 a.m. to 5:59 a.m.	5,467	26,301	247,678
6:00 a.m. to 6:29 a.m.	16,129	73,828	569,201
6:30 a.m. to 6:59 a.m.	22,481	85,142	720,998
7:00 a.m. to 7:29 a.m.	39,885	135,810	1,063,673
7:30 a.m. to 7:59 a.m.	31,221	118,740	1,046,414
8:00 a.m. to 8:29 a.m.	33,212	121,865	812,057
8:30 a.m. to 8:59 a.m.	13,991	57,395	388,700
9:00 a.m. to 9:59 a.m.	19,165	68,497	419,450
10:00 a.m. to 10:59 a.m.	7,834	27,324	167,860
11:00 a.m. to 11:59 a.m.	2,831	10,859	77,065
12:00 p.m. to 3:59 p.m.	12,899	54,664	413,569
4:00 p.m. to 11:59 p.m.	11,652	51,294	418,050
Total (Working Outside the Home)	226,174	875,174	6,703,079

Source: 1990 U.S. Census, 2000 U.S. Census

Figure 7
Time Leaving Home to Go to Work



Source: 1990 U.S. Census, 2000 U.S. Census.

2.3.6 Means of Travel to Work

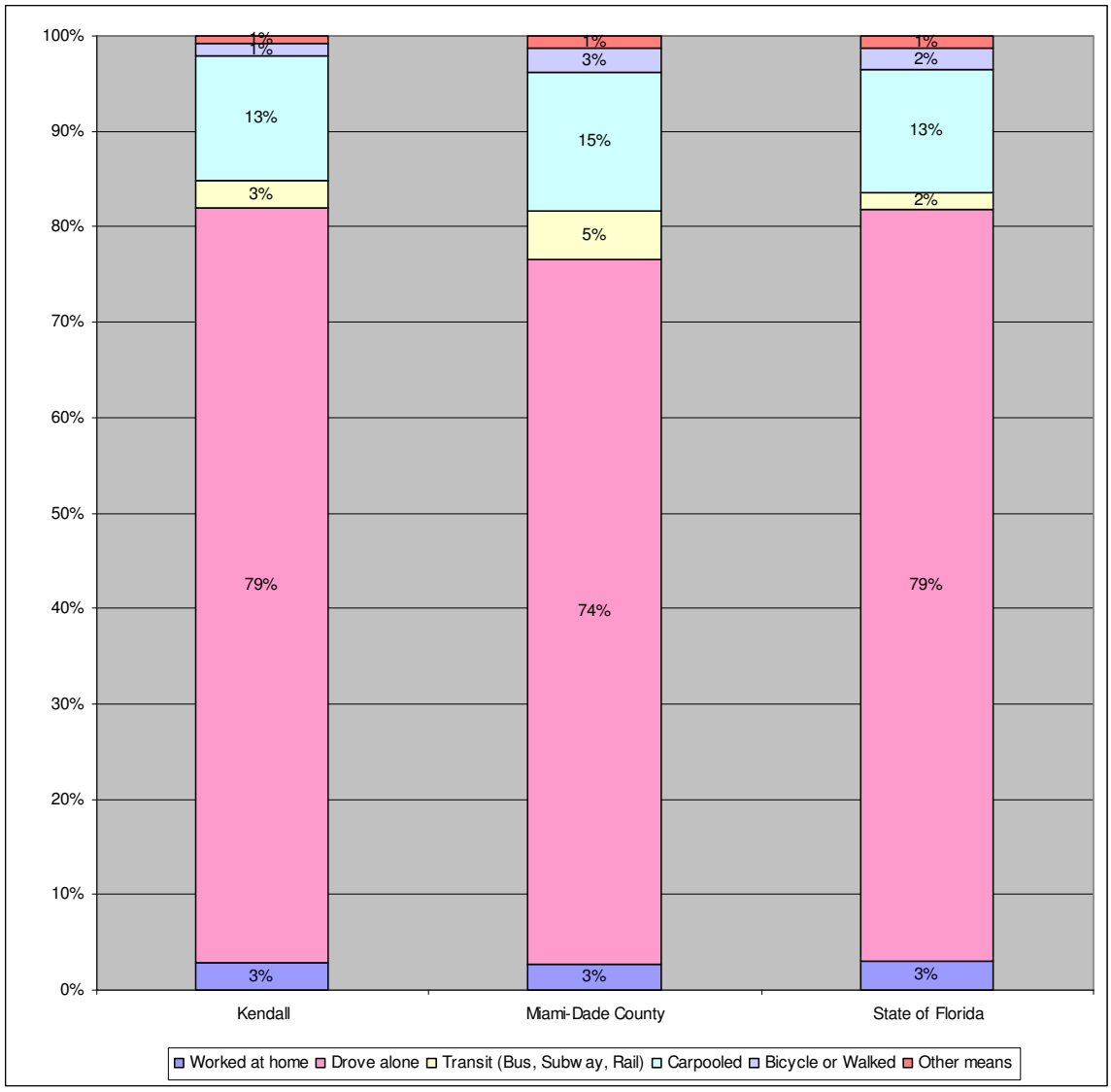
A smaller proportion of people are taking transit to work in the Kendall area (3 percent) as compared to Miami-Dade County as a whole (5 percent) (Table 14, Figure 8). This means that a higher percentage of residents are commuting in single occupant vehicles (79 percent) compared with Miami-Dade County as a whole (74 percent). This can be attributed to the fact that the Kendall study area has fewer transit options than are found in the other areas of the County. The Kendall study area does, however, have a higher percentage of Metrorail users (0.98 percent) as compared to the County as a whole (0.63 percent), indicating a strong preference and desire in the area to use dedicated transit services.

