Miami-Dade MPO GPC V #7

Miami-Dade 2040 Bicycle/Pedestrian Plan

prepared for:

MIAMI-DADE MPO
Metropolitan Planning Organization

prepared by:

Kimley-Horn and Associates, Inc.

TB260059.13

Table of Contents

This page intentionally left blank.

Introduction

Miami-Dade County is located in the southeastern part of Florida, and is the most populated county in Florida with approximately 2,591,035 people. The county is bounded by Broward, Monroe, and Collier counties. As the third largest county in Florida in land area, Miami-Dade County contains approximately 2,431 square miles with 35 incorporated municipalities. Miami-Dade County's transportation network consists largely of a grid street system with streets running east-west and avenues running north-south. Exceptions to the grid system include some of the major expressways and roadways such as I-95, SR 836 (Dolphin Expressway), SR 874 (Don Shula Expressway), Homestead Extension of Florida's Turnpike (HEFT), Biscayne Boulevard, and South Dixie Highway. Miami-Dade Transit provides three forms of fixed-route public transportation including Metrorail (heavy rail), Metromover (automated people mover), and Metrobus (fixed route bus). Miami-Dade County provides eight large-scale parks among numerous smaller parks and recreation facilities. Two national parks are located in Miami-Dade County including Everglades National Park and Biscayne National Park.

It is critical to enhance non-motorized transportation mobility and accessibility in Miami-Dade County to connect the county's cities, neighborhoods, and surrounding facilities. Pedestrian and bicycle-friendly environments invite residents to patronize local businesses, walk or bike to work and school, and access public transportation for longer trips. Furthermore, promoting walking and bicycling in Miami-Dade County achieves important sustainability, health, and recreation goals as well.

Atlantic Trail, Multi-Use Pathway in Miami Beach

Miami-Dade County is continually seeking ways to enhance its pedestrian and bicycle facilities. Collectively, the county's 2035 Long Range Transportation Plan, 2035 Miami-Dade MPO Pedestrian and Bicycle Plan, and Miami-Dade Transit Development Plan have been the springboard towards the vision and development plan for the future of pedestrian and bicycle facilities in Miami-Dade County.

The Miami-Dade 2040 Bicycle/Pedestrian Plan presents a vision and improvement strategies developed through public engagement activities and technical analysis to enhance the important non-motorized transportation network of Miami-Dade County. This Plan serves as the non-motorized element of the 2040 Long Range Transportation Plan (LRTP).

Bicycling is an important family and community-building activity

Vision, Goals, Objectives

Vision

The vision of the Miami-Dade 2040 Bicycle and Pedestrian Plan is to enhance the accessibility, safety, public health, social equity, environment, and overall quality of life within Miami-Dade County by creating interconnected bicycle and pedestrian friendly communities throughout the county.

Goals and Objectives

Goal 1

Create a safe, convenient, and accessible series of pedestrian and bicycle friendly facilities that connect local communities, utilizing cooperative efforts of stakeholder entities including the public, governmental agencies, and the private sector.

Objective 1.1

Develop an inter-regional system of pathways connecting all major points of interest including areas of residential development, businesses, employment centers, schools, and other areas of public interest such as health care, recreation, and cultural centers.

Objective 1.2

Create a development plan that defines and evaluates existing and proposed facilities in order to prioritize specific planning and design needed to enhance the mobility for users throughout the network.

Objective 1.3

Provide pedestrian and bicycle facilities that will help to interconnect existing and future networks between neighboring counties, including but not limited to Broward, Collier, and Monroe counties.

Objective 1.4

Incorporate existing public right-of-ways (e.g. utility lines, rail lines, waterways, etc.) and transportation networks in the design of bicycle and pedestrian facilities to minimize the cost to the public.

Objective 1.5

Ensure that the network system is convenient and adequate by utilizing universal pedestrian bicycle facilities that provide access and mobility for all users of the community including children, adults, the elderly and disabled.

Objective 1.6

Expand and develop physical pedestrian and bicycle facilities that help to improve visibility, utility and safety including but not limited to additional bicycle parking, improved lighting along pathways, and improved landscaped pathways, trails, and lanes.

Objective 1.7

Provide a safe and efficient maintenance program that will evaluate and monitor bicycle and pedestrian facilities throughout the pedestrian and bicycle network, ensuring that all facilities are appropriately maintained for access, safety, and usability.

Objective 1.8

Provide a safety guideline program to enforce regulations of safety, operation and proper usage of the bicycle and pedestrian network, ensuring that the interaction between users and the facilities remains safe and accessible at all times.

Objective 1.9

The bicycle and pedestrian network should be implemented to meet ADA design standards as well as the highest obtainable level of safety and design standards.

Goal 2

Create an environment that endorses walking and bicycling as viable forms of transportation, exercise, and leisure that will promote well-being through measures of personal health benefits, environmental awareness, and safety.

Objective 2.1

Provide informational sessions and forums advising the public how using the pedestrian and bicycle network helps to address numerous health concerns including depression, heart disease, high blood pressure, obesity, and stress. Provide both quantitative and qualitative statics that will inform the public about how their change in transportation mode can contribute to a decrease in a number of health concerns.

Objective 2.2

Inform the public, through qualitative and quantitative measurements, about how using the pedestrian and bicycle network helps to decrease motor vehicle usage, in turn reducing vehicle emissions and improving the environment from both a visual and ecological standpoint.

Objective 2.3

Encourage and seek out partnerships through local and regional cycling /walking organizations to provide regular training and safety programs regarding pedestrian and bicycling facilities and the interaction with its users.

Objective 2.4

Encourage and promote safety programs for the public, including Safe Route to School, Safe Route to Parks, and Urban Center Safety and Mobility initiates.

Objective 2.5

Create and provide information to the public regarding proper usage and safety regulations for the pedestrian and bicycle network through the use of handouts, information sessions and online sources.

Objective 2.6

Provide programs and functions that promote incentives for the public utilizing pedestrian and bicycle facilities. Provide ways for the public to measure their pedestrian and bicycle network usability and institute awards and recognition for users who have implement the pedestrian and bicycle facilities throughout both their professional and social lives.

Objective 2.7

Promote bicycle commuting by encouraging local employers to provide bicycle parking and changing facilities for their employees. Promote bicycle commuting by encourage local developments to provide additional bicycle parking and pathways for pedestrian and bicycle use beyond City and County published standards.

Goal 3

Foster pedestrian and bicycle planning programs at both the county and local levels.

Objective 3.1

Petition and support the establishment of pedestrian and bicycle planning committees within local governments, encouraging the development of new pathways, enhanced bicycle facilities, and overall improvement of landscaped pathways, trails, and lanes.

Objective 3.2

Support the establishment of forums for bicyclist, pedestrians, public stakeholders, and anyone else of interest to discuss and plan the development of the pedestrian and bicycle systems throughout the county.

Objective 3.3

Develop ways for active participation of the community in programs, policy planning, and development of the pedestrian and bicycle system including but not

limited to online/in-person surveys and public forums/hearings regarding future/proposed pedestrian and bicycle facilities.

Objective 3.4

Support local pedestrian and bicycle plans and encourage their integration with the county wide pedestrian and bicycle plan by utilizing objectives and goals proposed in the local plans intertwined into and directly correlated the county's development plan.

Objective 3.5

Create a method to measure usage of the existing and proposed systems, utilizing the results as guidelines for future priorities regarding pedestrian and bicycle network development.

Objective 3.6

Develop policies that require the integration of pedestrian and bicycle safety and design standards in all future development and transportation projects.

Objective 3.7

In order to promote pedestrian and bicycle friendly environments, provide assistance in planning, land usage and zoning as well as roadway design.

Goal 4

Secure ample funding opportunities for the development and maintenance of a safe and accessible pedestrian and bicycle network for all users through both local sources and the pursuit of applicable federal, state, and private grants.

Objective 4.1

Continuously supply information on all available state and federal grants for pedestrian and bicycle planning and development.

Objective 4.2

Maximize the availability of public and private sector funds when developing a pedestrian and bicycle system.

Objective 4.3

Promote several different opportunities for the general public to contribute to the system to help offset costs endured by the local governments as well as technical assistance on different financing options needed to develop the pedestrian and bicycle network.

Objective 4.4

Warrant designated funds for development of pedestrian and bicycle facilities, including all stages of project development

Goal 5

Invest in accessible and accommodating bicycle and pedestrian facilities that give users of all ages, abilities, and income viable options when making essential trips.

Objective 5.1

Create a network of pedestrian and bicycle facilities that help communities meet social equity goals by providing links for essential trips such as to work, to school, to food sources, or for healthy recreation, recognizing that walking, biking, and public transportation are cheaper forms of personal transportation than private automobiles.

Objective 5.2

Develop enhanced pedestrian and bicycle facilities including but not limited to improved lighting for visibility, separation of facilities for bicyclists and pedestrians, and larger and more open ramps and pathways in order to encourage/attract the elderly and disabled to utilize the pedestrian and bicycle network.

Objective 5.3

Provide sufficient signage and information along the pathways to keep all users updated with pathway types, conditions, and accessibility to locations throughout the entirety of the network.

Objective 5.4

Inform the public through information sessions, forums, and handouts how the bicycle and pedestrian network can be utilized by all people and how it can socially and economically benefit/advance their personal lives.

- Providing informational brochures and pamphlets around the County about pedestrian and bicycle network connections that will help all users travel to and from their origins and destinations without the use of motorized vehicles.
- Provide informational sessions to teach the public about the effects of their daily trips, and how making changes to their transportation modes can alter their lifestyle in both qualitative and quantitative measurements.
- Provide information online about programs that promote the implemented universal pedestrian and bicycle facilities that will be fit to serve all users within the pedestrian and bicycle network.

Literature Review

An important element of a successful multimodal mobility plan is to understand prior initiatives that can provide information about the context within which this plan exists and can provide information about projects that can be used as a starting point for enhancing multimodal mobility. Recommendations and projects identified in prior studies that may affect the outcome of this plan have been identified.

The following data sources, studies, and plan were reviewed as part of this effort. A brief summary of the review of each item is included.

- National Household Travel Survey
- U.S. Census Journey-to-Work
- Miami-Dade MPO 2035 Bicycle and Pedestrian Master Plan
- City of Miami Gardens Pedestrian/Bicycle Master Plan
- City of Doral Bikeway Network Plan
- Miami DDA Bicycle/Pedestrian Plan
- City of Miami Bicycle Plan
- NACTO – Urban Bikeway Design Guide
- USDOT Complete Streets
- Context Sensitive Solutions

- FHWA's How to Develop a Pedestrian Safety Action Plan
- Miami-Dade MPO 2035 Long Range Transportation Plan (LRTP)
- Florida Department of Transportation (FDOT) Work Program
- Miami-Dade MPO Transportation Improvement Plan (TIP)

National Household Travel Survey Data

According to the 2009 National Household Travel Survey, nearly one-half of all trips are less than three miles in length. Approximately 28 percent of trips are less than one mile, yet less than one percent of all trips are made by bicycle. CHECK THIS

According to the 2009 National Household Travel Survey, nearly 28 percent of all trips are two miles or less in length. Approximately 17 percent of trips are less than one mile, yet less than two percent of all trips are made by bicycle and less than 11 percent of all trips are made by walking.

Active transportation, such as bicycling, walking, or accessing public transportation, has the potential to serve a greater market share of trips than it currently does. Facilities such as wide sidewalks, pedestrian crossing features at key intersections, bicycle parking areas, and interconnected bike lanes are important for attracting a greater modal share for alternative travel modes. Focusing planning efforts on alternative transportation modes is vital.

US Census Journey-to-Work

The United States Bureau of the Census measures transportation data for work trips only using a sampling of respondents that complete the census long form as part of the annual American Community Survey (ACS). Updated socioeconomic, demographic, and housing information is now available on an annual basis. The 2007-2011 ACS 5-Year Estimates were used for this analysis.

Work trip characteristics in the Miami-Dade County demonstrate that residents are less likely to make work trips on foot or bicycle than by utilizing car, truck, or van. Based on the 2007-2011 American Community Survey 5-Year Estimates, 77.1 percent of residents in Miami-Dade County utilize unshared car, truck, or van to commute to work, while only 9.6 percent of residents utilize shared car, truck, or van to commute to work. Less than three percent of residents in Miami-Dade County commute to work by walking or other

means; however, based on the 5-year estimates, there has been an increase in the number of residents that commute to work by walking or biking. Below provides an estimate for the number of residents that commuted to work by walking or bicycling for the years 2006 and 2011.

	Miami-Dade County		State of Florida	
Description	**Number**	**Percent**	**Number**	**Percent**
Car, truck, or van	956,248	86.44%	7,334,876	89.83%
Drove alone	851,100	76.94%	6,486,547	79.44%
Carpooled	105,148	9.51%	848,329	10.39%
Public Transportation	60,698	5.49%	160,236	1.96%
Taxicab	1,493	0.13%	6,113	0.07%
Motorcycle	2,292	0.21%	26,456	0.32%
Bicycle	4,933	0.45%	48,401	0.59%
Walked	24,194	2.19%	132,455	1.62%
Other means	14,784	1.34%	98,906	1.21%
Worked at home	41,560	3.76%	357,958	4.38%

Based on the data provided, the number of residents in Miami-Dade County that commute to work by bicycle has increased by 9.6 percent and the number of residents that commute to work by walking has increased by 2.8 percent.

Miami-Dade MPO 2035 Bicycle and Pedestrian Master Plan

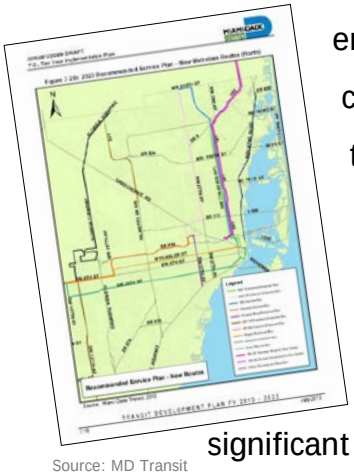
The Miami-Dade Metropolitan Planning Organization in conjunction with Gannet Engineering developed a Bicycle and Pedestrian Master Plan for Miami-Dade County with a long-term horizon of 2035. This master plan was built upon a solid foundation of previous studies prepared for Miami Dade County's mobility, aesthetics, and urbanism. The vision of the master plan was to foster the development of bicycle and pedestrian friendly communities while improving quality of life and public health for the greater good of life with Miami-Dade County (MPO 2035). The document was used to create an objective-oriented master plan that would help to improve existing bicycle and pedestrian facilities and develop new bicycle and pedestrian facilities intertwined with the surrounding roadway networks. The 2035 Miami-Dade County MPO Bicycle and Pedestrian Master Plan established the following goals:

- Provide a regional system of safe, convenient and accessible bicycle and pedestrian facilities for all users through the coordinated efforts of governmental agencies, the private sector and the public (MPO 2035).
- Promote and encourage cycling and pedestrian travel as viable forms of transportation, as healthy forms of exercise, and as a positive benefit to the environment (MPO 2035).
- Promote coordinated and continuous bicycle and pedestrian planning and development programs at the County and local levels (MPO 2035).

- Provide adequate funding resources for planning, developing and maintain high quality bicycle and pedestrian systems (MPO 2035).

Miami-Dade Transit Development Plan

The Miami-Dade Transit Development Plan is a 10-year for Miami-Dade Transit to help endorse a sustainable, reliable, and functional transit system that can be utilized by all patrons. The transit plan aims to evaluate the existing transit systems and prioritizing areas that require improvements. The Miami-Dade Transit Development Plan is made up of major components including a performance evaluation, a needs plan, a capital improvement plan, and a financial plan. The transit development plan is aiming to make significant improvements to the metro bus service, develop 13 new transit hubs, and providing additional metrobus routes through a needs basis.



Source: MD Transit

Recently, the Miami Dade Transit revealed the Miami International Airport Metrorail Station and the Orange Line rail service. This project has helped to jump start development committees and discussion about the growth of the Miami Dade Transit system.

City of Miami Gardens Pedestrian/Bicycle Mobility Plan

In 2013, the City of Miami Gardens in conjunction with Kimley-Horn and Associates, Inc. developed a Bicycle and Pedestrian Mobility Plan. The vision of the mobility plan was to foster the development of bicycle and pedestrian facilities that:

- Enhance the city-wide bicycle/pedestrian safety network
- Provide bicycle facilities and amenities for use as a method of transportation
- Improve traffic flow and safety for intermodal transportation

- Refine goals as identified in the City's Transportation Element of the Comprehensive Development Master Plan

The mobility plan used a combination of data collection, public feedback, and engineering evaluation to determine pedestrian and bicycle facility needs throughout all of the City of Miami Gardens. After the assessments were completed, a list of area wide improvements, site-specific improvements, and non-engineering improvements were compiled.

City of Doral Bicycle Network Plan

The City of Doral, in conjunction with Kimley-Horn and Associates, Inc. and Alta Planning and Design developed a Bikeway Network Plan to identify potential trail projects that would provide residents and employees with transportation, recreational, and leisure opportunities.

