

MULTI-MODAL HEALTH DISTRICT COMPREHENSIVE TRAFFIC STUDY



Submitted to:
Metropolitan Planning Organization



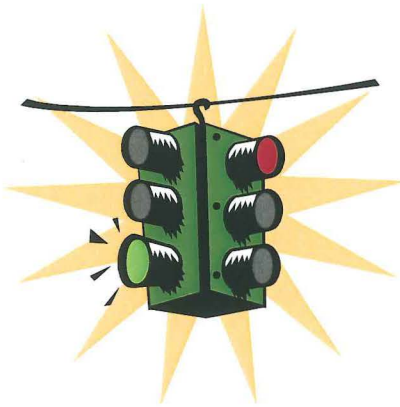
EXECUTIVE SUMMARY

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Executive Summary

The Health District is the second largest employment center in the county outside of Downtown Miami. The area is growing rapidly and many of the freeways accessing the area are over capacity. It lies in the Urban Infill Area and is governed by various growth management rules. Over time, the multiple stakeholders in the area have developed many recommendations to mitigate the traffic congestion and foster mobility. This study was designed to evaluate the study area holistically in light of each of these existing plans, so that the implementing agencies could have the confidence to move forward with the understanding that the area has been examined comprehensively and that conflicting projects are not programmed.



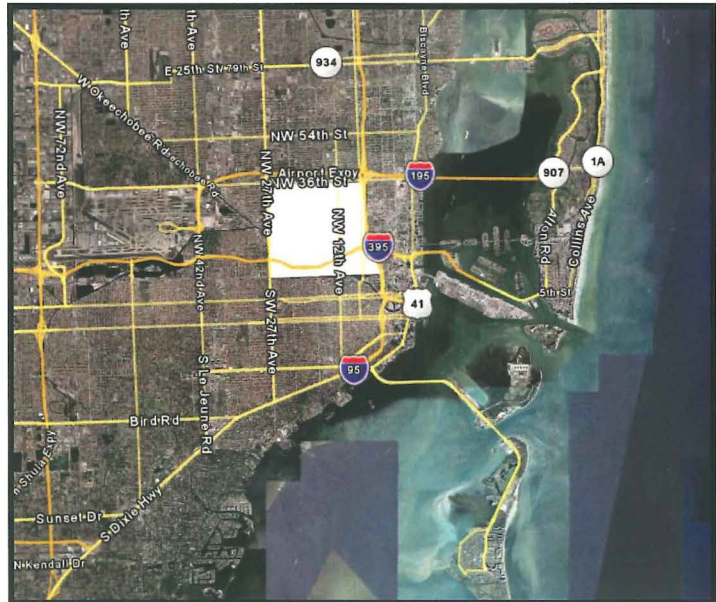
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An initial task of the effort was to develop a Study Advisory Committee. This consisted of stakeholders from each agency and the local institutions in the Study Area. This group developed the methodology, identified available data, provided policy guidance as the study progressed, and examined the work product of each

task.

The second task focused on project development, which reviewed existing conditions, previous reports and studies, as well as collected needed traffic counts.

Traffic Model Development was undertaken in the third task. Methodologies for two levels of analysis were developed. These included an examination of the regional Long Range Transportation Plan Model as well as a micro simulation of the specific study area. Once agreed upon, an analysis of transportation needs was undertaken, which examined level of service on freeways, ramps, roadways and intersections. These were done for the existing year of 2008 and the future year of 2015. From the deficiencies, project needs were determined. Subsequently, a host of multi-modal recommendations were made, focused on:



- Current, planned and recommended projects

- A Transportation Management Organization
- Intersection Modifications
- Capacity Improvements
- Pedestrian and Transit Improvements
- New Facilities.



Existing Conditions

In performing this study previous studies and plans in the area were examined. These included the Miami Dade County Comprehensive Plan, the City of Miami Transportation Element, the Civic Center Circulator and various work programs of various agencies. The Health District has been the object of several transportation and planning studies in the past, where each study addresses and focuses on a specific issue for the area such as roadways, transit, planning and redevelopment.

The existing conditions in the Health District were evaluated, including an examination of Land Use and Zoning Information, a comparison of the Transportation Concurrence Exception Area, other concurrence policies, an analysis of existing traffic conditions including traffic volumes, traffic levels of service, traffic patterns, existing roadway network, and traffic controls. In addition, existing transportation plans were reviewed. The existing

transportation network was evaluated including a look at the traffic counts that were taken, parking inventory, and emergency vehicle routes. Transit conditions, including existing transit routes, transit ridership, transit levels of service, transit infrastructure were examined as were bicycle and pedestrian conditions, including generalized pedestrian flows, pedestrian volumes, pedestrian and bicycle infrastructure. Socio-economic information was researched including residential and employment information.

The evaluation found the Health District is composed of a connected grid pattern of streets. Traffic is able to access the study area and distribute on this network, which remains connected over two large and potentially disruptive physical barriers of the SR 836 Expressway and the Miami River. A sublayer of streets provides internal access between the larger access facilities and the local streets.