Table 14
Means of Transportation to Work

	Kendall	Miami-Dade County	State of Florida
Car; truck; or van; Drove alone	184,326	663,902	5,445,527
Car; truck; or van; Carpooled	30,699	131,302	893,766
Bus or trolley bus	3,755	38,249	108,340
Streetcar or trolley car	16	335	945
Subway or elevated	2,274	5,701	6,815
Railroad	324	1,385	3,638
Ferryboat	0	65	629
Taxicab	147	1,352	8,708
Motorcycle	201	890	14,967
Bicycle	439	4,079	39,294
Walked	2,309	19,367	118,386
Other means	1,684	8,547	62,064
Worked at home	6,849	24,149	207,089
Total	233,023	899,323	6,910,168

Source: 1990 U.S. Census, 2000 U.S. Census.

Figure 8
Mean of Transportation to Work



Source: 1990 U.S. Census, 2000 U.S. Census.

2.3.7 Economic Development and Growth Management Initiatives

There are a numerous economic development projects on-going and planned in the Kendall study area. Concurrently, many growth management initiatives are being pursued in the study area in an effort to encourage orderly, controlled development. All of the initiatives and development efforts identified are supportive of transportation and transit improvements in the Kendall study area.

Near the western end of the study corridor, several transit-oriented communities with mixed-use residential and commercial development are planned. At the eastern end of the corridor in Dadeland, significant changes are planned and have already occurred over the past three years as the area has developed to create the "downtown Kendall" area. Medium to high density residential, commercial and office uses are being created in a mixed pattern, which will encourage a pedestrian and transit friendly environment.

Many community groups are located in the Kendall area. A significant group is the Kendall Federation of Homeowner Associations, Inc., (KFHA) a non-profit organization with membership open to homeowner and condominium associations as well as individuals living in the Kendall area. The KFHA has been a leader in maintaining orderly growth in the Kendall area. The KFHA has identified in its list of issues the need for transit from the Western part of the Kendall area to the available transit in the Eastern part of the area.

2.4 Transportation Profile

2.4.1 Roadway Infrastructure

The major east-west roadway corridors in the study area include:

- Kendall Drive/SW 88th Street/SR 94
- SR 836/Dolphin Expressway
- Tamiami Trail/SW 8th Street
- Coral Way/SW 24th Street
- Bird Road/ SW 40th Street
- Miller Road/ SW 56th Street
- Sunset Drive/ SW 72nd Street
- Killian Drive/ SW 104th Street
- SW 152 Street

Major north-south roadways in the study area that intersect with Kendall Drive include:

- Homestead Extension of the Florida Turnpike (HEFT)/ SR 821
- Don Shula Expressway/ SR 874
- Snapper Creek Expressway/ SR 878
- Palmetto Expressway/ SR 826
- US 1/Dixie Highway

Kendall Drive/SW 88th Street/SR 94 within the study area is primarily a six-lane divided (raised/restrictive median) state principal arterial. An eight-lane divided section is located from the Turnpike west to SW 127th Avenue.

Florida Department of Transportation (FDOT) arterial access management classification standards range from "Access Class 2" to "Access Class 7". Kendall Drive from SW 142nd Avenue to US 1 is classified by FDOT as arterial "Access Class 5". From SW 142 Avenue to Krome Avenue, Kendall Drive is classified as arterial "Access Class 3". The lower the access class, the more stringent the standards for driveway connections, medians and median openings, and traffic signals.

The speed limit along Kendall Drive is currently posted at 45 miles per hour. There are no HOV or bus-only facilities along Kendall Drive or along key connecting roadways.

2.4.1.1 Roadway Congestion Patterns

"Pinpoints" or "chokepoints" in the study area roadway network occur at locations where major roadways intersect. For the two major categories of roadways analyzed (signalized and unsignalized highways), the pinpoints in the roadway network occur in four different forms for each category:

1) On a signalized highway corridor (i.e. Kendall Drive), points occur in four forms:
    a) Signalized highway AM: traffic approaching an entrance to an unsignalized highway
    b) Signalized highway PM: traffic approaching an exit to an unsignalized highway
    c) Signalized highway intersecting with another Signalized highway
    d) Signalized highway ending or merging with another Signalized highway
2) On an unsignalized highway Corridor (i.e. Turnpike) points occur in four forms:
    a) Unsignalized highway AM: traffic approaching an entrance from a signalized highway
    b) Unsignalized highway PM: traffic approaching an exit to a signalized highway
    c) Unsignalized highway ending or merging with a unsignalized highway
    d) Unsignalized highway ending or merging with another Signalized highway

The following tables apply the above methodology to Kendall Drive, the Turnpike, Route 874, Route 878 and Route 826 to identify major pinchpoints (Tables 15, 16, 17, 18, 19).