The bicycle network plan development was consistent with the Bicycle Friendly Communities (BFC) model, which includes the "Four E's" of Engineering, Education, Encouragement, and Enforcement. The development of the bicycle plan also included collaboration with the public, Miami-Dade County Bicycle Pedestrian Advisory Committee (BPAC), Miami-Dade Metropolitan Planning Organization (MPO), and Miami-Dade Park and Recreation Department (MDPR).

Miami DDA Bicycle and Pedestrian Plan

Miami-Dade Metropolitan Planning Organization (MPO) in conjunction with Miami Downtown Development Authority (DDA) and Kimley-Horn and Associates, Inc. developed a bicycle/pedestrian mobility plan for the Miami Downtown Development Authority (DDA) area. The mobility plan used a combination of data collection, public feedback, and engineering evaluation to determine pedestrian and bicycle facility needs throughout all of the City of Miami Gardens. After the assessments were completed, a

list of area wide improvements, site-specific improvements, and non-engineering improvements were compiled.

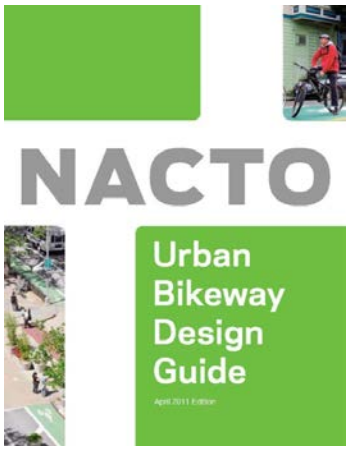
City of Miami Bicycle Master Plan

In 2009, the City of Miami in conjunction with HNTB developed a Bicycle Master Plan for the City of Miami. The vision of the Bicycle Master Plan was to provide a 20 year plan for the City of Miami's bikeway network plan, bicycle parking facilities, and bicycle safety promotion.

The bicycle master plan was broken into 4 phases including 2010, 2015, 2020, and 2030 based on the priorities and needs within specific districts and corridors throughout the City of Miami. Some of the priority corridors (2010-2015) that were zoned are Biscayne Boulevard, Coral Way, SW 8th Street, SW 1st Street, and NW 3rd Avenue. The districts that were considered priority areas included Brickell, Marlins Stadium, Civic Center, Center Grove, and Wynwood Arts.

NACTO Urban Bikeway Design Guide

The National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide was developed as part of the Cities for Cycling initiative and offers guidance to cities seeking to improve bicycle transportation and create safe and enjoyable complete streets.



The Guide details state-of-the-practice design treatments that are used in the world's most bicycle friendly cities including:

- Bike Lanes

- Conventional Bike Lanes
- Buffered Bike Lanes
- Contra-Flow Bike Lanes
- Left-Side Bike Lanes

- Cycle Tracks
  - One-Way Protected Cycle Tracks
  - Raised Cycle Tracks
  - Two-Way Cycle Tracks
- Intersections
  - Bike Boxes
  - Intersection Crossing Markings
  - Two-Stage Turn Queue Boxes
  - Median Refuge Island
  - Through Bike Lanes
  - Combined Bike Lane/Turn Lane
  - Cycle Track Intersection Approach
- Bicycle Signals
  - Bicycle Signal Heads
  - Signal Detection and Actuation
  - Active Warning Beacon for Bike Route at Unsignalized Intersection
  - Hybrid Signal for Bike Route Crossing of Major Street
- Bikeway Signing and Marking
  - Bike Route Wayfinding Signage and Markings System
  - Colored Bike Facilities
  - Shared Lane Markings

USDOT Complete Streets

In March 2010, the Secretary of the United States Department of Transportation (USDOT) announced the end of favoring motorized transportation at the expense of non-

motorized transportation. To accomplish this objective, the USDOT is directing state DOTs, MPOs, and local jurisdictions to:

- Treat walking and bicycling as equals with other transportation modes,
- Go beyond minimum standards within a context sensitive solution,
- Collect data on walking and bicycling trips, and
- Improve non-motorized facilities during maintenance projects.

Complete streets are designed and implemented to enable safe access for all users so that pedestrians, bicyclists, transit passengers, and motorists of all ages and abilities are not discriminated against in the design of the transportation network. Complete streets are defined by the National Complete Streets Coalition (NCSC), a national non-profit partnership, as safe, comfortable and convenient for travel by everyone, regardless of age or ability – motorists, pedestrians, bicyclists, and public transportation riders.

In 1984, the State of Florida adopted a Statute for Bicycle and Pedestrian Ways (Florida Statute 335.065), which is widely regarded as an early form of the complete streets principle. Over the years this initiative has evolved to its current form where it states that both bicycle and pedestrians shall be given full consideration in the planning and development of transportation facilities, with a special emphasis to projects within one mile of an urban area.

Context Sensitive Solutions

The concept of Context Sensitive Solutions (CSS) has been around since late 1960's when the National Environmental Policy Act (NEPA) of 1969 required transportation agencies to consider the possible adverse effects of transportation projects on the environment.

In the late 1990's, the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) jointly sponsored the "Thinking Beyond the Pavement" national conference, which generated the definition of context sensitive design (CSD). It was then that CSS really gained significant momentum.

In the fall of 2006 AASHTO's Center for Environmental Excellence and FHWA sponsored a conference, whose results generated the following definition of CSS:

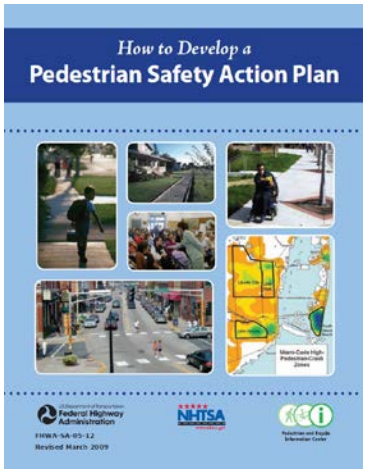
"Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting. It is an approach that leads to preserving and enhancing scenic, aesthetic, historic, community, and environmental resources, while improving or maintaining safety, mobility, and infrastructure conditions".

The core principles of CSS are applied to transportation planning and design and are especially relevant within the context of the City of Miami Gardens. One of them emphasizes exercising flexibility and creativity to shape effective transportation solutions, while preserving and enhancing community and natural environments. In addition, CSS design stresses that in urban environments pedestrians should not be expected to make inconvenient diversions from their travel paths to cross an intersection or a roadway.

How to Develop a Pedestrian Safety Action Plan (FHWA)

The Federal Highway Administration's (FHWA) guide on How to Develop a Pedestrian Safety Action Plan was created to assist state and local agencies in forming and implementing their own Pedestrian Safety Action Plans and enhancing their existing pedestrian safety programs and activities. It includes guidance on:

- Involving stakeholders throughout the planning process
- Collecting data and identifying pedestrian safety problems
- Prioritizing concerns and pedestrian safety improvements
- Selecting engineering countermeasures and other



safety-related treatments

- Providing funding
- Creating a Pedestrian Safety Action Plan

Walking is the fundamental mode of human mobility; however, many of our nation's streets and highways were primarily built to facilitate the smooth flow of motor vehicles. Transportation professionals need to focus on the following areas to make streets safer for pedestrians:

- Slowing vehicle speeds
- Reducing street crossing distances for pedestrians
- Improving the visibility of pedestrians and motorists
- Increasing the level of caution taken by pedestrians and motorists
- Providing pedestrian facilities (sidewalks, crossing islands, etc.) where the needs and potential crash reductions are the greatest

Miami-Dade MPO 2035 Long Range Transportation Plan (LRTP)

The Miami-Dade Metropolitan Planning Organization (MPO) updates their LRTP every five years per federal legislation requirements. The LRTP outlines expenditures for surface transportation programs including highways, transit, safety, research and freight. The current LRTP is for long term planning horizon 2035. The 2035 LRTP was adopted by the MPO Governing Board late 2009. The plan addresses several transportation improvements, including mobility, safety, security, economic vitality, environment, connectivity, and system preservation. The plan identifies several projects extending throughout all of Miami-Dade County.

Florida Department of Transportation (FDOT) Work Program

The Florida Department of Transportation (FDOT) prepares an annual work program for projects to be completed in the next five years. Miami-Dade County falls within the jurisdiction of FDOT District Six. The FDOT 2013 – 2017 work program was reviewed to determine what projects are expected to be completed within the next five years. According to Florida Statute 335.065, bicycle and pedestrian ways shall be established in conjunction with the construction, reconstruction, or other change of any state transportation facility. The Florida Department of Transportation (FDOT) specifies proposed transportation improvements to be implemented throughout all of Miami-Dade County.

Miami-Dade MPO Transportation Improvement Plan (TIP)

The Miami-Dade MPO prepares the annual Transportation Improvement Program (TIP) consistent with federal guidelines. The TIP in effect at the time of this Plan is the FY 2012/13 to FY 2016/17 TIP approved by the Miami-Dade MPO Governing Board on May 17, 2012. The TIP specifies proposed transportation improvements to be implemented in Miami-Dade County over the coming five years.

TRANSPORTATION MOBILITY ANALYSIS

A general transportation mobility analysis is conducted to identify bicycle and pedestrian mobility issues through data analysis in Miami-Dade County. The analysis was based on existing conditions, data collected for this Plan, and an online bicycle and pedestrian survey. The purpose of this task is to collect data that will allow the study team to properly assess the existing conditions of alternative travel modes in Miami Gardens, and to analyze the future bicycle and pedestrian infrastructure needs.

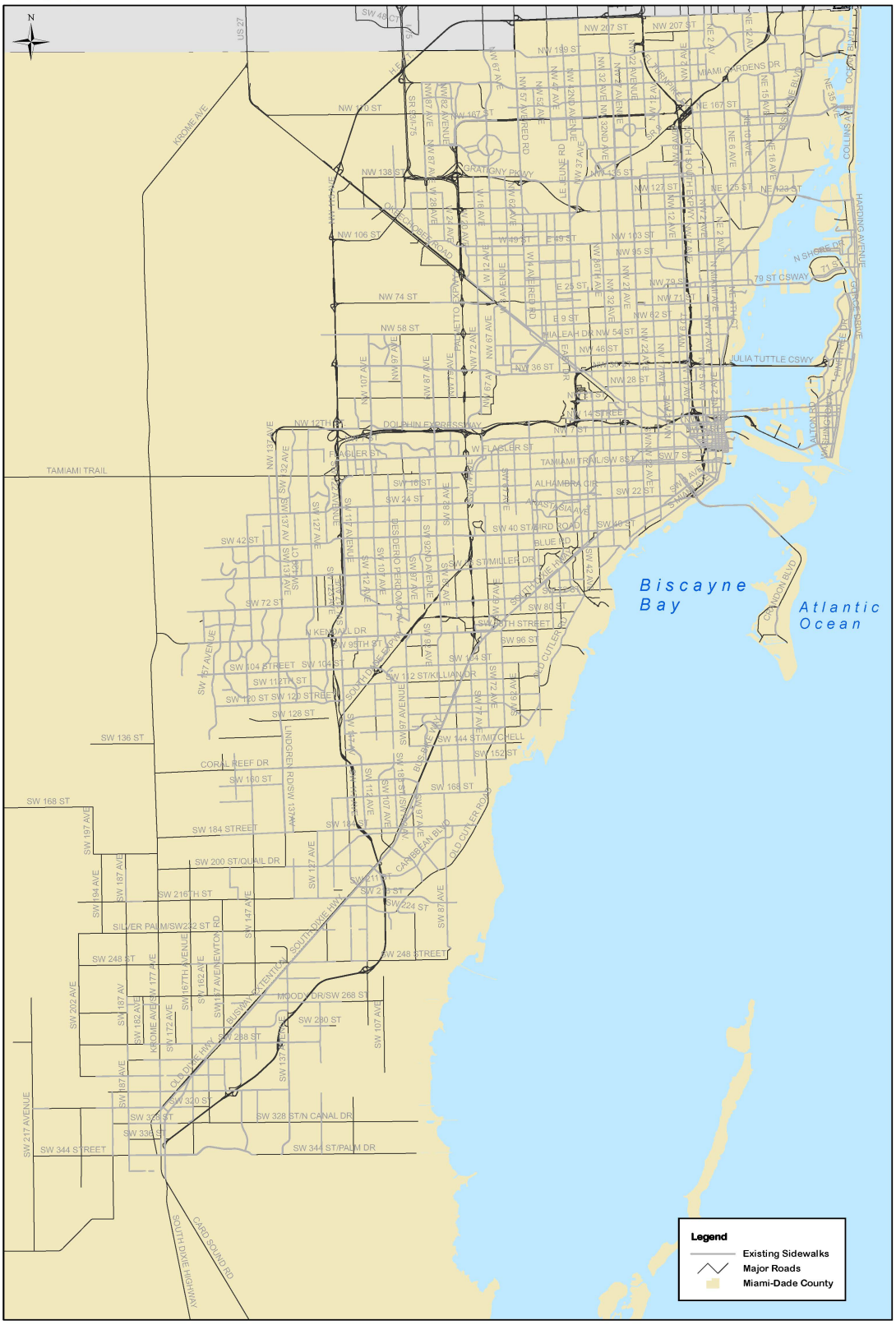
GIS Data Map Series

Using geographic information systems (GIS), a map series was prepared to illustrate existing transportation mobility conditions and community features in Miami-Dade County that help form the background conditions for improving the County's bicycle and pedestrian mobility.

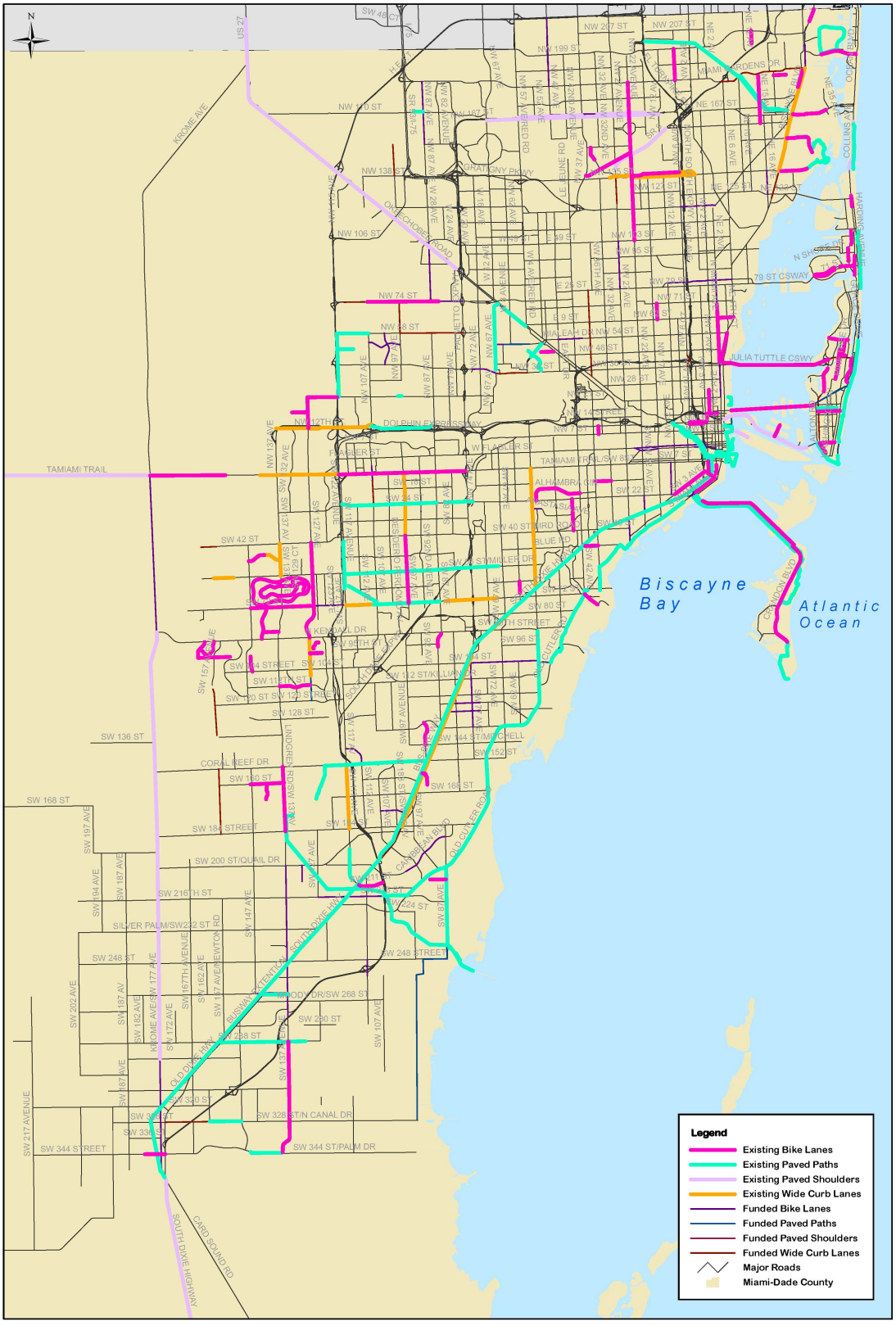
Figures 1 through 7 present the GIS Data Map Series.