Traffic counts were taken at 31 intersections to determine traffic volumes, levels of service and travel patterns. Through this examination it was determined that traffic flows toward the core of the area in the morning, and away in the evening. This is particularly true in the northern end of the area, where the traffic generally flows south and east on 36th Street in the morning, and north and east in the evening. On 20th Avenue traffic flows south and east in the morning and west and north in the evening, adhering to this pattern. Traffic converges on the core of the area, which is defined here as the intersection of 14th Street and 12th Avenue, which is the epicenter of vehicular and pedestrian volumes. One glaring deficiency in the mobility system is the lack of adequate directional and way

finding signage in the area, particularly directing people to and through the area from the expressway system.

External travel patterns show that the study area is a destination for the remainder of Miami Dade County. About 4 percent of all trips in Miami Dade County are destined for the Health District, while just more than 1 percent originates there.

Existing conditions such as traffic, parking, emergency vehicle routes and pedestrian flows were also evaluated. As were transit conditions, bicycle pedestrian conditions and socio-economic conditions. It was determined that the Health District is one of the most well connected centers in all of Miami-Dade County. There are bus stops throughout the study area. These indicate the relative coverage of transit, but most routes using these stops circulate at a variety of frequencies and are not generally perceived as conducive to people making the short trips. There are several distinct areas of pedestrian movement inside the core of the area on sidewalks and between buildings. Traffic counts detail a high level of pedestrian activity in the core and in the northern boundary along 36th Street.

Socio-economic information relative to the Health District was identified, particularly on shift sizes, employment, and students and visitors. The area can be described as urban, horizontally mixed in use between residents and business. The core of the study area is the institutional center of the health district, and as such, it has very few residential units and is almost entirely composed of institutional establishments. North of the central study area there is a large industrial/warehousing area with very low population and employment density. However, this area houses the produce market and experiences heavy truck traffic during operational hours. While there are few residential units in these areas, there are generally more than 15,000 employees per square mile. The remainder of the area outside of the central study area is residential. The area of greatest population is a super block bound by 20th Street to the north, 14th Avenue to the east, 14th Street to the south and 17th Street to the west. This contains over 15,000 people per square mile. A relatively dense residential area surrounds the business core of the district. The central core of the study area has an employment density of nearly 39,000 employees per square mile. The central core area generates a large number of trips from the 52,500 employees in the total study area. More than 20 percent of health district workers utilize public transit as their primary means of transportation to travel to work.



The racial composition of the health district closely resembles that of Miami-Dade County. Approximately 44 percent of residents were born in the United States (30 percent born in Florida) while 55 percent are immigrants. The district has a higher incidence of non U.S. citizen foreigners than Miami-Dade County, accounting for 35 percent of the area residents.

Analysis

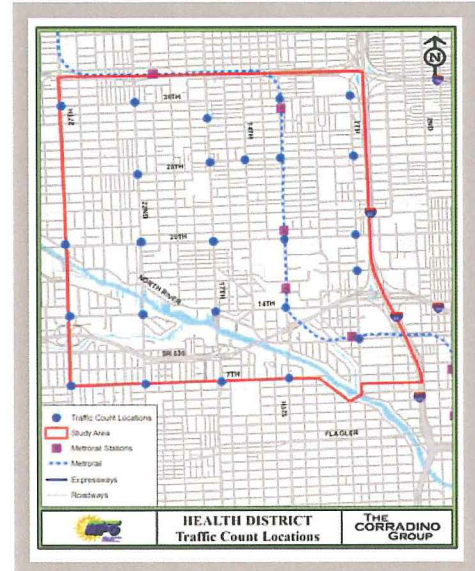
Both the expressways system and intersections on local roads were analyzed using two different transportation models. Both analysis have been performed for the years 2008 and projected to the future analysis year of 2015.

Model volumes were compared for the years 2000, 2008 and 2015. It was observed that the model shows consistent growth in highway and transit trips.

From the counts Average Annual Daily Traffic (AADT) for the Year 2008 and Year 2015 were calculated. A deficiency analysis was then performed and the level of service for Year 2008 and Year 2015 was determined. Traffic volumes were compared with roadway capacity for the peak hour traffic, and subsequent level of service values were assigned for Year 2008 and Year 2015. The roadway system can be characterized as congested and worsening over time. Often times there may be little available physical capacity to mitigate the problems alone, therefore multi-modal solutions need to be sought.

Expressways

The expressway network is above or nearing capacity. The SR112 corridor WB from east of the I-95 interchange has segments that perform at a LOS E and F. The SR 836 Eastbound corridor performs at a LOS of D or better in the AM and PM except at the NW 27th Ave Interchange area in the AM peak hour. The SR836/395 WB corridor performs at an acceptable LOS from the east of I-95 interchange to the approach to NW 27th Avenue interchange. The I-95 NB corridor contains sections that perform at a LOS of E and F in the afternoon peak hour. At the interchange with SR836/195 there are sections that perform at a LOS of E/F due to the high volumes along the freeway and vehicles attempting to maneuver to I-95NB lanes and the SR836/195 EB WB lanes. The I-95 SB corridor section that performs at a LOS of E and F during the AM Peak Hour. This is due to the high volume of vehicles using the freeway in the morning rush hour traffic with destinations within the Health District.