Table 15
Congestion Points on Kendall Drive (Signalized Highway Corridor)

Location	Degree of Severity	Detail (if applicable)
a) Signalized highway AM: traffic approaching an entrance to an unsignalized highway		
AM Eastbound traffic choke point at Turnpike Entrance	High degree of severity: from the choke point at the Turnpike entrance, through SW 120 Ave, SW 122 Ave and SW127 Avenue, with ripple effects heavy continuing west but gradually decreasing from SW 137 Avenue to Krome Avenue.	Traffic severity is highest in the leftmost lane, with less traffic in middle lane and less in the right lane.
AM Eastbound Traffic choke point candidate at 878 Entrance	Occasionally Heavy to Mostly Medium: From Choke Point at Entrance, SW 97 Ave, SW 99 Ave, SW107 Avenue with ripple effects medium to SW 112 Avenue.	At the chokepoint on this eastbound 3 lane highway, severity is highest in leftmost lane, then less in the middle lane then less in the right lane.
AM Eastbound Traffic choke point candidate at 826 Entrance	Medium to Light: Not considered a choke point.	
b) Signalized highway PM: traffic approaching an exit to an unsignalized highway		
PM Westbound Traffic choke point at Turnpike Exit	High: From Choke Point at Exit, SW 117 Ave, SW 112 Ave, with ripple effects heavy East from SW 107 Avenue to SW 97 Avenue.	At the chokepoint on this westbound 3 lane highway, severity is highest in rightmost lane, then less in the middle lane then less in the left lane.
PM Westbound Traffic choke point candidate at 878 Exit	Degree of severity High: From Choke Point at Exit al the way to SW 87 Avenue.	At the chokepoint on this westbound 3 lane highway, severity is highest in the rightmost lane, then less in middle lane then less in left lane.
PM Westbound Traffic choke point candidate at 826 Exit	Degree of severity Light. Not considered a choke point.	
c) Signalized highway intersecting with another signalized highway		
AM Eastbound Traffic choke point candidate at intersection with US-1	i) Degree of severity medium to light: Traffic is making eastbound left turn unto US-1 heading downtown.	
d) Signalized highway ending or merging with another		
Does not apply on Kendall Drive		

Source: Edwards and Kelcey, 2006.

Table 16
Congestion Points on Turnpike (Unsignalized Highway Corridor)

a) Unsignalized highway AM: traffic approaching an entrance from a signalized highway
AM all major entrances to Turnpike: severe conditions in lane adjacent to entrance
b) Unsignalized highway PM: traffic approaching an exit to a signalized highway
PM all major exits from Turnpike: severe conditions in lane adjacent to exit
c) Unsignalized highway ending or merging with a unsignalized highway
Turnpike merging/ending with US-1
Turnpike merging/ending with 874
Turnpike merging/ending with 836
Turnpike merging/ending with the interchange of I-75 and 826 Extension
d) Unsignalized highway ending or merging with another signalized highway
Does not apply to Turnpike

Source: Edwards and Kelcey, 2006.

Table 17
Congestion Points on Route 874 (Unsignalized Highway Corridor)

a) Unsignalized highway AM: traffic approaching an entrance from a signalized highway
AM all major entrances to 874: severe conditions in lane adjacent to entrance
b) Unsignalized highway PM: traffic approaching an exit to a signalized highway
PM all major exits from 874: severe conditions in lane adjacent to exit
c) Unsignalized highway ending or merging with a unsignalized highway
874 merging/ending with Turnpike
874 merging/ending with 878
874 merging/ending with 826
d) Unsignalized highway ending or merging with another signalized highway
Does not apply to Route 874

Source: Edwards and Kelcey, 2006.

Table 18
Congestion Points on Route 878 (Unsignalized Highway Corridor)

a) Unsignalized highway AM: traffic approaching an entrance from a signalized highway
AM all major entrances to 878: severe conditions in lane adjacent to entrance
b) Unsignalized highway PM: traffic approaching an exit to a signalized highway
PM all major exits from 878: severe conditions in lane adjacent to exit
c) Unsignalized highway ending or merging with a unsignalized highway
878 merging/ending with 874
d) Unsignalized highway ending or merging with another signalized highway
Does merging/ending at US-1

Source: Edwards and Kelcey, 2006.

Table 19
Congestion Points on Route 826 (Unsignalized Highway Corridor)

a) Unsignalized highway AM: traffic approaching an entrance from a signalized highway
AM all major entrances to 826: severe conditions in lane adjacent to entrance
b) Unsignalized highway PM: traffic approaching an exit to a signalized highway
PM all major exits from 826: severe conditions in lane adjacent to exit
c) Unsignalized highway ending or merging with a unsignalized highway
826 merging/ending at I-95/US-1 Golden Gate Interchange
826 merging/ending with 836 (chokepoint at Miami International Airport NW 72 Avenue)
South end of 826 merging/ending with US-1
d) Unsignalized highway ending or merging with another signalized highway
North end of 826 merging/ending with NE 167 Street

Source: Edwards and Kelcey, 2006.