- Figure 1. Existing Pedestrian Facilities
- Figure 2. Existing Bicycle Facilities
- Figure 3. Parks and Schools, with Sidewalks
- Figure 4. Parks and Schools, with Bicycle Facilities
- Figure 5. Metrobus Daily Ridership Ranger Per Stop
- Figure 6. Rail Transit
- Figure 7. 2010 Census Population Density

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 1: Existing Pedestrian Facilities
Miami-Dade County

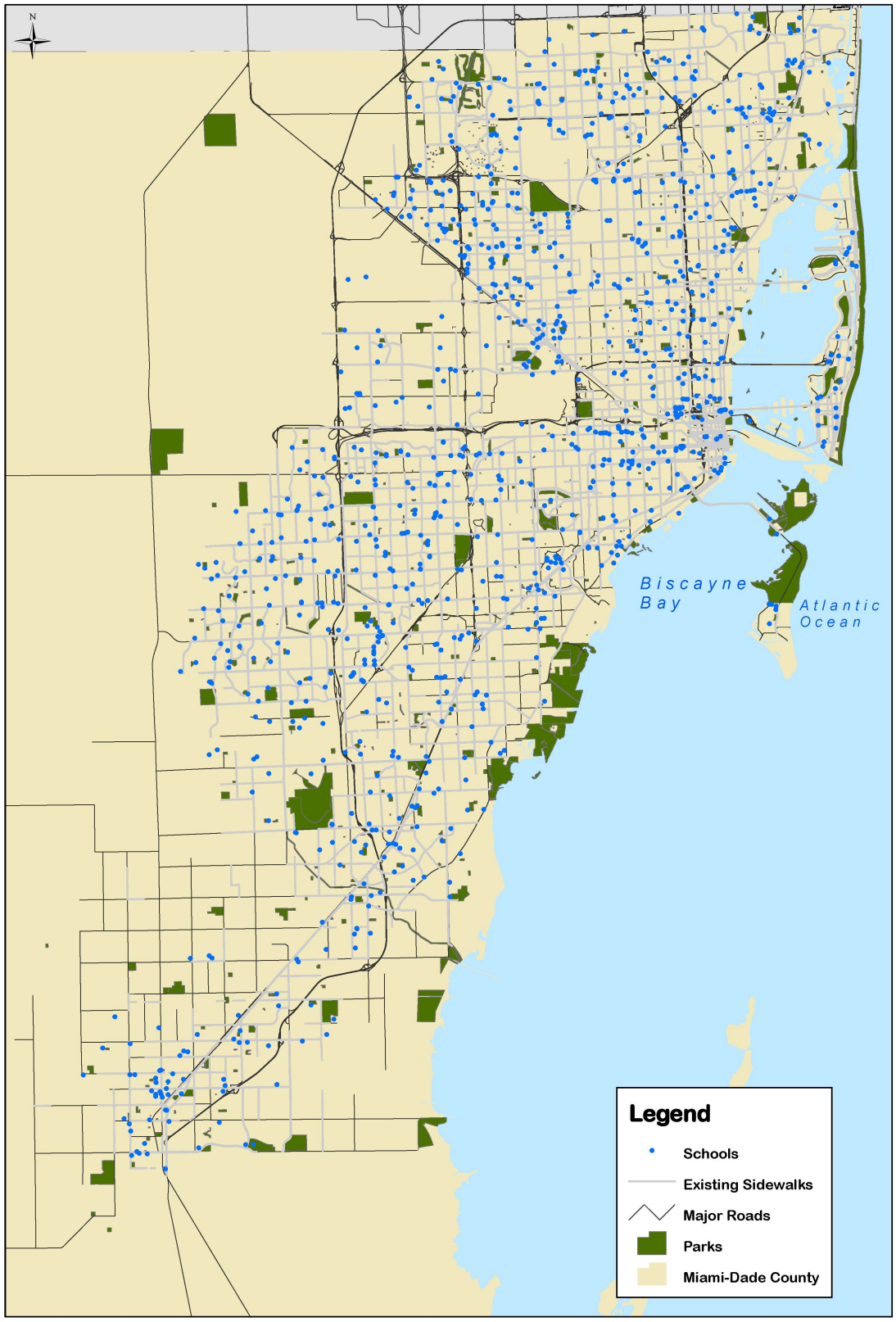


MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 2: Existing Bicycle Facilities
Miami-Dade County



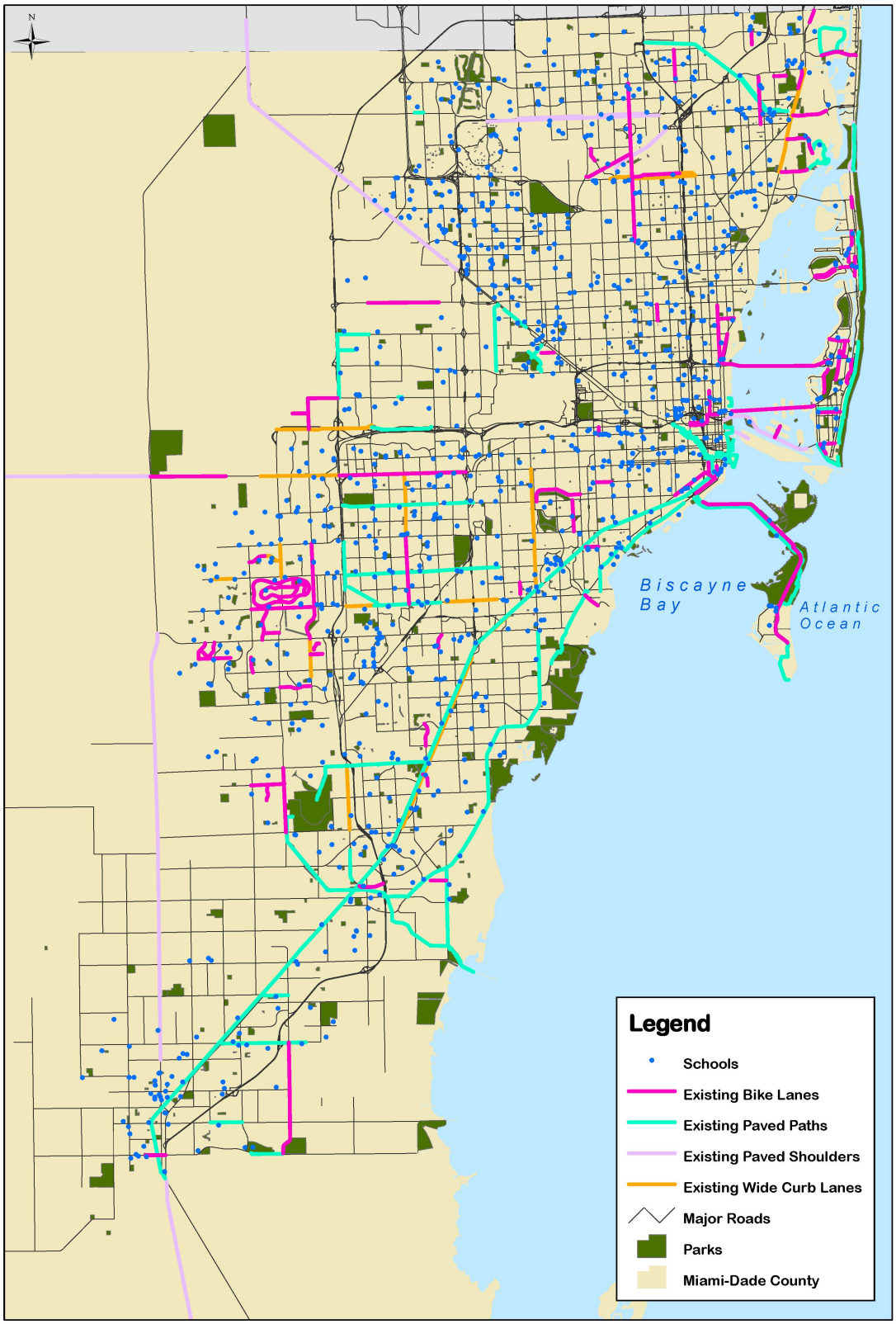
Kimley-Horn and Associates, Inc.

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 3: Parks and Schools, with Sidewalks
Miami-Dade County



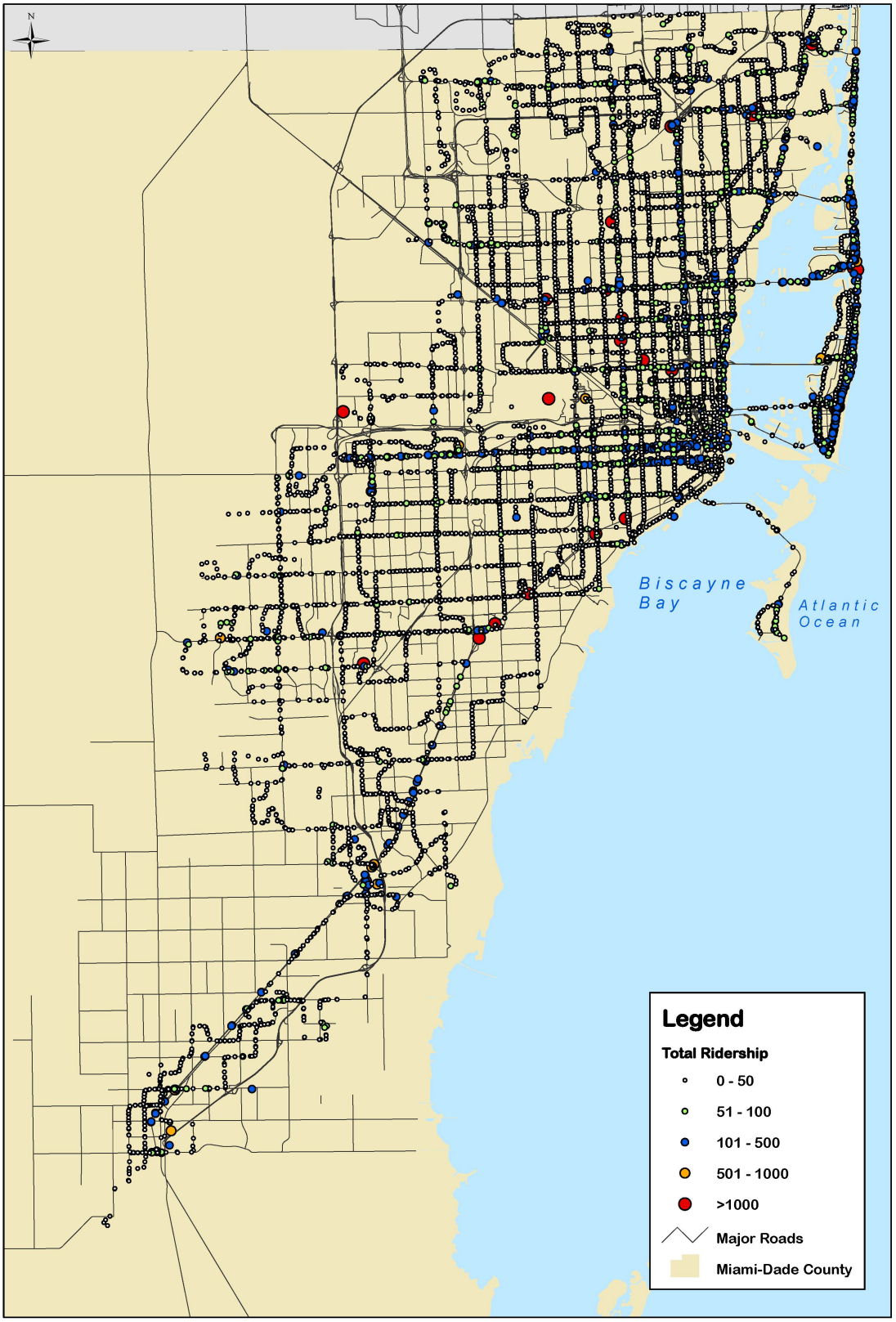
Kimley-Horn and Associates, Inc.

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 4: Parks and Schools, with Bicycle Facilities
Miami-Dade County



Kimley-Horn and Associates, Inc.

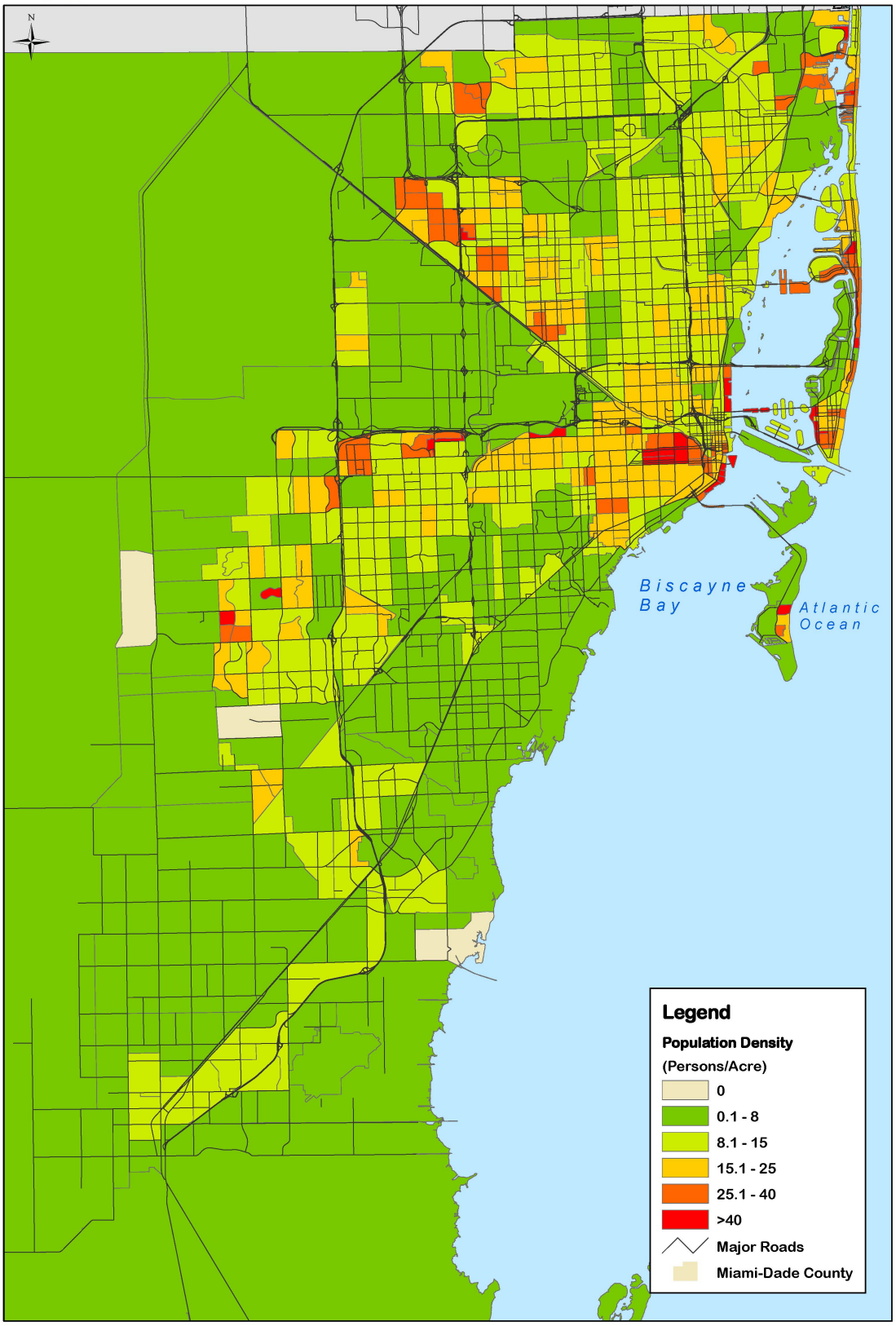
MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 5: Metrobus Daily Ridership Range Per Stop
Miami-Dade County



Kimley-Horn and Associates, Inc.

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 6: Rail Transit
Miami-Dade County

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 7: 2010 Census Population Density
Miami-Dade County



Kimley-Horn and Associates, Inc.

Bicycle Levels of Service

A Bicycle Level of Service (BLOS) analysis was conducted to identify comptability of bicycle travel along the Base Year (2005) Bicycle Network. The results help understand cycling conditions as experienced by an average user.

The BLOS model is based on a methodlogy adopted by the FDOT Quality/Level of Serice (QLOS) Handbook which includes

- Average effective width of the outside thru lane
- Number of thru lanes
- Motorized vehicle volumes
- Mortozied speeds
- Hevey vehicle (truck) volumes
- Pavement conditions

The model identifies the bicycle level of service for a segment of the Bicycle Network on a scale of A through F based on a numerical model score. An LOS of "A" indicates good cycling conditions and "F" indicates the least favorable conditions. In the model, the BLOS are determined by assessing the above variables in the following equation and then applying the LOS thresholds, show in Table 1, to the calculated scores.

$$BLOS = 0.507 ln(Vol_{15}/L) + 0.199SP_t(1 + 10.38HV)^2 + 7.066(1/PR_5)^2 - 0.005(W_e)^2 + 0.760$$

The BLOS model results are not equivalent to the corresponding level of service for the motorized vehicles that has been long recongized by engineers and planners in Florida. As mentioned, BLOS is a measure of compatiabilty for bicycle travel on a given roadway network and not a measure of capacity. The BLOS level of service is not a function of congestion on the network facility but rather the qaulity of service experienced by the cyclist along a given segment.