Intersections

Intersections were examined for level of service deficiencies. One intersection was found deficient in the existing condition, and three were found deficient in 2015. Multiple pieces of many intersections either as approaches or specific movements are and will be deficient, but can be mitigate through signal optimization. Essentially what was found is that the study area will experience an increase in travel time, travel delay, vehicular delay, total stops and average speed of vehicles by 2015. It is anticipated that these benchmarks can be mitigated by the implementation of the projects recommended herein.

Network Statistics/Measures of Effectiveness (MOE)

| Synchro Total Network Statistics | 2008 AM | 2015 AM | 2008 PM | 2015 PM | 2015 AM Mitigated | 2015 PM Mitigated |
|----------------------------------|---------|---------|---------|---------|-------------------|-------------------|
| Travel Time (hrs) | 4,055.9 | 5,480.2 | 3,810.9 | 4,933.1 | 4,433.8 | 4,666.9 |
| Total Delay (hrs) | 2,706.6 | 4,016.2 | 2,420.2 | 3,483.8 | 2,910.4 | 3,133.2 |
| Delay/Veh (s) | 348.5 | 485.6 | 324.1 | 439.5 | 333.9 | 357.9 |
| Total Stops | 92,904 | 120,188 | 90,834 | 98,620 | 111,751 | 117,691 |
| Stops/Veh | 3.32 | 4.04 | 3.37 | 3.46 | 3.56 | 3.74 |
| Average Speed (mph) | 13 | 12 | 15 | 13 | 14 | 13 |

| | |
|---------------|---------------|
| Travel Time | + 1425 hrs |
| Total Delay | + 1310 hrs |
| Vehicle Delay | + 138 sec |
| Total Stops | + 27285 stops |
| Stops/Veh | + 0.72 stops |
| Average Speed | - 1 mph |

Recommendations

Based on the analysis a series of recommendations have been prepared to address the identified transportation deficiencies and improve the study area in terms of safety and operations. The series of improvements are multimodal in character to ensure that all users of the system will be provided an adequate level of service.

The recommendations were based on a traffic models of the study area with future projects included from the TIP. These have already been justified by the LRTP and come from an analysis of needs and are recognized as needed and cost feasible. The additional capacity projects at intersections and links resulting from the model are the newly needed projects. Projects have been prioritized by the project team to reflect Health District priorities. In doing so projects have been ranked in the following time frames:

- Short Term -- 1-2 Years
- Mid Term -- 3-5 Years
- Long Term -- +5 Years

As a main objective of this project was to perform a transportation analysis to determine the need for projects, recommendations were made by bringing together previously suggested projects from a variety of sources including the Transportation Improvement Program, the Long Range Transportation Plan, and the City of Miami Basis of Design Report, as well as new projects stemming from the intensive analysis of the system performed in this study. Recommendations were made in six categories which include:

- Currently Planned and Recommended Projects
- Transportation Management Organization
- Intersection Modifications
- Pedestrian and Transit
- Additional Capacity
- New Facilities

Each of the projects has been cross referenced and mapped (where appropriate) with the existing projects from the Transportation Improvement Program, Long Range Transportation Plan and City of Miami Basis of Design Report to assure that conflicting recommendations are eliminated. No conflicting recommendations exist in this report. See Chapter 7 for Lists of Recommendations.

In general, the future transportation system will consist of existing roadways with several capital improvements to widen roadways, provide additional bike lanes, sidewalk improvements, transit improvements, and operational improvements throughout the network.

During the development of this study, the Study Advisory Committee worked to ensure that the needs of Miami-Dade County Public Works, Miami-Dade Transit, Jackson Memorial, University of Miami,



FDOT, Miami-Dade Expressway Authority and the Transportation Local Disadvantaged Community were considered.

As input was taken, it was recommended that the streets or roadways that are adjacent to the University of Miami/Jackson Memorial main generators, Institutional uses, main parking facilities and Metrorail stations have a well interconnected system of sidewalks to provide for an efficient transportation system. Additionally a signage program needs to be developed direction motorists coming to the Health District from the highway system. Additionally, there is a stated need for improved bike path system between the residential areas located in the western most area.

The analysis of level of service for existing and future conditions indicates there is a need to improve the transportation network within the study area. However, a closer study of the intersections reveals that operational improvements that are short term and relatively low in cost will improve the efficiency of the network. These improvements, such as signal timing optimization, additional turn lanes, additional storage capacity for turn lanes, etc. are recommended.

Many improvements to the freeway system are being studied by the Florida Department of Transportation, and a Project, Development and Environment Study (PD&E) is currently underway along SR 836. Improvements along I-95 such as the High Occupancy Toll (HOT) lanes are currently being implemented.

It is now incumbent upon the various stakeholders to work with FDOT, MDX, the City of Miami and Miami Dade County Public Works to have the projects placed on the appropriate work programs. The analysis and recommendations provided in this report should provide sufficient justification to the various agencies to enable the projects to be implemented expeditiously.