2.4.1.2 Roadway Usage

Kendall Drive/SW 88th Street/SR 94 is one of the most highly utilized east-west roadway corridors in Miami-Dade County. With the western spread of suburban development into the Kendall area, Kendall Drive has changed from a predominantly rural roadway to an urban principal arterial carrying large volumes of traffic. The severity and duration of traffic congestion continues to multiply as development increases in the corridor. Average daily traffic on Kendall Drive is on the rise, increasing between eight and 10 percent on all segments between 2001 and 2004 (Table 20).

Table 20
Kendall Drive, Average Annual Daily Traffic

Between	2001	2004	Percent Change
SW 157th Avenue and SW 137th Avenue	43,000	46,500	8%
SW 137th Avenue and SW 127th Avenue	76,000	82,000	8%
SW 127th Avenue and SR 874	65,000	71,500	10%
SR 874 and US 1	50,000	55,000	10%

Source: Florida Department of Transportation, Transportation Statistics Office

2.4.1.3 Congestion Delay

Travelers on Kendall area roadways experience significant delay, particularly during the peak periods, with many of the roadways experiencing level of service (LOS) F. As indicated in Figure 9, Kendall Drive from 137th Avenue to the Palmetto Expressway operates at LOS F. SR 878 in the study area is operating at LOS C and the HEFT is LOS D. In the future year 2015, as depicted in Figure 10, Kendall Drive is expected to continue to be in an extremely congested LOS F condition. The HEFT is also anticipated to deteriorate to LOS F conditions. SR 878 is predicted to remain at LOS C.