Pedestrian Levels of Service

A Pedestrian Level of Service (BLOS) analysis was conducted to identify comptability of bicycle travel along the Base Year (2005) Bicycle Network. The results help understand cycling conditions as experienced by an average user.

Bicycle and Pedestrian Levels of Service

BLOS and PLOS were calculated according to the methodology established in the 2009 FDOT Quality/Level of Service (QLOS) Handbook. The BLOS Model is based on the following facility characteristics:

- Average effective width of the outside thru lane
- Number of thru lanes
- Motorized vehicle volumes
- Motorized speeds
- Heavy vehicle (truck) volumes
- Pavement conditions

In the BLOS Model, bicycle levels of service are determined by assessing the above variables in the following equation and then applying the LOS thresholds, shown in Table 1, to the calculated scores.

$$BLOS = 0.507ln(Vol_{15}/L) + 0.199SP_t(1 + 10.38HV)^2 + 7.066(1/PR_5)^2 - 0.005(W_e)^2 + 0.760$$

Similar to the required BLOS roadway characteristic criteria PLOS Model requires additional variable information to complete its assessment and calculate its LOS. The facility characteristics needed to complete the PLOS calculation are listed below:

- Existence of a sidewalk
- Lateral separation of pedestrians from motorized vehicles
- Motorized vehicle volumes
- Motorized vehicle speeds

In the PLOS Model, pedestrian levels of serve are determined by assessing the above variables in the following equation and then applying the LOS thresholds, shown in Table 1, to the calculated scores.

$$PLOS = -1.2276 ln(W_{ol} + W_l + f_p \times \%OSP + f_b \times W_b + f_{sw} \times W_s) + 0.0091(Vol_{15}/L) + 0.0004SPD^2 + 6.0468$$

Table 1: Bicycle and Pedestrian LOS Categories

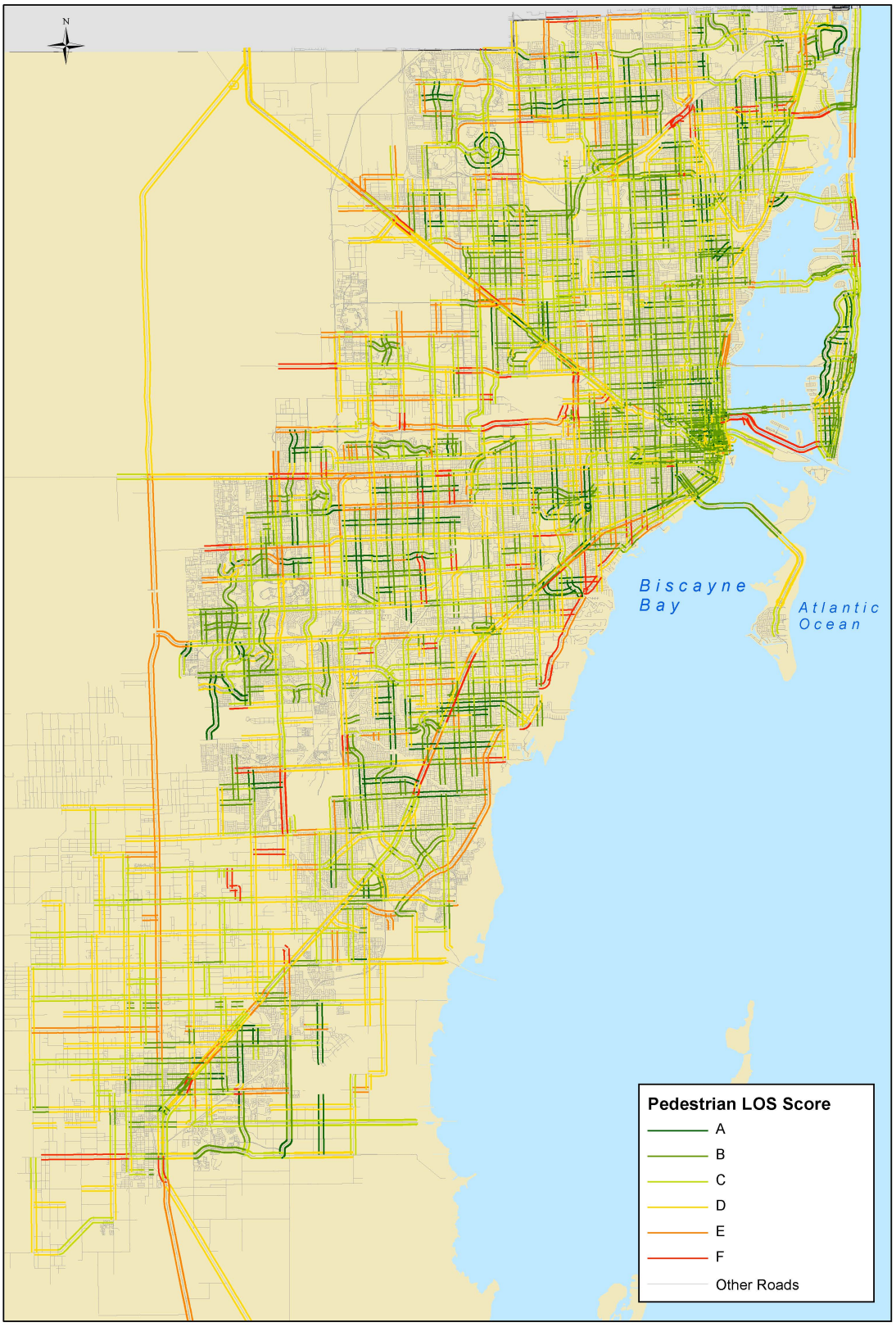
LOS	Score
A	≤1.5
B	>1.5 and ≤2.5
C	>2.5 and ≤3.5
D	>3.5 and ≤4.5
E	>4.5 and ≤5.5
F	>5.5

In order to provide the most accurate analysis of BLOS and PLOS, a spreadsheet consisting of major state and county road segments located in Miami Gardens was utilized. These segments were split into directions, therefore giving the possibility to have a unique Pedestrian Level of Service on both sides of each road. As the spreadsheet was originally created in 2002, updates were needed to make the information valid for 2011. The traffic volume (ADT), directional factor (D), and hourly factor (K_d) were updated based on information from the Florida Department of Transportation and the Miami-Dade Public Works and Waste Management Department.

Sidewalk data for the PLOS calculations were updated segment by segment, first by verifying the presence of sidewalks, then measuring the sidewalk width, the buffer width, and the tree spacing in the buffer. The spreadsheet was also revised to correct any segments that were either mislabeled or no longer exist.

Each segment in the spreadsheet received a unique number created so that it could interact with the NAVTEQ street database. The NAVTEQ database is the most comprehensive street database of its kind, and is updated quarterly. Once every segment was given a number, the spreadsheet was joined with the NAVTEQ database to create the maps that provide a visual reference for the levels of service ranging from A to F. Due to varying sidewalk conditions on the different sides of the segments, there are two pedestrian levels of service for each segment showing the PLOS on each side of the segment. Figures 10 and 11 present the BLOS and PLOS ratings calculated for major roadways within the municipal boundaries. The calculation spreadsheets for BLOS and PLOS are included in Appendix A.

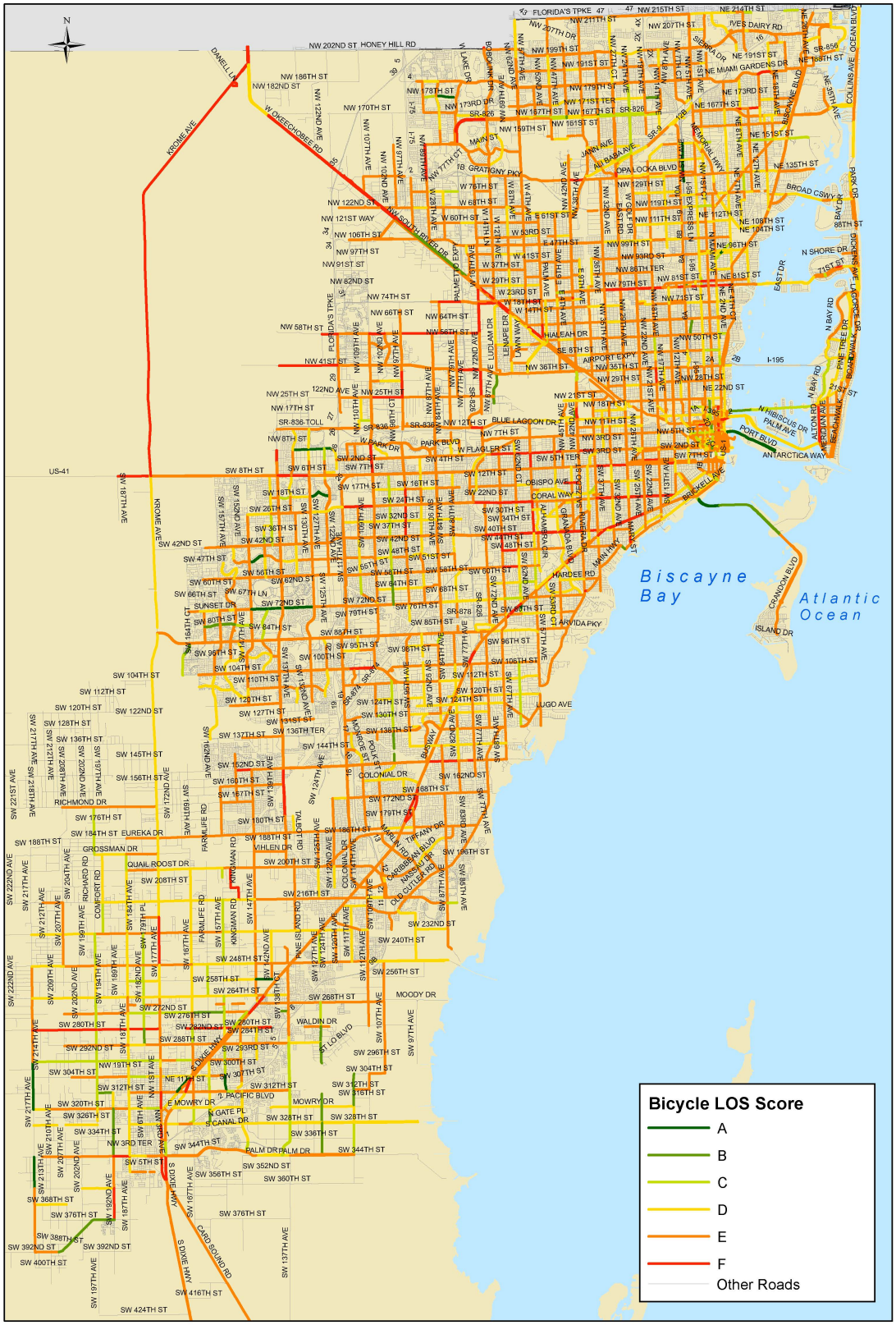
MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 8: Pedestrian Level of Service
Miami-Dade County



Kimley-Horn and Associates, Inc.

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN

Figure 9: Bicycle Level of Service
Miami-Dade County



Kimley-Horn and Associates, Inc.

The results of the BLOS analysis show that over 60 percent of the major roadways within Miami-Dade County have a BLOS of E and over 4 percent of the major roadway segments within the county boundaries have a BLOS of F. A summary of the BLOS results are presented in Table 2.

Table 2: Miami-Dade County Bicycle Level of Service Summary

BLOS Score	Percentage of Major Roads
A	0.8%
B	1.3%
C	5.7%
D	25.5%
E	62.1%
F	2.8%

As shown in Table 3, the majority of the main roadways within Miami-Dade County have a PLOS of B or C. There are only a few major roadway segments within the municipal boundaries that have a PLOS of F.

Table 3: Miami-Dade County Pedestrian Level of Service Summary

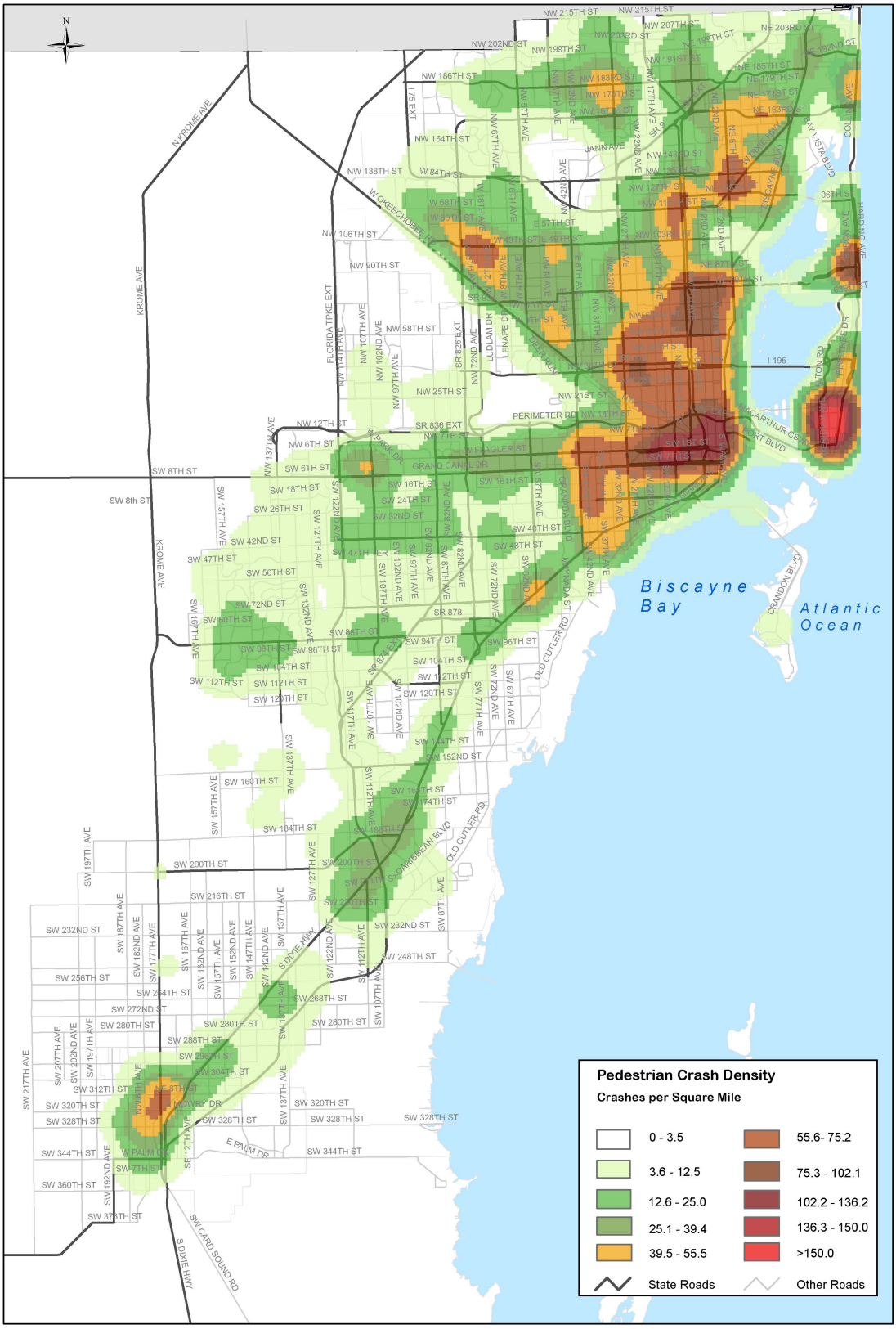
PLOS Score	Percentage of Major Roads
A	6.7%
B	31.7%
C	31.7%
D	21.1%
E	6.1%
F	2.8%

SAFETY

Traffic Crash Data

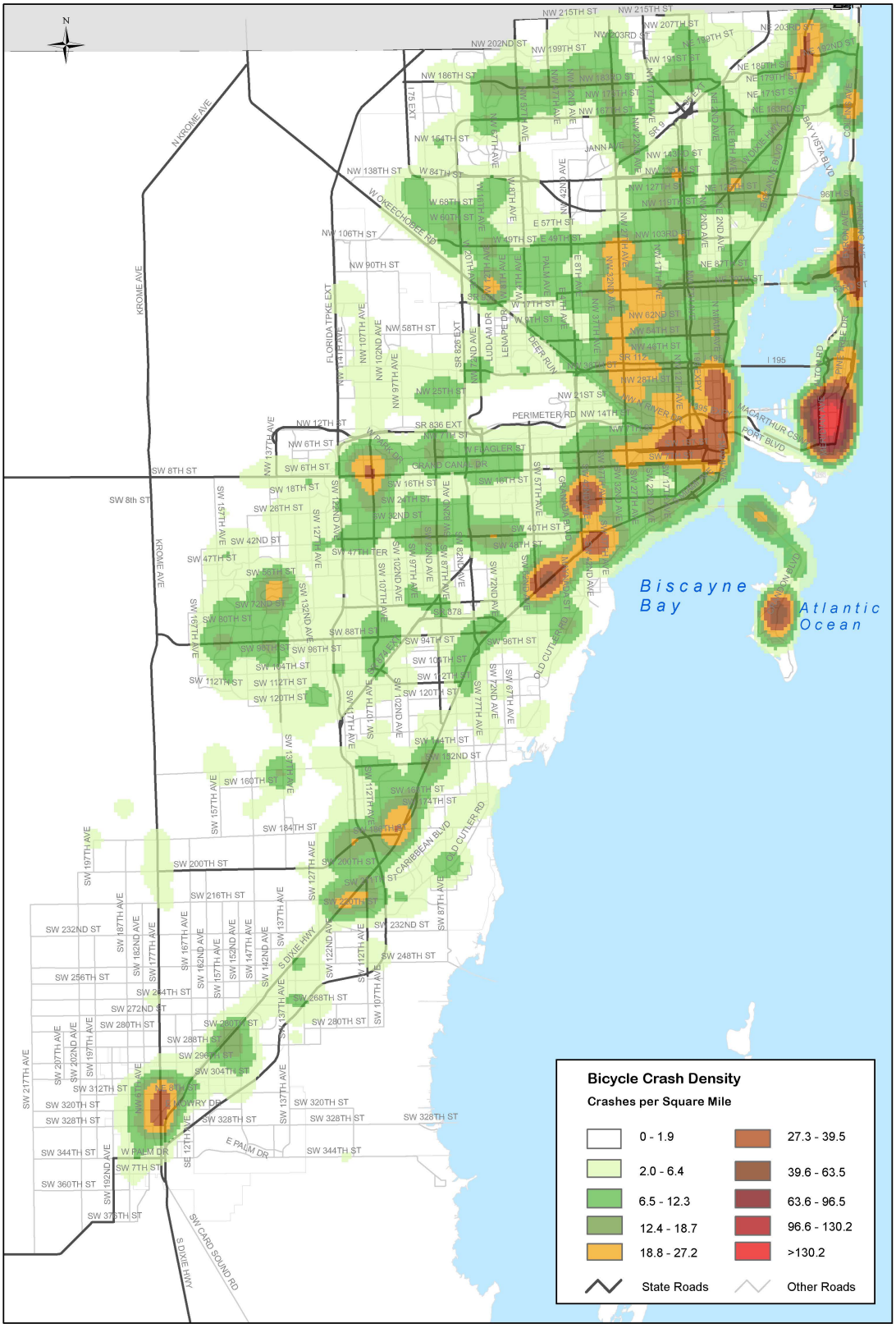
High crash clusters, corridors, and districts were identified based on geographic information systems (GIS) crash data mapping. Figures 15, 16 and 17 depict the bicycle and pedestrian crashes within Miami-Dade County from 2005 to 2011. The Bicycle Crash Density Map shown in Figure 18 depicts the spread of bicycle-related crashes within Miami-Dade County from 2005 to 2011. The darker clusters on the map show the areas with higher concentrations of bicycle-related crashes. Figure 19, the Pedestrian Crash Density Map, shows a similar pattern for the concentration of pedestrian-related crashes. Figure 20 depicts the density of bicycle and pedestrian crashes combined.

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 10: Pedestrian Crash Density Map 2005-2011
Miami-Dade County



Kimley-Horn and Associates, Inc.

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 11: Bicycle Crash Density Map 2005-2011
Miami-Dade County



Kimley-Horn and Associates, Inc.

As seen in Figure 18, the bicycle-related crashes are concentrated along the major districts and roadways within the County. The districts with the highest occurences of bicycle-rated crashes are Miami Beach, Brickell, and Coral Gables. The corridors with the highest occurrences of bicycle-related crashes are US 1, SW 8th Street, SW 27th Avenue, Biscayne Boulevard, Alton Road, and Collins Avenue.

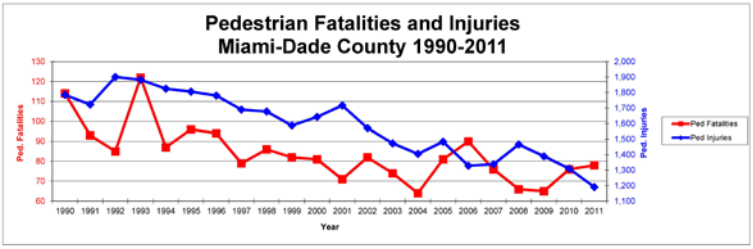
Figure 19 shows similar patterns for the concentration of pedestrian-related crashes; however, midtown, overtown, and wynwood districts also possess high rates of pedestrian-related crashes. The pedestrian-related crashes show similar patterns for the corridors; however, NW 7th Avenue, North Miami Avenue, NW 7th Street, and NW 1st Street also possess high concentrations of pedestrian-related crashes.

Pedestrian/Bicyclist Injuries and Fatalities Report

The Miami-Dade MPO updates the Pedestrians and Bicyclists Injuries and Fatalities report on an annual basis. A wealth of data stretching back to 1990 demonstrate that the raw number of bicycle and pedestrian fatalities and injuries have declined significantly over the past two decades. However, very recent data indicate that we may have reached a leveling off (or perhaps a slight increase) of the injury numbers, while fatalities seem to be still slightly decreasing. The numbers demonstrate success in the Federal, State, and Local

Pedestrian Injuries and Fatalities
Miami-Dade County

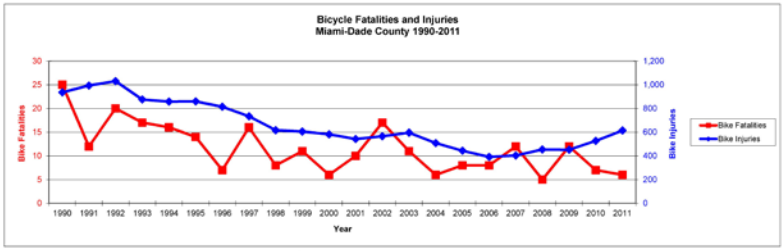
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Ped Fatalities	114	93	85	122	87	96	94	79	86	82	81	71	82	74	64	81	90	76	66	65	76	78
Ped Injuries	1,785	1,723	1,901	1,883	1,825	1,806	1,781	1,690	1,678	1,588	1,643	1,717	1,571	1,473	1,405	1,484	1,329	1,338	1,466	1,390	1,310	1,191



Prepared by Miami-Dade MPO from the Department of Highway Safety and Motor Vehicles' "Traffic Crash Statistics Report 2011."

Bicyclist Injuries and Fatalities
Miami-Dade County

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bike Fatalities	25	12	20	17	16	14	7	16	8	11	6	10	17	11	6	8	8	12	5	12	7	6
Bike Injuries	935	993	1,030	875	857	859	813	733	616	605	582	543	566	596	508	444	391	403	454	452	527	614



Prepared by Miami-Dade MPO from the Department of Highway Safety and Motor Vehicles' "Traffic Crash Statistics Report 2011."

emphasis on non-motorized transportation safety over the last 20 years. The numbers are generally improving, but more improvement is needed.

Safety Programs/ Initiatives

Walksafe

The Walksafe program is an elementary school based programed that educates students on safety and health through an interactive environment. The program was initiated by the University Of Miami Miller School Of Medicine in 2001 to promote safety education for children and to prevent pedestrian injuries related to children at school. The Walksafe program consists of a 3-day curriculum that is taught to children in the classroom in grades K-5. The class is taught yearly through audio, visual, and motor skills and has shown an increase in pedestrian safety knowledge of school children. The WalkSafe program partners with Police Departments and local authorities to ensure that children are provided with safe environments. Based on a 10-year pedestrian injury analysis (1997-2007), the WalkSafe program has resulted in a 43 percent decrease in pedestrian injuries for ages (0-14).

Source: WalkSafe

Bikesafe

The Bikesafe program is a middle school based program that educates middle school students on safety and health regarding bicycling. The program was initiated by the University Of Miami Miller School Of Medicine in 2009. The program aims to improve bicycle safety, promote the use of bicycles as transportation, and improve overall bicycle environments for children. In part of the overall improvement of the bicycle environment, the program examines existing sites where incidents have occurred to evaluate and create possible modifications to ensure safe environments in the future. The Bikesafe program collaborates with Bicycle Pedestrian Advisory Committee of Miami Dade MPO.

Source: BikeSafe

Safe Routes to Schools

Safe Routes to School is a Federal Highway Administration funded (FHWA) program that looks to provide safer walking and bicycling routes for children to and from the school site. The program's vision is to build sidewalks, bicycle paths, and pedestrian-friendly infrastructure to ensure safe connection to and from the school. The program aims to reduce speeds in school zones and neighborhoods, and install speed bumps to encourage slower speeds for vehicles driving around the school. The program also looks to educate students on pedestrian safety for students walking and riding to and from school. The program also focuses on building parent involvement at school and promoting a community with safe school zones and public involvement in the general safety around schools.

Source: Safe Routes to Schools

Florida Traffic and Bicycle Safety Education Program (FTBSEP)

The Florida Traffic and Bicycle Safety Education Program was developed by University of Florida in conjunction with Florida Department of Transportation. The program aims to educate pedestrians and bicyclists on the roadways safety skills will walking, run, or bicycling. The program is taught to teachers and community members throughout Florida, who then teach the curriculum to students in elementary schools and varying community centers.

CyclingSavvy

Cycling Savvy is an adult cycle education class that aims to teach the public how to be confident on the roadway, tools on how to remain safe on the roadway while cycling, and ways to interpret traffic or road situations that one may come across while cycling. The course is offered with 3 three-hour parts which include bike-handling session, a classroom part, and physical on-road lesson.

Source: Cycling Savvy

ENCOURAGEMENT

Programs/Events/Initiatives

Walk-to-School/Bike-to-School Day

Walk-to-School/Bike-to-School Day is a national event that takes place once a year, and encourages children to safely bike or walk to school. The program started in 1997, aimed to promote pedestrian and bicycle friendly environments. In 2000, the even became international when the United Kingdom and Canada held Walk to School days. The program has been used to promote safer and healthier habits for children. In 2012 the program reached its highest enrollment with 4,200 events registered from all 50 states.

Source: Walk/Bike to School

Bike and Hike

Bike and Hike is a recreational bicycle tour program provided by Miami-Dade County in conjunction with ECO Adventures. The program currently provides three different tours including Everglades Pineland Bike & Hike, Redland Historic Bike Tour, and Key Biscayne Bike Adventure. All routes provide tourists with approximately an 8-mile trip and are designed for all types of riders.

Source: Eco Adventures

Bike 305

The Bike 305 program that promotes a healthy and fun way to explore and connect with Miami Dade County communities through walking, running, or biking. The interactive program aims to provide alternative transportation routes for residents throughout Miami-Dade County to help reduce traffic congestion and vehicle emissions, create an environment that promotes the use of trails and pathways as forms of transportation and leisure, and to increase property value and tourism development. Currently there are 130 miles built with another 30 miles currently in development; the goal is to have 500 miles of greenways and trails for Miami-Dade County.

Source: Bike 305

Bike Miami Days

The City of Miami sets up a designated day every year where they shut down a portion of Miami to allow for people to bike without the obstruction of vehicular traffic. The program's inception occurred in 2008. Bike Miami Days aims to promote a healthy lifestyle and give residents of the City of Miami an opportunity to explore the areas of city without having to worry about motorized vehicles. Bike Miami Days is promoted and supported by the community and volunteer sources.

Miami Critical Mass

Miami Critical Mass is an event that occurs on the last Friday of every month where bicyclists and skateboarders ride in the streets in large masses. This event is a celebration and promotion of bike riding and reminds vehicular users about sharing the road with bicyclists.

Great Street Program

The Great Street program aims to promote the beautification of existing arterial and collector roads by improving visual aesthetics, providing safer and accessible bicycle and pedestrian environments. The Great Street program will include design elements such as sidewalks with large widths, clearly defined sidewalks for pedestrian use, and pedestrian signalization that operates automated systems rather than a push-activated signal system. The program looks to provide a needs basis for the roadway improvements based on a street hierarchy. By designated the hierarchy of the roadway network in Miami-Dade County it helps to establish the level of development is required on the existing roadways.

Share the Road

Share the Road is program that aims to promote education for motorists and bicyclists of roadway traffic laws. The program looks to provide education on bicycle and motorist safety, while emphasizing the safe collaboration of all users on the roadway. The program provides training, educational materials, and media events to help distribute and educate the public about the program.

Safe Streets Miami

Source: Green Mobility Network

Safe Streets Miami is a movement to create a more accessible and collaborative environment for all users on Miami's roadways. The movement will look to educate the public about safety between all users, encourage and enhance the level of law enforcement that is provided on Miami's roadways, and seek public participation for input on the movement's development.

Bike SoMi

Bike SoMi is an initiative to promote and develop the City of South Miami into a more bicycle friendly environment. The initiative is focused on providing neighborhood greenways to provide connections to varying destinations including schools, stores, restaurants, and community uses. The initiative has set up a petition to make the City a more bicycle friendly place and also developed a rough draft of the greenway network.

Source: Bike SoMi

DecoBike

Source: DecoBike

The City of Miami Beach in conjunction with DecoBike, LLC developed a public bicycle sharing and rental program in South Beach Miami. The program was started in March 2011 and was the first green public transit program in the county. The program is currently is located in three Florida locations (Surfside, Bay Harbor Island, Miami Beach) and one New York location (Long Beach), but is proposed for the City of Miami and City of San Diego.

WalkSafe

WalkSafe is an elementary school based program in Florida that takes on a fun and interactive approach to increase the safety and health of children. It is a proactive approach at preventing pedestrian injuries amongst children, developing safer school environment, and imparting lifelong walk safety skills to the future generations.

Source: WalkSafe

Groups

Bicycle Pedestrian Advisory Committee

The Miami-Dade Bicycle Pedestrian Advisory Committee is an appointed committee that informs the Governing Board of Miami-Dade County on pedestrian and bicycle issues. The advisory committee is used to help develop comprehensive bicycle transportation plan and has contributed towards the development of the Long Range Transportation Plan. The committee has monthly meetings where they discuss public affairs and existing and or upcoming pedestrian and bicycle projects that are occurring in Miami-Dade County.

Emerge Miami

Emerge Miami is an organization aimed to improve the social collaboration between individuals and businesses throughout Miami-Dade County. Emerge Miami serves to promote and advertise bicycle events and programs that seek to promote varying bicycle development and growth.

Green Mobility Network

The Green Mobility Network looks to promote bicycling, running, and walking as modes of transportation and leisure through education and information. It helps to promote communication between government and community groups in design, education and enforcement to obtain safer streets that will serve all users. It will also look to teach all users that cyclists, pedestrians, and motorists should share streets in a safe and mutual environment.

Source: Green Mobility Network

Alliance for Biking and Walking

The Alliance for Biking & Walking looks to promote collaboration between states and local bicycle organizations. The alliance has developed pedestrian and bicycle advocacy groups throughout all of the country to promote the development of bicycle and pedestrian friendly communities. The alliance has helped to support the Green Mobility Network in Miami, Florida.

Florida Bicycle Association

The Florida Bicycle Association was initiated in 1998 as a non-profit educational group that aims to promote communities and the residents within with a practical and safe bicycle environment. The association aims to encourage safe on-road and off-road facilities for bicyclists, speak out for the needs of bicyclists, and promote the lifestyle of bicycling as transportation, leisure, and recreational uses.

South Florida Bike Coalition

The South Florida Bike Coalition was developed in 2007 to provide resources to local bike/pedestrian groups to support alternative, safe modes of transportation facilities in all of South Florida. The South Florida Bike Coalition is currently organizing the campaign for the "Share the Road" billboards in Miami, and supports and promotes events and movements such as Natasha's Ride and Ride Right/Drive Right.

Source: South Florida Bike Coalition

Facilities

Bicycle Facilities

Bicycle facilities in Miami-Dade County are comprised of two different categories: On-road facilities and off-road facilities.

On-Road Facilities: On-road facilities are comprised of all roadways within Miami-Dade County's roadway network. The county has approximately 160 miles of existing or under-construction on-road facilities.

- Bicycle Lanes: A bike lane is a portion of the roadway that is designated by signs and markings for use by bicyclists. State, County, and local agencies may have different requirements for specific conditions. *Provide example of municipalities.*
- Paved Shoulders: Paved shoulders are a portion of the roadway that is typically delineated by edge line striping and can be used by bicyclists. Some paved shoulders include bicycle lane pavement markings and signing
- Wide Curb Lanes: A wide curb lane is a minimum of 14 feet. *Provide greater detail of why these are included.*
- Multi-use path: a paved path that is physically separated from the roadway and is used to serve bicycle and pedestrian traffic

Off-Road Facilities: Off-road facilities include greenways, trails, and shared-used paths and are considered more suitable for mountain biking.