Figure 9
Existing Level of Service on Miami County Roadways

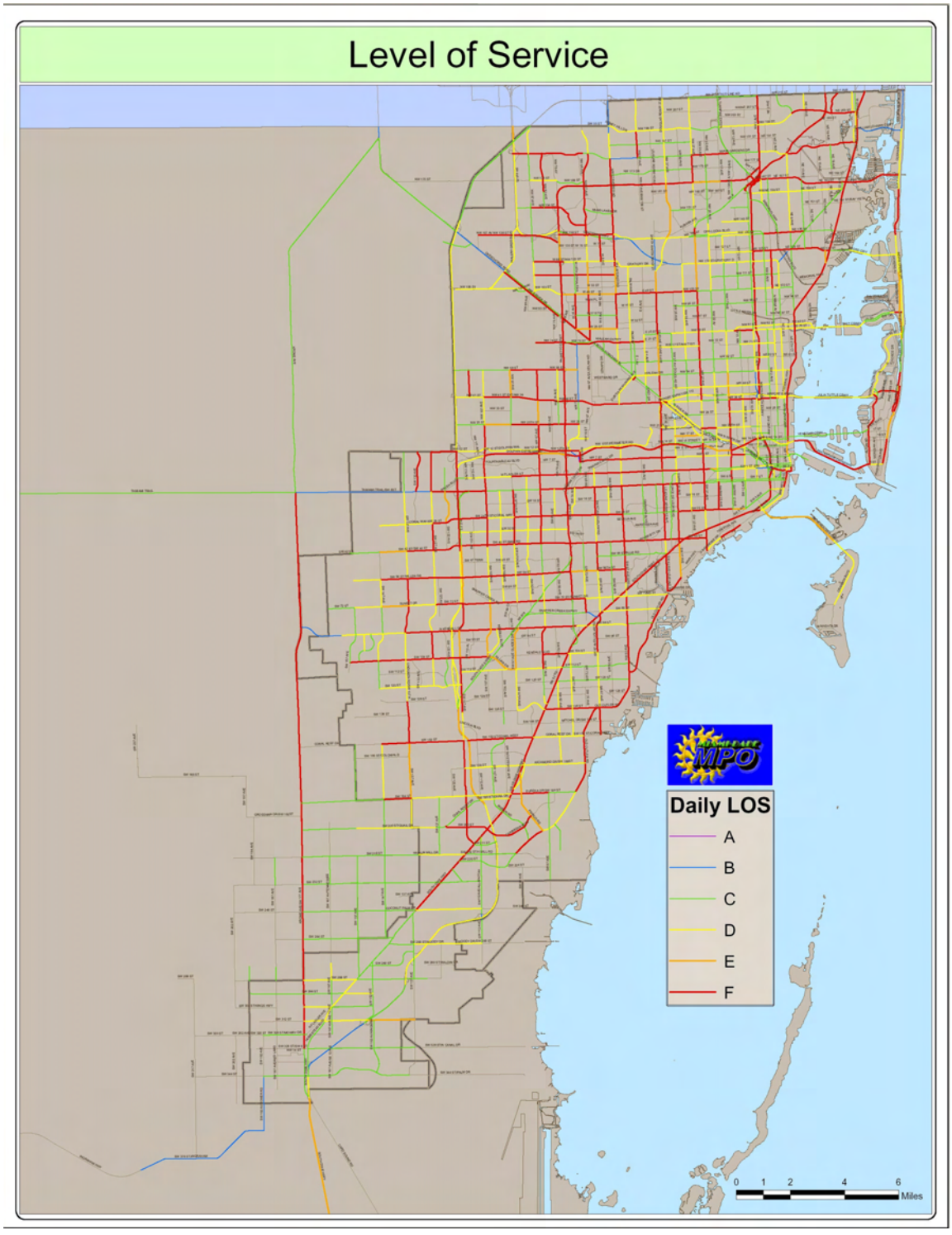
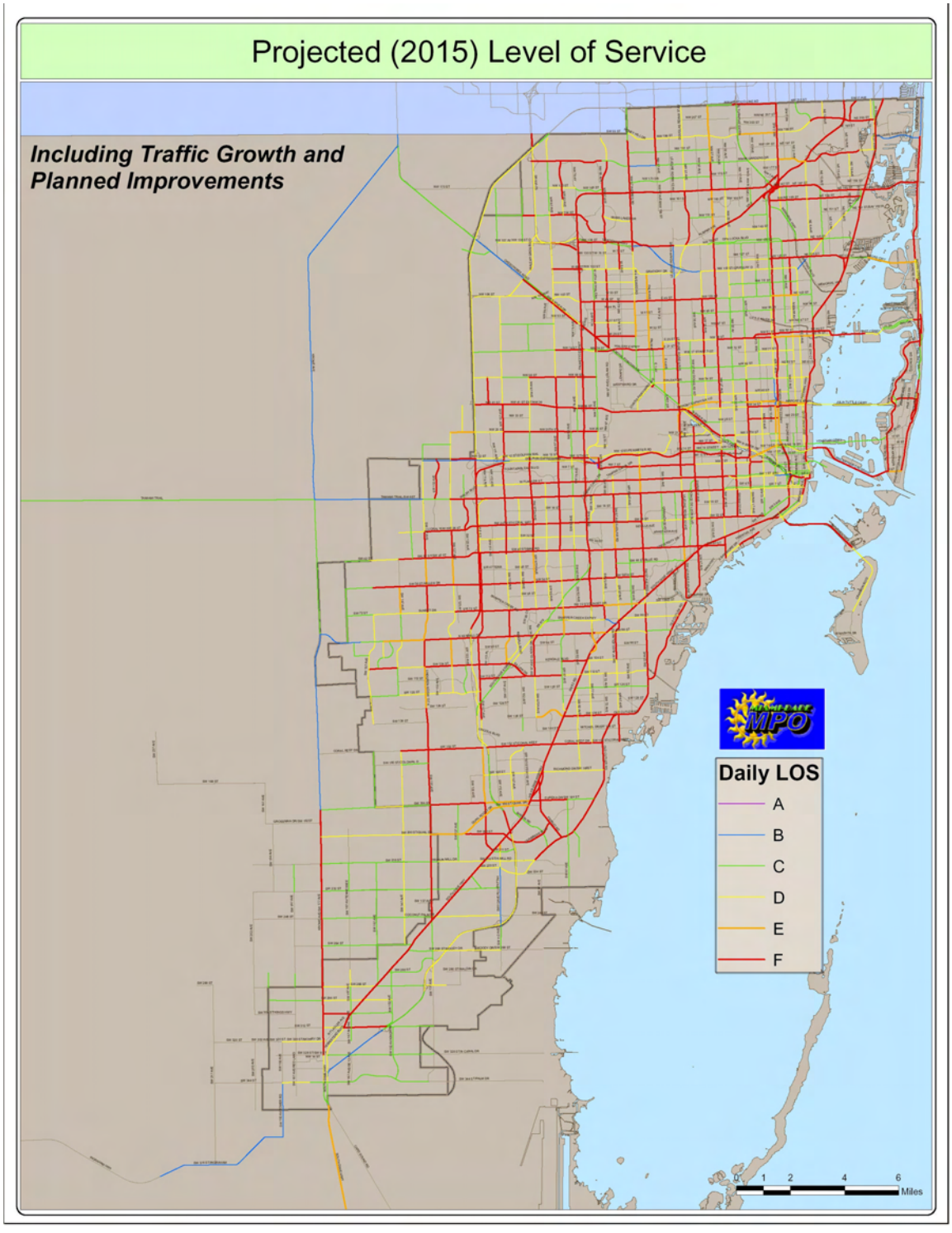


Figure 10
Future Level of Service on Miami County Roadways



2.4.2 Public Transportation Infrastructure

Public transportation services in the study area are provided by Miami-Dade Transit (MDT), the county-wide transit operator. MDT is the 14th largest public transit system in the United States and the largest transit agency in the State of Florida, providing more than 50 percent of the trips taken on public transit in the State. They operate a system of over 100 Metrobus routes; the elevated 22-mile Metrorail; Metromover, an automated downtown people mover; and the Paratransit division's Special Transportation Service. In 2004, MDT's Metrobus, Metrorail, and Metromover transported more than 96 million passengers, compared to 85 million the previous year.