- Unpaved Trails: The existing trail network is 160 miles long
- Share-use Trails: The existing paved path network is approximately 110 miles long. Paved shoulder can be found along three or four of the main thoroughfares in the region:
    - US 1

- US 41
- US 27
- SR-997/Krome Avenue

Miami-Dade County contains 110.5 miles of paved paths and 149.3 miles of unpaved paths. (MPO 2035). The county also provides 607.5 miles of greenways. (MPO 2035)

Note: Need to get information regarding the off-road facilities and how much is designated to Unpaved Trails and Share-use Trails

Bicycle Parking Facilities

To increase the number of cyclists, parking facilities need to be provided in high demand areas such as commercial retail, office areas, and public transportation locations. Miami-Dade County requires bicycle parking facilities at nearly all commercial retail, restaurants, and parks. Some land uses have specific requirements for bicycle parking facilities based on the number of spaces they provide for their users. Bicycle parking areas are split between short-term and long-term parking areas.

Short-term parking: Short-term bicycle parking is used for short stops or cyclists that are temporarily making a stop and then proceeding. These parking areas usually or should be located within close proximity of land uses. Typical short-term bicycle parking structures that are used are u-racks and rolling racks. Short-term parking areas are provided in large facilities in downtown Miami; however a majority of Miami-Dade County does not provide accessible and visible short-term bicycle parking

Long-term parking: Long-term bicycle parking is used for major office and transit areas for commuters requiring bike transportation. Bicycle facilities including bike lockers have been implemented a number of major public areas and at the following metrorail stations:

- Okeechobee

- Hialeah
- Northside
- Brownsville
- Earlington Heights
- Allapattah
- Vizcaya
- Douglas Road
- University
- South Miami
- Dadeland North
- Dadeland South

Greenways and Trails Network

Greenways: Greenways are connections provided between people and nature. Currently greenways may only be provided through existing easements and roadways, relative to the existing roadway network. Greenways provide pedestrians and bicyclists with the possibility to connect to nature and park in a more safe and accessible way. Greenways provide alternate transportation routes, and provide ways to collaborate transportation with the preservation of nature and the environment. Typical types of greenways found are off-street paths, trails, and water trails. Water trails also are part of greenways systems and provide alternate modes of transportation and leisure.

Bike Trails: Bike trails are provided as use for bicyclists for transportation, leisure, and fitness. Typically bike trails are considered off-street paths and are physically separated

from vehicular traffic; however some bike trails will intertwine between off and on-street paths. Miami Provide a number of bike trails

- Snake Creek Trail - Paved (3.0 miles)
- Rickenbacker Trail - Paved (8.5 miles)
- Commodore Trail - Paved (5.0 miles)
- Old Cutler Trail - Paved (11.0 miles)
- Biscayne Trail - Paved and Dirt (2.7 miles)
- Black Creek Trail - Paved and Dirt (8.7 miles)
- Biscayne-Everglades Greenway - Gravel or Rocks (Not Listed)
- Southern Glades Trail - Gravel or Rocks (13 miles)
- Amelia Trail (Not Listed)
- Miami Dade County Park
- Libraries
- Cultural Attractions

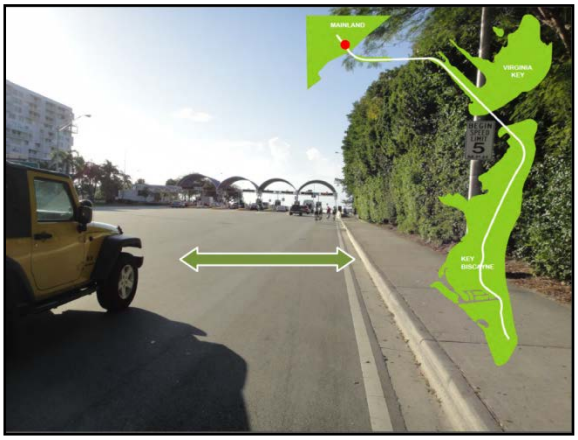
SHOWCASE PROJECTS

Atlantic Trail	
Vision	Continuous mixed-use greenway facility along the barrier island
Existing Conditions	Some portions in Miami Beach already completed such as • South Pointe Park to 2nd Street • 5th Street to 23rd Street
Focus Area	• 2nd Street to 5th Street • 23rd Street to 4600 Block (existing boardwalk section) • 4600 Block/Indian Beach Park to 6400 Block/Allison Park • North of the City of Miami Beach
Needs Plan	• Fill in missing gaps, • 5th Street Shared Space project to connect to Ocean Drive • Improve connectivity to street network

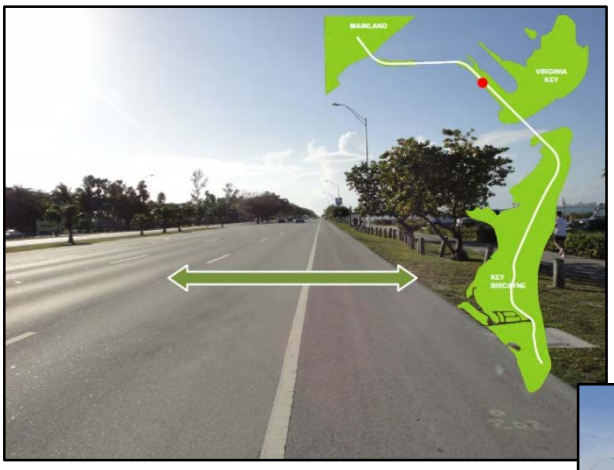
Atlantic Trail (continued)

Rickenbacker Causeway	
Vision	Implement a linear park with enhanced bicycle and pedestrian facilities.
Existing Conditions	• Wide bicycle lanes • Conventional bicycle lanes • Shared-use path • Three vehicular lanes in each direction • Functional classification: Principal Arterial
Focus Area	Brickell Avenue to Crandon Park
Needs Plan	• Utilize the liberated space from removing a vehicular lane in each direction to expand bicycle and pedestrian facilities by creating recreational buffer zones • Lower the functional classification to enable a different roadway design standard • Continuous shared-use path • Transform Rickenbacker Causeway into a park so more residents, cyclists, and joggers would be drawn to the highway

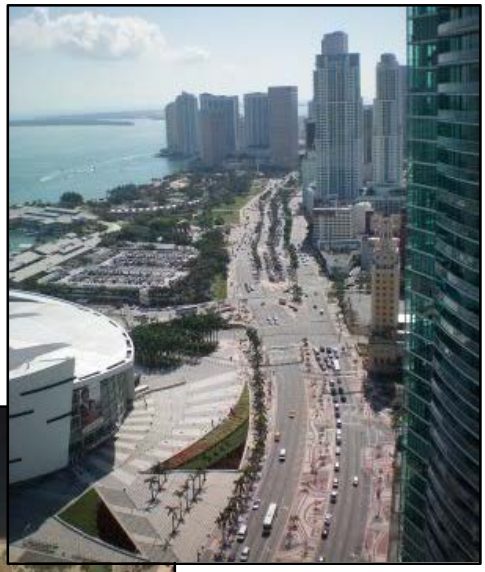
Length of the roadway is 2.92 miles



Rickenbacker Causeway (continued)

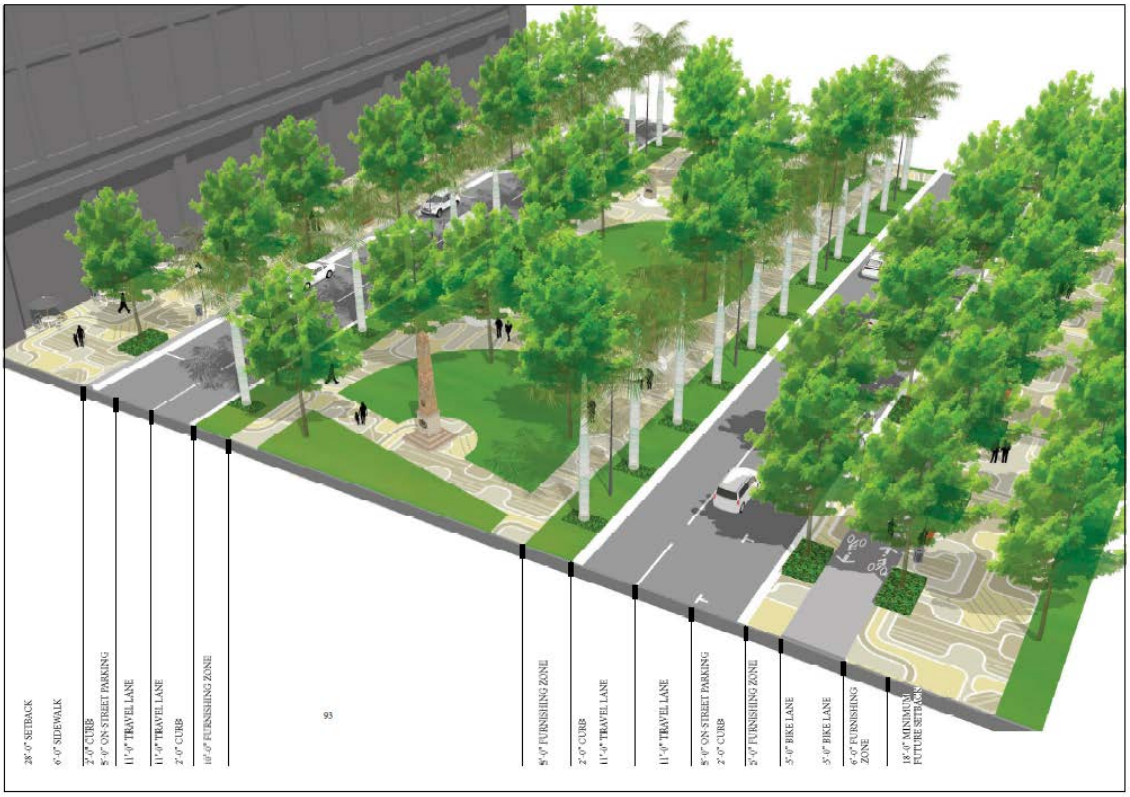


Biscayne Boulevard	
Vision	Reconstruct Biscayne Boulevard through Downtown Miami to be more context sensitive to the downtown bayfront environment.
Existing Conditions	• Varies from six- to eight-lane roadway • Parking lots in the median
Focus Area	SE 2nd Street to NE 11th Terrace
Needs Plan	• Implement a grand boulevard concept • Pedestrian promenade similar to the Paseo De Prado, Madrid • Replace median parking with a pedestrian oriented green median • Ensure the new boulevard is treated as both an open space and a well-designed roadway • Create greenways and a network of tree-shaded streets safely linking parks and public spaces to one another • Design roadways to calm automobile traffic and improve bicycle safety



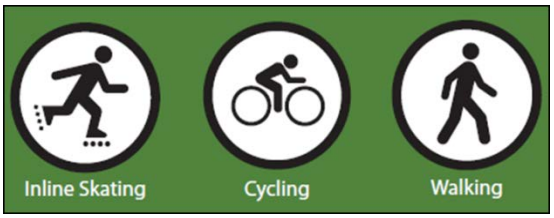
Location of the Grand Pedestrian Promenade

Biscayne Boulevard (continued)



Snake Creek Trail / I-95 Underpass	
Vision	Create a user-friendly Snake Creek Trail underpass at I-95 that meets minimum height and width requirements by using retaining walls and a pumping system.
Existing Conditions	• Narrow approach • Low clearance
Focus Area	South Florida Rail Corridor to I-95
Needs Plan	• Improve vertical clearance through lowering the trail surface • Remove steps and create a more gradual vertical slope • Use retaining wall design to meet elevation challenges • Underpass would lead to bicyclist energy conservation (Dutch principle) when compared to alternative overpass design

Existing Conditions



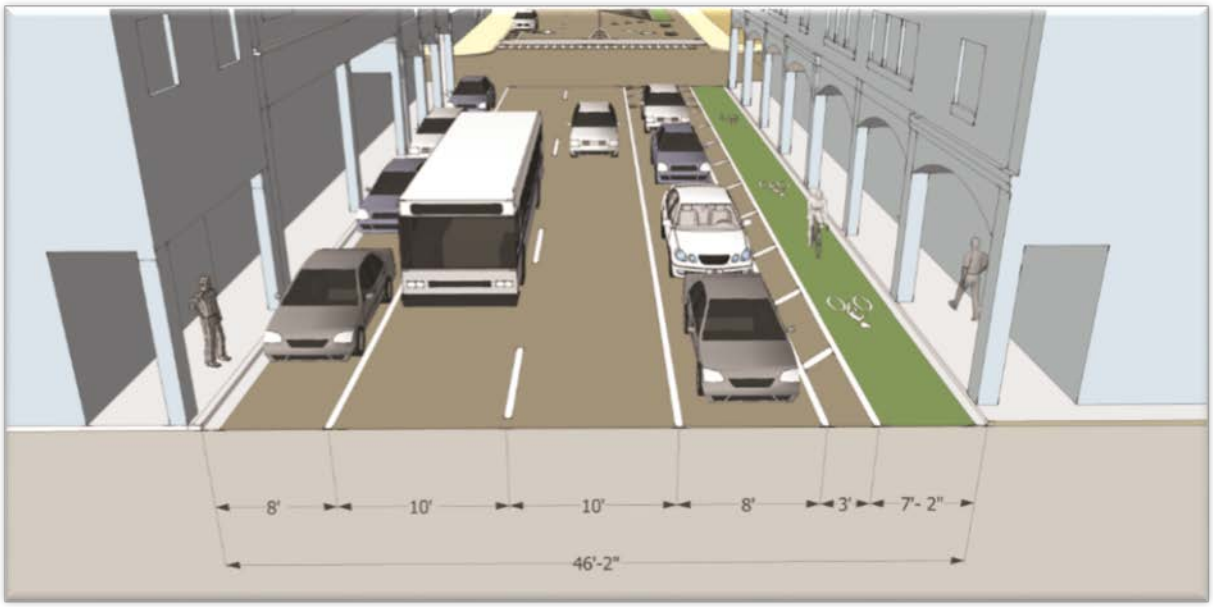
Snake Creek Trail / I-95 Underpass (continued)

M-Path / GreenLink	
Vision	Fulfill the vision of the M-Path Master Plan as an urban linear park by implementing the M-Path GreenLink, Miami's 10-mile world class urban trail that connects to numerous transit stations.
Existing Conditions	• Seven- to Eight-foot path • Discontinuities exist • The path does not meet current trail design standards for bi-directional multi-use paths • Intersection safety concerns • Short-term improvements underway
Focus Area	M-Path from SW 67th Avenue to SW 7th Street
Needs Plan	• Implement the long-term improvements identified in M-Path Master Plan • Create an urban linear park through the M-Path GreenLink Concept

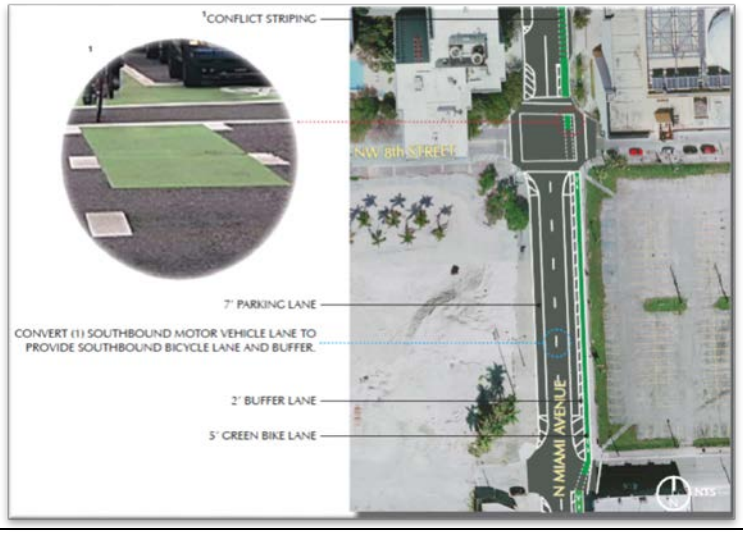
M-Path/GreenLink (continued)

Miami Avenue / NE 1st Avenue Cycle Track

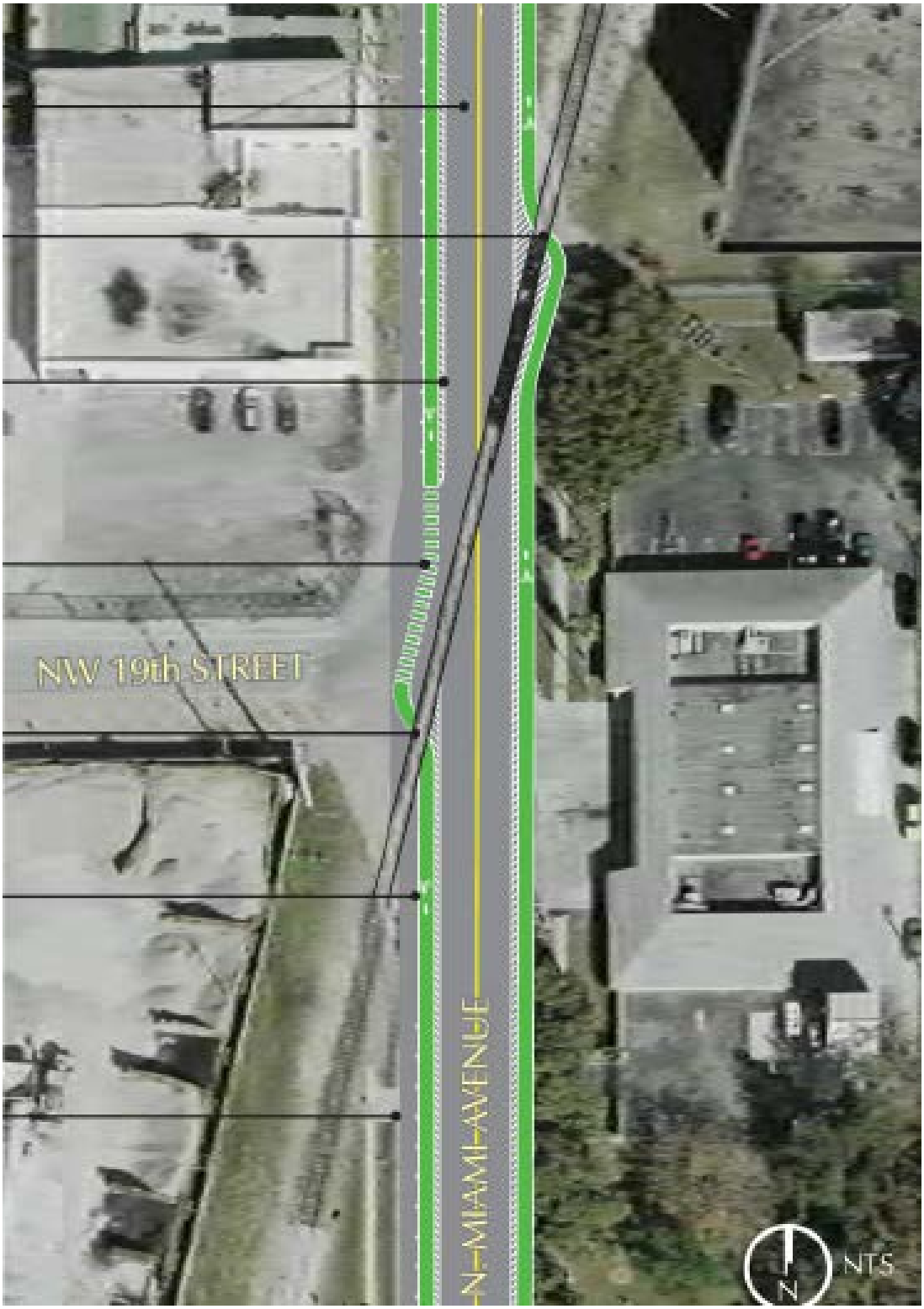
Vision	Implement a protected bike lane.
Existing Conditions	• Three-lane one-way pairs south of NE 15th Street • Four-lane two-way section from NE 15th Street to NE 29th Street
Focus Area	Downtown Miami to Wynwood
Needs Plan	• Implement a cycle track (protected bike lane) on the one-way pair section through lane reduction • Implement buffered bike lanes on the two-way section



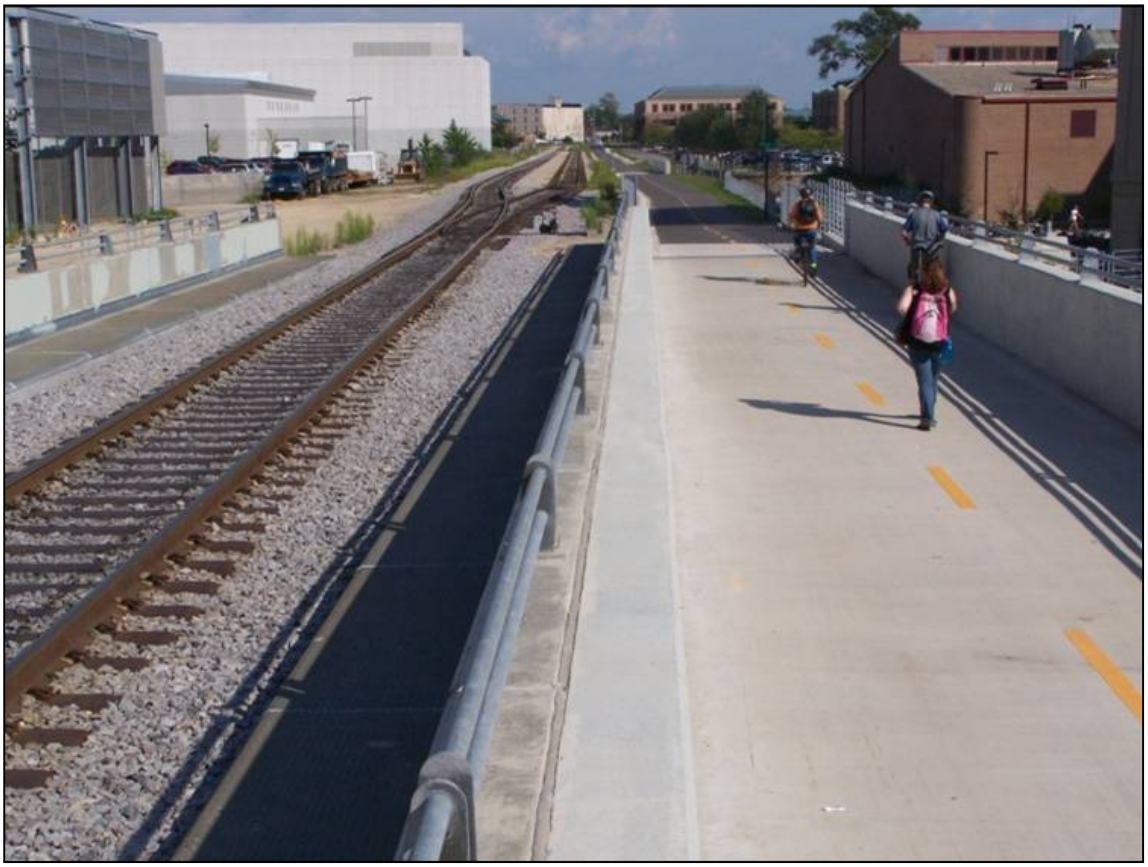
Source: The Street Plans Collaborative



Miami Avenue/ NE 1st Avenue Cycle Track (continued)



Flagler Trail	
Vision	Implement a regional trail connecting the downtowns of the eastern cities.
Existing Conditions	• Florida East Coast (FEC) railroad (freight traffic) • U.S. 1 • Dixie Highway
Focus Area	Downtown Miami to West Palm Beach
Needs Plan	• Implement a regional shared-use path along the corridor • Integrate with stations • Passenger rail access



Flagler Trail (continued)

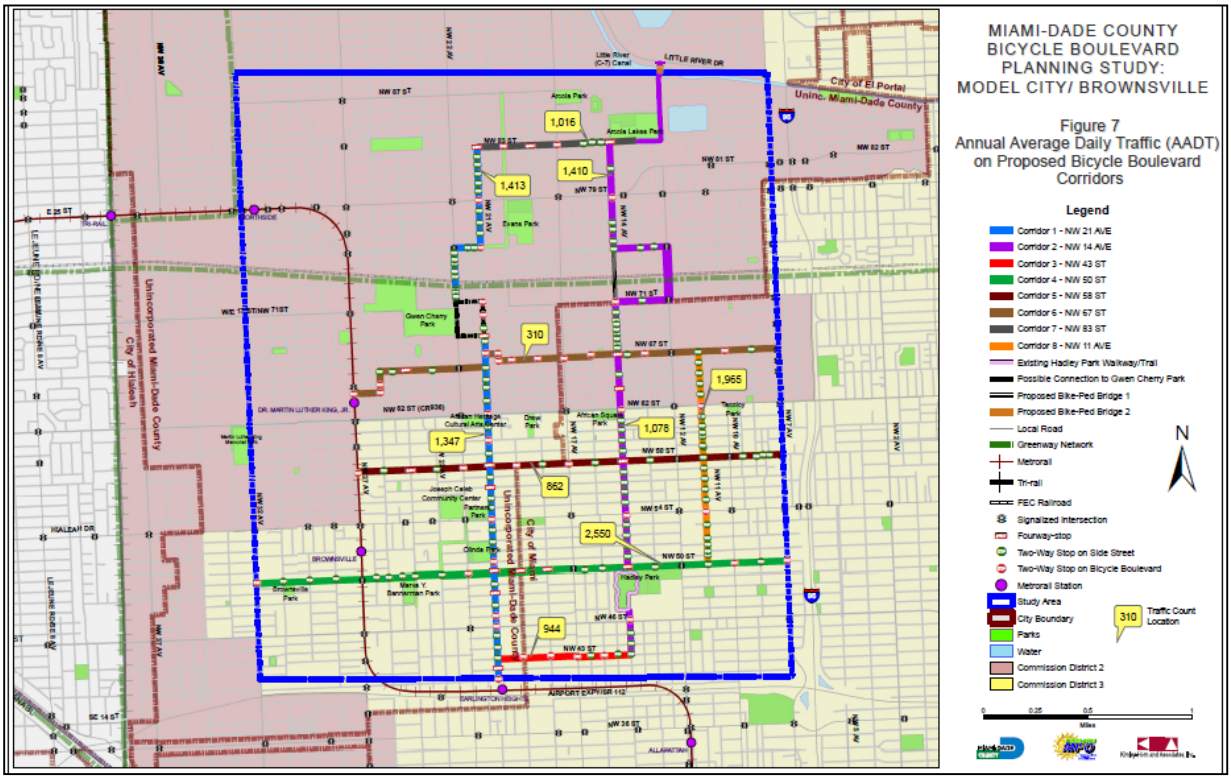
Ludlam Trail	
Vision	Implement a rails-to-trails greenway project in the Ludlam Corridor.
Existing Conditions	• Abandoned rail corridor • FEC Ownership
Focus Area	Dadeland North Station to Miami International Airport
Needs Plan	• Implement a shared-use path • Connect to communities • Connecting corridors to build healthier places for healthier people

The above image is a 'before' picture of the A.D. Barnes Park and Ludlam Trail connection point. The image to the right is an 'after' image of the same connection point demonstrating the design guidelines for a park connection.

Ludlam Trail (continued)

Neighborhood Greenways	
Vision	Designate streets where bicycles, pedestrians and neighbors are given priority through traffic calming, bike route marking, signage, and pavement marking techniques.
Existing Conditions	• The Miami-Dade MPO and Miami-Dade Parks, Recreation and Open Spaces Department prepared a Bicycle Boulevard Planning Study for the Model City/Brownsville area
Focus Area	Model City/Brownsville pilot project, Cities of Miami, Coral Gables, South Miami, and Miami Beach
Needs Plan	• Bicycle shared lane markings and R4-11 signs • Traffic calming • Provide safer bicycling and pedestrian connections • Markings on the pavement and signage and letting users know where the Neighborhood Greenway goes and what destinations are nearby • Improve crossings at main streets

Neighborhood Greenways (continued)

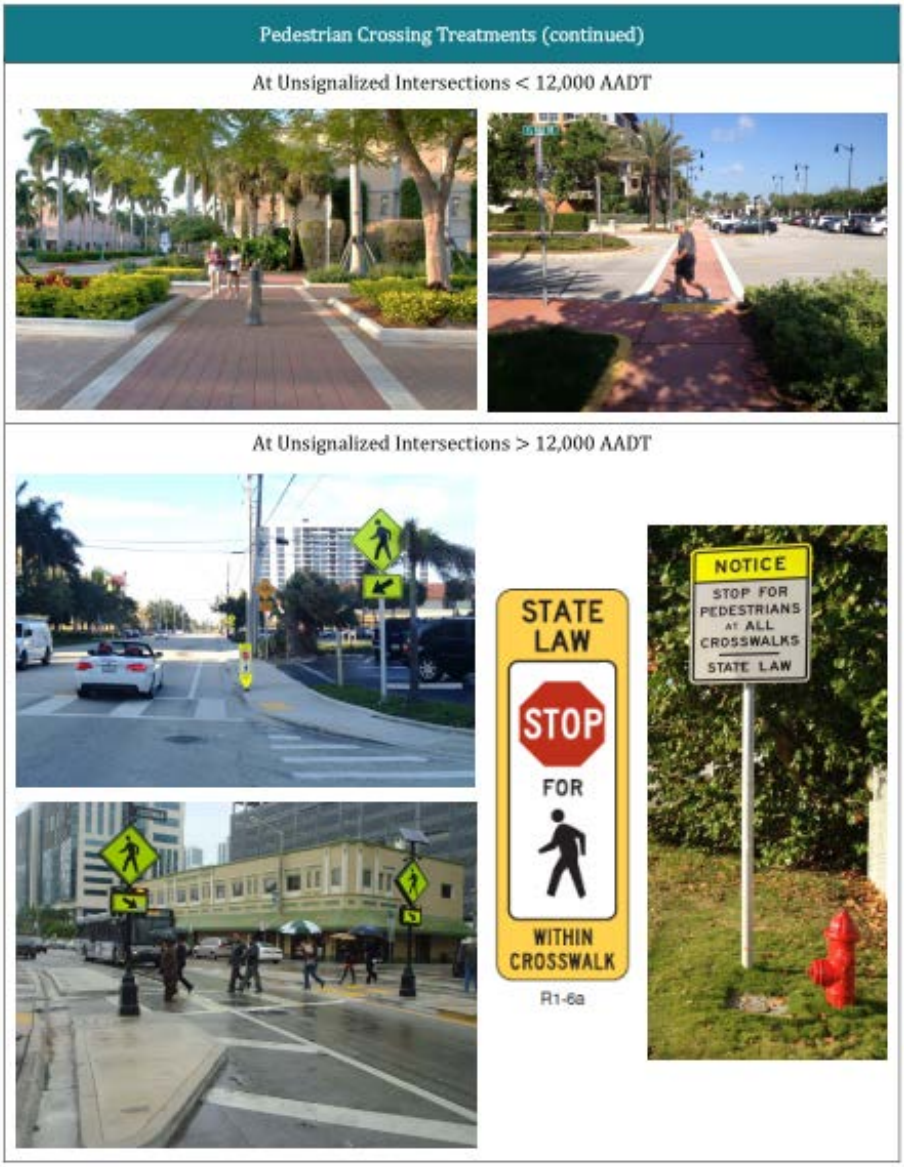


Bicycle Commuter Stations	
Vision	Creating a building or structure designed for use as a bicycle parking facility.
Existing Conditions	• Bicycle parking condition varies depending on location
Focus Area	Downtown Miami/ Brickell/ Dadeland South/ Universities
Needs Plan	• Indoor or sheltered bike parking • Bicycle parking racks to lock bicycles • On-site staff during the day • A gate or door secured by key or by electronic card access • Providing end-of-trip facilities • Maintenance services

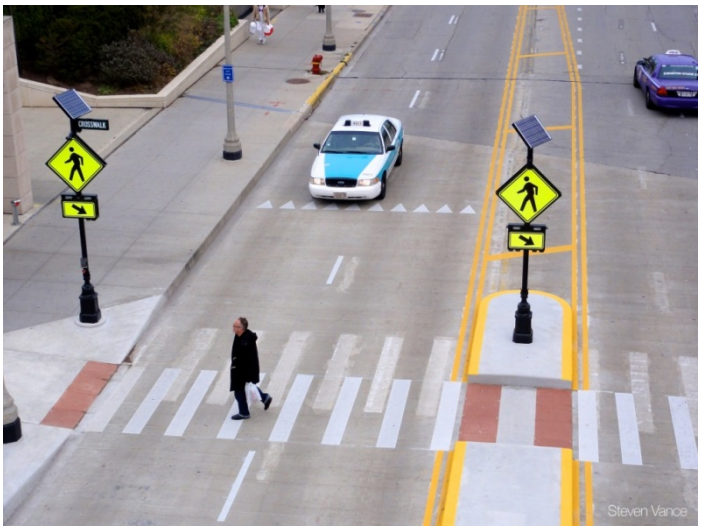
Focus Study Area	Atuomated Bicycle Rental System Deman	Bicycle Parking Transit Center Type (A)
Dadeland	Low	Type III
Brickell	High	Type III
Downtown	High	Type III
South Beach	Existing	Type III

Bicycle Commuter Stations (continued)

More and Safer Crosswalks	
Vision	Increase the frequency of safe crosswalks
Existing Conditions	• Most arterials have crosswalk spacing ¼ - mile to ½ mile
Focus Area	Various locations
Needs Plan	• Implement crosswalks on all legs of signalized intersections • Implement safe crosswalks at unsignalized intersections • Implement safe crosswalks at mid-block locations