Metrorail is an electrically-powered, elevated, rapid-transit system. Metrorail is 22.4 miles in length, from Kendall in South Miami-Dade to Medley in West Miami-Dade. Metrorail connects a major portion of Miami-Dade County to business, cultural, and shopping centers. Metrorail offers connections to Broward and Palm Beach counties via Tri-Rail, South Florida's tri-county commuter train. Travel time from one end of the system to the other is approximately 42 minutes. Metrorail operates from 5 a.m. to midnight, seven days a week, including holidays. On weekdays, trains arrive every six minutes during morning and afternoon peak hours, every 8-10 minutes during weekday midday hours, and every 15-30 minutes after 6 p.m. Metrorail service is accessible at the eastern end of the Kendall study corridor at the Dadeland North and Dadeland South stations. Each of these Metrorail stations has parking garages with over 1,200 spaces.

Metrobus offers countywide bus service throughout Miami-Dade County. All buses are wheelchair accessible. In addition, Metrobus connects with Metrorail and Metromover. With over 1,031 buses, 107 Metrobus routes travel over 41 million miles per year. Presently, there are 16 bus routes that operate primarily in the Kendall study area (Table 21). Hours of operation are generally from 5 a.m. to 12 a.m. seven days per week, while some routes are only operated during weekday peak periods. Peak period headways vary from every 10 minutes to every 30 minutes.

Table 21
Metrobus Routes in the Kendall Area

Number	Route
24	SW 137 Court/Coral Way, FIU Bus Terminal, Florida International University South Campus, West Dade Regional Library, Westchester Shopping Center, City of Coral Gables, Vizcaya Metrorail Station, Downtown Miami, Government Center Metrorail Station
40	SW 147 Avenue/47 Street (40B), SW 132 Avenue/18 Street (40), Bird Road, City of Coral Gables (40), Douglas Road Metrorail Station
56	John A. Ferguson High School, SW 162 Avenue/47 Street (56A), Miller Road, Town & Country Mall (56), Miami-Dade College Kendall Campus (56), University Metrorail Station, City of Coral Gables via Ponce de Leon and LeJeune Road, University of Miami Campus, Doctors Hospital
71	Dolphin Mall, Miami International Mall, Florida International University South Campus, SW 107 Avenue, Concord Shopping Center, Miami-Dade College Kendall Campus
72	SW 157 Avenue/88 Street (72A), Westlakes Plaza (72A), Sunset Drive (SW 72 Street), SW 140 Avenue/47 Street (72), South Miami Metrorail Station
87	NW 80 Street/81 Place, Palmetto Metrorail Station, NW 74 Street Connector, Miami-Dade Police HQ (weekdays only), Mall of the Americas, SW 87 Avenue, Kendall, Dadeland Mall, Dadeland North Metrorail Station
88	SW 157 Avenue/Kendall Drive (88A), SW 142 Avenue/84 Street (88), Dadeland Mall, Dadeland South Metrorail Station (eastbound trips midnight to 5 a.m. only), Dadeland North Metrorail Station
104	SW 80 Street/157 Avenue, Hammocks Town Center, Miami-Dade College Kendall Campus, Baptist Hospital, Dadeland Mall, Dadeland North Metrorail Station
136	SW 142 Ave., SW 120 St., SW 117 Ave., SW 107 Ave., SW 136 St., The Falls, SW 128 St., The Busway, Dadeland South Metrorail Station
137 West Dade Connection	Miami International Mall, Sweetwater, Kendale Lakes, Kendall-Tamiami Executive Airport, Tamiami/Pineland Industrial Park, SW 147 Avenue, Serena Lakes, Larry & Penny Thompson Memorial Park, SW 211 Street, South Miami-Dade Government Center, Southland Mall Park & Ride
147 Kendall Connection	Kendall-Tamiami Executive Airport, Beckman-Coulter, SW 147 Avenue, Kendale Lakes, Lakes of the Meadow, Dolphin Mall
204 Killian KAT	Shoppes at Paradise Lake, SW 167 Avenue/Kendall Drive, Hammocks Town Center Park & Ride, SW 104 Street, SW 113 Place Park & Ride, MDC Kendall Campus, SR 874, SR 878, Dadeland North Metrorail Station
224 Coral Way MAX	Coral Way, Las Americas Shopping Center, Miami-Dade Permit Inspection Office, West Dade Regional Library, City of Coral Gables City Hall, Coral Gables Hospital, English Center, Douglas Road Metrorail Station
240 Bird Road MAX	West Miami-Dade, SW 152 Avenue/42 Street, Bird Road, Tropical Park, Kendall Drive, Dadeland Mall, Dadeland North Metrorail Station
272 Sunset KAT	West Lakes Shopping Center, SW 80 Street/157 Avenue, Shoppes at Lago Mar, Sunset Drive (SW 72 Street), Sunset Strip Shopping Center Park & Ride, SR 878, Dadeland North Metrorail Station
288 Kendall KAT	Shoppes at Paradise Lakes, SW 157 Avenue, Hammocks Park & Ride, Kendall Drive (SW 88 Street), SR 874, SR 878, Dadeland North Metrorail Station

Source: Miami Dade Transit

2.4.2.1 Public Transportation Usage

The most heavily utilized Metrobus routes in the study area, Routes 24 and 40, are located at the northern edge of the study area, closest to the City of Miami (Table 22). These routes also provide all day service, unlike many of the other study area bus routes which operate only during the peak periods. The KAT routes experienced the greatest increases in ridership from 2005 to 2006, with the Route 288 Kendall KAT increasing 55 percent, the Route 272 Sunset KAT increasing 42 percent and the Route 204 Killian KAT increasing 36 percent. Metrobus routes in the study area on average experienced an eight percent increase in usage over a one year period.

Metrorail use in the study area is also increasing. The Dadeland South station had an 11 percent increase in boardings and Dadeland North three percent in the period between 2005 and 2006. Overall, both bus and rail usage in the corridor is increasing, up eight percent over the period from 2005 to 2006.

Table 22
Transit Ridership in the Kendall Area

Number	Average Weekday Boardings		Percent Change
	January 2005	January 2006	
24	4,019	4,324	8%
40	2,877	3,203	11%
56	827	886	7%
71	1,848	1,468	-21%
72	1,241	955	-23%
87	2,211	2,213	0%
88	3,092	2,978	-4%
104	1,582	1,774	12%
136	N/A	150	N/A
137 West Dade Connection	1,522	1,876	23%
147 Kendall Connection	427	397	-7%
204 Killian KAT	1,412	1,926	36%
224 Coral Way MAX	345	364	6%
240 Bird Road MAX	535	649	21%
272 Sunset KAT	1,046	1,482	42%
288 Kendall KAT	595	923	55%
Subtotal – Metrobus (Kendall Study Area)	23,579	25,568	8%
Metrobus – Systemwide	*242,100*	*265,400*	*10%*
Dadeland North	6,326	7,004	11%
Dadeland South	6,713	6,925	3%
Subtotal – Metrorail (Kendall Study Area)	13,039	13,929	7%
Metrorail – Systemwide	*60,200*	*60,900*	*1%*
TOTAL TRANSIT (Kendall Study Area)	36,618	39,497	8%

Source: Miami Dade Transit

The Dadeland South and Dadeland North Metrorail station parking garages have occupancy rates over 98 percent. There are an average of 1,205 vehicles parked at the Dadeland South garage and 1,858 vehicles parked at the Dadeland North garage on the typical weekday.

3. PROBLEM STATEMENT

Based on the existing conditions and trends in the Kendall study area, the following is a statement of the problems, or challenges, in the study corridor:

- Natural barriers (coast, Everglades) limit space available for development to continue in the same manner and at the current pace. Future development patterns will be higher density in-fill, which will require and support expanded transit service in order to be sustainable.
- The Kendall area makes up 23 percent of Miami-Dade County, the largest County in Florida and the eighth largest County in the U.S. The area is experiencing dramatic change – Kendall grew 43 percent from 1900 to 2000, while Miami-Dade County as a whole only grew 16 percent. Population projections indicate that the Kendall area will continue to grow in the future, reaching approximately 650,000 residents by 2020. Continued population growth will create additional vehicles traveling on study area roadways, exacerbating already congested conditions, particularly in the peak periods.
- The Kendall area is a major employment center. The area two miles either side of SR 836/Dolphin Expressway has more than 50 percent of the total employment in the County. Over 230,000 jobs are projected in the study area by 2020, almost four times more than in the downtown Miami Central Business District. Traffic congestion is impacting the ability to access the major employment centers in the study area, which affects the economic health of the region as a whole.
- The Kendall area generates 28 percent of all work trips in Miami-Dade County – more than any other area of the County. Seventy percent of the workforce leaves the Kendall area for employment elsewhere in the County, higher than the average for any other area. The largest destinations for work trips are the Central area (20 percent), Airport/Doral (17 percent) and the Central Business District (16 percent). These large volumes of workers from the Kendall area to these work destinations have limited travel choices other than the single occupant automobile.
- Average travel time to work is 32.8 minutes, higher than the average for Miami Dade County (30.1 minutes) or the State of Florida (26.2 minutes). Commuters from the western part o the study area commute an average of 42 minutes. The largest growth period is in commuters travel more than 90 minutes to work, up 355 percent from 1990 to 2000.
- The Kendall area has a narrowly focused commuting period – 31 percent of Kendall workers leave between 7:00 a.m. and 8:00 a.m. This creates congestion on roadways during these periods.
- Average daily traffic on Kendall Drive is on the rise, increasing between eight and 10 percent on all segments between 2001 and 2004. Kendall drivers experience significant congestion and delay, taking 32 minutes to travel the 8.6 miles from 157th Avenue to U.S. 1 (an average of 16 miles per hour) Population projections indicate that continued growth in the future will continue to exacerbate already-high levels of traffic congestion.

- A smaller proportion of people take transit to work in the Kendall area (three percent) as compared to Miami Dade County as a whole (five percent). This is because there are fewer transit choices available in the Kendall study area.
- Although 23 percent of Miami-Dade County's population resides in the study area and 28 percent of all work trips originate in the study area, only 16 of the 107 bus routes (15 percent) serve the area and only ten percent of Metrobus boardings are on study area routes. Traffic issues have made it difficult to operate transit services in the corridor and attract and maintain riders.
- Although Metrorail continues to experience modest increases - three percent (Dadeland North) and 11 percent (Dadeland South), future growth potential is restricted because both parking garages are at capacity.
- Although there are indicators of strong transit demand in the corridor, for example, ridership on the Route 288 Kendall KAT increased 55 percent from 2005 to 2006; future ridership growth on these routes may be limited by non-competitive bus travel times due to roadway traffic congestion, as there are no HOV or bus-only facilities in the study area.
- There are many community facilities in the study area which are primarily used by special needs groups such as the elderly, population under 17 and those without a car. These groups have a need for transit services due to their dependency on others for their mobility. Examples of desirable destinations in the study corridor for these groups includes Miami-Dade College (MDC) Kendall Campus which is attended by over 55,000 students, and Baptist Hospital, which serves over 95,000 patients per year.

4. TRANSPORTATION NEEDS IN THE STUDY AREA

The following transportation needs have been identified in the study corridor based on the statement of the problems:

- Expand transit services in order to support more sustainable future development in the study area at higher densities and in-fill locations and address growth management initiatives;
- Meet unmet demand for transit services for work trips due to the recent and anticipated population growth in the area;
- Direct transit services to major employment destinations from the study area including the Central area, Airport/Doral and the Central Business District;
- Improve mobility to the major activity/employment centers in the Kendall area, which are some of the most important facilities in the regional economy and are critical to the economic health of the study area and the region;
- Improve transit services to address the higher than the average travel time to work for the study area;
- Provide a greater variety of travel choices other than single occupant automobile on congested study area roadways;
- Expand solutions to attract and maintain new transit riders;
- Expand person-carrying capacity of existing transportation infrastructure;
- Create new facilities/services that avoid congested conditions, such as dedicated HOV lanes or exclusive transit ways; and
- Increase travel options for special needs groups.

5. GOALS, OBJECTIVES AND EVALUATION CRITERIA

Goals and objectives were developed based on identified study area problems and needs. The goals and objectives were used to develop the evaluation criteria for use in screening the alternatives of this study. These goals, objectives and criteria are listed in the following table, along with criteria for measuring how well an alternative met the objectives (Table 23).

Table 23
Study Goals, Objectives and Criteria

Goal	Objectives	Criteria
Enhance Regional Mobility	• Create additional transportation choices and new travel options • Improve links between population and activity centers • Improve multimodal connections by linking Metrobus and Metrorail services • Provide effective pedestrian and bicycle access • Meet demand for public transportation • Improve transit travel times • Increase transit ridership • Reduce automobile dependency • Improve services for socially, economically, and physically disadvantaged groups who are frequently transit dependent.	• Service travel times • User time savings • Linkages • Number of total riders • Serves transit-dependent communities
Improve Accessibility to Work Destinations	• Compete with the automobile • Serve major workplace destinations: Central area, Airport/Doral and the Central Business District; • Serve work destinations in the Kendall area • Promote the use of public transportation for work trips • Provide competitive travel times • Serve peak period demand	• Service travel times • User time savings • Number of peak riders • Number of destination businesses accessible to the service • Number of Kendall area businesses accessible to the service • Transit's mode share of work trips
Enhance Existing Infrastructure	• Maximize existing transportation investments • Provide for additional and improved transportation capacity on existing transit lines and roadways	• Use of existing transportation rights-of-way and facilities • Increased ridership on transit services

	• Build on previous and ongoing infrastructure investments	
Promote Communities and the Environment	• Encourage and support transit-friendly development • Provide consistency with local or regional plans and growth management initiatives • Avoid community disruption • Promote improved air quality	• Stations/stops servicing existing/planned transit friendly developments • Consistency with local or regional plans • Ability to meet demands of Clean Air Act and State Implementation Plan
Enhance Existing Transportation Services	• Provide complementary services • Increase public transportation ridership • Support coordinated transportation network • Improve transit reliability • Improve the people-moving capability of the transportation system • Develop time and or financial incentives for the use of alternative modes • Develop alternatives to single occupant vehicles • Develop alternatives to influence when travel occurs during a day • Eliminate existing and anticipated gaps in the rail and bus networks.	• Expanded transit operations (hours/days) • Increased ridership on transit services • Transit's mode share of trips • Decrease average travel time to work
Promote Regional Development	• Create opportunities to increase federal and state investments • Create opportunities for creating public-private partnerships • Create opportunities for economic development	• Type of federal and state funding for which service is eligible • Economic incentives for private investment • Increase in jobs, tax revenues, private investment • Access to planned developments
Develop a Cost-Effective Solution	• Ensure that project benefits outweigh project impacts • Ensure that project investments are consistent with financial resources • Improve overall transit cost-effectiveness and efficiency	• Service goals adequately met • Cost per passenger • Cost per passenger mile • Capital and operating costs not greater than projected funding resources