More and Safer Crosswalks (continued)



ractive Flashing Beacon

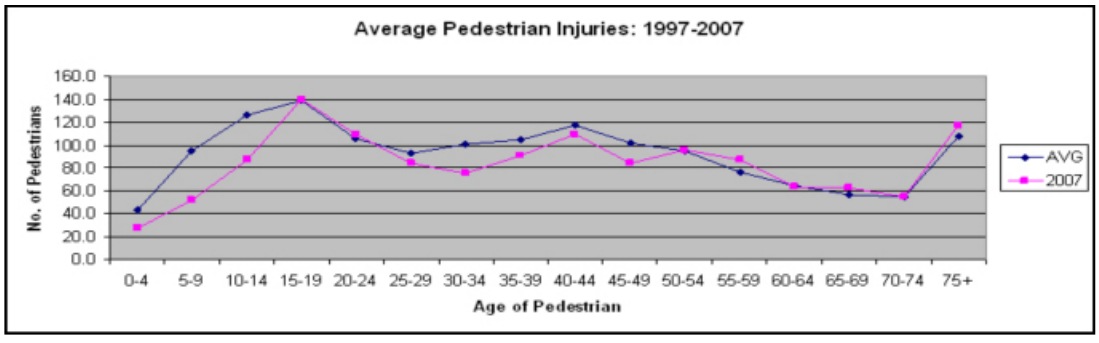
School Safety Enhancement Program	
Vision	**WalkSafe** Take a proactive approach at preventing pedestrian injuries amongst children, as well as directing children towards a healthier and more active lifestyle by walking to and from school safely.
Existing Conditions	• The University of Miami Miller School of Medicine WalkSafe program actively works with elementary school children to teach safe walking skills and to encourage healthy activity.
Focus Area	Various locations
Needs Plan	• Decrease the number of children injured as pedestrians • Increase physical activity • Encourage the use of walkable environments

School Safety Enhancement Program (continued)

Health-data from Trauma Centers

Year	0-4 years old Injuries (Fatalities)	5-9 years old Injuries (Fatalities)	10-14 years old Injuries (Fatalities)	Total Injuries (Fatalities)
2001	50 (1)	93 (1)	150 (0)	293 (2)
2002	52 (1)	104 (1)	116 (1)	272 (3)
2003	36 (0)	101 (3)	120 (1)	257 (4)
2004	27 (1)	63 (1)	130 (2)	220 (4)
2005	34 (2)	73 (1)	105 (0)	212 (3)
2006	29 (0)	55 (1)	90 (1)	174 (2)
2007	27 (1)	52 (1)	87 (2)	166 (4)
2008	25 (0)	43 (1)	103 (0)	171 (1)
2009	19 (1)	39 (0)	83 (2)	141 (3)
2010	23 (0)	38 (0)	77 (1)	138 (1)
2011	19 (0)	32 (0)	53 (2)	104 (2)

Reduced juvenile pedestrian hit-by-car trauma center admittances by **65 percent since 2001**



EVALUATION CRITERIA

The bicycle needs assessment process is different from conventional roadway needs assessment that includes analysis of roadway LOS to identify need for new/additional roadway capacity. For this plan, bicycle needs assessment seeks to identify facilities that should be more bicycle-friendly. This section includes a description of the process and results of bicycle and pedestrian facility needs assessment task.

The Plan's Goals and Objectives, developed in consultation with the MPO's BPAC, were used to identify evaluation criteria. The evaluation criteria were broadly divided into four parameters: Existing Conditions, Connectivity, Local Support, and Cost Feasibility. Each parameter included one or more variables measuring different aspects of the parameter.

Evaluation Criteria

The evaluation criteria are slightly different for on-road facilities and off-road facilities. For example, crash data can be used to evaluate on-road facilities but not off-road facilities.

On-Road Facilities

- Existing Conditions
    - Pedestrian and Bicyclist Crash Data
    - Pedestrian and Bicycle LOS
- Connectivity
    - Schools, Employment Centers, Residential, Public Transit, Parks and Recreation Areas
    - Existing Pedestrian and Bicyclist Facilities
- Local Support
    - Funding
- Cost Feasibility
    - ROW (Right-of-Way) Availability
    - Component of an LRTP Project

Off-Road Facilities

- Existing Conditions
  - Unpaved Path
- Connectivity
  - Schools, Employment Centers, Residential, Public Transit, Parks and Recreation Areas
  - Existing Pedestrian and Bicyclist Facilities
- Local Support
  - Funding
- Cost Feasibility
  - ROW (Right-of-Way) Availability

RESULTS OF BICYCLE/PEDESTRIAN FACILITY NEEDS ASSESSMENT

The non-motorized transportation needs assessment process began by reviewing the needs identified in the 2035 Bicycle and Pedestrian Plan. Projects that have been built within the last five years were removed from the needs assessment list. Projects that have moved up to the Transportation Improvement Program (TIP) were noted and marked as funded. In addition, prior area-wide plans and studies conducted by the MPO and other governmental bodies were reviewed to identify non-motorized transportation needs. These projects were analyzed to identify gaps in the proposed non-motorized system that represent additional needs. A critical review was conducted to identify projects that fill in gaps between proposed facilities or between a proposed facility and a key destination.

Evaluation criteria and weights assigned by BPAC members were used to conduct a needs assessment analysis for on-road and off-road facilities. It was determined that these projects represent an unmet need. The highest priority projects are represented in the Minimum Revenue Plan (Cost Feasible Plan). The unmet needs for which revenue is not anticipated to be available are displayed in the Appendix of the Minimum Revenue Plan.

MINIMUM REVENUE PLAN

The non-motorized needs assessment projects were analyzed using the evaluation criteria identified by BPAC to prioritize the projects for rankings.

On-Road Facility Needs Assessment

The results indicate that there is a high percentage of on-road facility mileage proposed to be implemented in Priority 1. Approximately 44 percent (approximately 56 miles) of the on-road network included in the minimum revenue plan is contained in Priority 1 (Table 4). The percentage was determined by adding the total miles in each priority and dividing it by the summation of the total miles from the four priorities.

Table 4: On Road Facility Needs Assessment

Need	Total Miles	Percentage
Priority 1	56	44.04%
Priority 2	16	12.66%
Priority 3	10	7.71%
Priority 4	45	35.58%
Total	**126**	

Off-Road Facility Needs Assessment

The results indicate that there is a high need in Priority 1, more than a third (approximately 48 miles) of the roadway network included in this analysis (Table 5). The evaluation criteria percentage was determined by the total miles in each priority and dividing it by the summation of the total miles from the four priorities.

Table 5: Off Road Facility Needs Assessment

Need	Total Miles	Percentage
Priority 1	48	33.95%
Priority 2	31	21.66%
Priority 3	30	21.18%
Priority 4	33	23.21%
Total	**142**	

Cost

A cost was assigned to each project depending on the type of the project and what the project needed (Table 6) using a broad assumption of cost/mile based on local experience and cost estimates from previous projects.

Table 6: Cost / Mile Assumptions of Projects

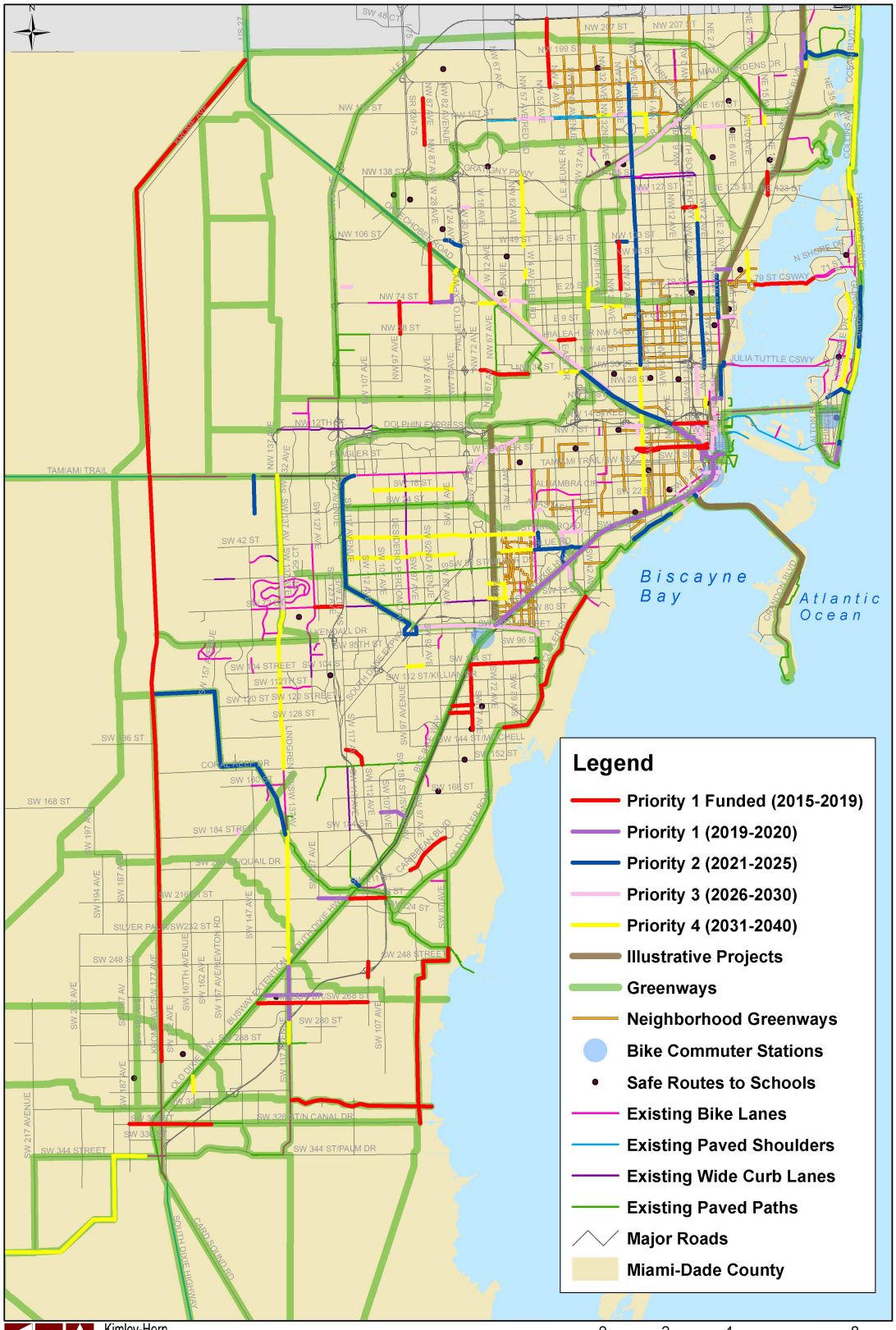
Project	Cost / Mile	Description
Bicycle Boulevard	20,000	Pavement markings and signage, traffic calming (includes both directions)
Off Street	500,000	Not along an existing street/sidewalk
Off Street	250,000	Widen existing path 10-12 foot multi-use
Off Street	250,000	Add new sidewalk (one direction)
On Street	10,000	Striping/Sign improvements
On Street	20,000	No curb/drainage alterations, will require adding asphalt
On Street	80,000	Will require curb modifications and parking management strategy
Off Street	400,000	Add new shared use path
Shared Lane	20,000	Reduce lanes, 13ft lane with sharrow, resurfacing

The cost of each project is based on 2014 dollars and is projected to 2040 dollars that includes inflation to provide a Year of Expenditure (YOE) analysis. The multiplier for the four priorities is displayed in Table 7 along with the design cost assumption of 15% of the construction cost.

Table 7: Cost Estimates

Design Cost %	15.00%
Priority 1 (2015-2020) YOE Multiplier	1.17
Priority 2 (2021-2025) YOE Multiplier	1.31
Priority 3 (2026-2030) YOE Multiplier	1.54
Priority 4 (2031-2040) YOE Multiplier	1.97

MIAMI-DADE 2040 BICYCLE/PEDESTRIAN PLAN
Figure 12: Cost Feasible Plan
Miami-Dade County



Kimley-Horn and Associates, Inc.

Miami-Dade MPO 2040 Bicycle and Pedestrian Plan

Non-Motorized Element of 2040 Long Range Transportation Plan (LRTP)

Prioritized List of Projects

CATEGORY	TYPE	FACILITY/LOCATION			Length (miles)	Construction Cost (YOE $)	Design Cost (YOE $)	Total Cost (YOE $)
		FACILITY/ITEM	FROM	TO				
PRIORITY 1								
On-Road Bicycle	Bicycle Facility Improvements	SW 328th Street	SW 187th Avenue	SW 162nd Avenue	2.595	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 268th Street	S Dixie Highway	SW 112th Avenue	3.484	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 112th Avenue	SW 256th Street	SW 248th Street	0.484	Funded		
On-Road Bicycle	Bicycle Facility Improvements	Caribbean Boulevard	Marlin Road	SW 87th Avenue	1.545	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 112th Avenue	SW 117th Avenue	SW 152nd Street	0.805	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 72nd Street	SW 127th Avenue	SW 118th Avenue	0.845	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 77th Avenue	SW 104th Street	SW 136th Street	2.079	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 124th Street	SW 77th Avenue	S Dixie Highway	0.649	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 128th Street	SW 77th Avenue	S Dixie Highway	0.688	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 104th Street	SW 77th Avenue	SW 57th Avenue	2.134	Funded		
On-Road Bicycle	Bicycle Facility Improvements	Flagler Street	NW 2nd Avenue	NW 24th Avenue	2.271	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 1st Street	SW 24th Avenue	SW 17th Avenue	0.729	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 1st Street	SW 5th Avenue	SW 2nd Avenue	0.295	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 87th Avenue	NW 74th Street	NW 103rd Street	1.87	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 97th Avenue	NW 74th Street	NW 58th Street	1.029	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 36th Street	NW 72nd Avenue	Curtiss Prkway	1.526	Funded		
On-Road Bicycle	Bicycle Facility Improvements	Hialeah Drive	E 4th Street	E 8th Street	0.5	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 27th Avenue	NW 103rd Street	NW 79th Street	1.512	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NE 79th Street	NE Bayshore Ct	Bay Drive	1.897	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 87th Avenue	NW 154th Street	NW 178th Street	1.478	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 47th Avenue	NW 183rd Street	NW 21st Street	2.164	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 119th Street	NW 7th Avenue	NE 2nd Avenue	0.402	Funded		
On-Road Bicycle	Bicycle Facility Improvements	SW 216th Street	S Dixie Highway	HEFT	1.12	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 16th Avenue	NE 135th Street	NE 123rd Street	0.735	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 11th Street	NW 12th Avenue	SW 2nd Avenue	1.019	Funded		
On-Road Bicycle	Bicycle Facility Improvements	Krome Avenue	SW 8th Street / Tamiami Trail	US-27 / Okeechobee Road	14.328	Funded		
On-Road Bicycle	Bicycle Facility Improvements	NW 74th Street	NW 87th Avenue	NW 79th Avenue	0.606	$56,721.60	$8,508.24	$65,229.84
On-Road Bicycle	Bicycle Facility Improvements	NW 79th Place	NW 74th Street	Palmetto Metrorail Station	0.215	$20,124.00	$3,018.60	$23,142.60
On-Road Bicycle	Bicycle Facility Improvements	SW 216th Street	SW 127th Avenue	HEFT	0.963	$22,534.20	$3,380.13	$25,914.33
On-Road Bicycle	Bicycle Facility Improvements	SW 264th Street	US-1	SW 137th Avenue	1.763	$41,254.20	$6,188.13	$47,442.33
On-Road Bicycle	Bicycle Facility Improvements	SW 176th Street/Hibiscus St	SW 107th Avenue	US-1	0.79	$73,944.00	$11,091.60	$85,035.60
On-Road Bicycle	Bicycle Facility Improvements	SW 22nd Avenue	US-1	Coral Way	0.381	$35,661.60	$5,349.24	$41,010.84

CATEGORY	TYPE	FACILITY/LOCATION			Length (miles)	Construction Cost (YOE $)	Design Cost (YOE $)	Total Cost (YOE $)
		FACILITY/ITEM	FROM	TO				
On-Road Bicycle	Bicycle Facility Improvements	SW 137th Avenue	HEFT	US-1	1.662	$38,890.80	$5,833.62	$44,724.42
On-Road Bicycle	Bicycle Facility Improvements	West Dixie Highway	NE 186th Street/Miami Gardens Drive	Ives Dairy Road	1.15	$26,910.00	$4,036.50	$30,946.50
Shared-Use Pathway	Trail Improvements	Overtown Greenway	NW 7th Avenue	NW 3rd Avenue	0.444	Funded		
Shared-Use Pathway	Trail Improvements	Biscayne Trail "C"	Biscayne National Park	Black Point Park	6.472	Funded		
Shared-Use Pathway	Trail Improvements	Old Cutler Road Path Phase 2	SW 136th Street	SW 72nd Street	5.373	Funded		
Shared-Use Pathway	Trail Improvements	South Dade Greenway Bridges	Biscayne and Black Creek	Trail Bridges		Funded		
Shared-Use Pathway	Trail Improvements	Krome Trail	Homestead	SW 8th Street / Tamiami Trail	18.571	Funded		
Shared-Use Pathway	Trail Improvements	Biscayne Trail "D"	US-1 / South Dixie Highway	Biscayne National Park	4.542	Funded		
Shared-Use Pathway	Trail Improvements	Miami River Greenway (complete missing segments)	NW 12th Avenue	SE 2nd Avenue	1.015	$475,020.00	$71,253.00	$546,273.00
Shared-Use Pathway	Trail Improvements	M-Path GreenLink (short-term improvements)	SW 67th Avenue	Miami River Greenway	9.048	$529,308.00	$79,396.20	$608,704.20
Shared-Use Pathway	Trail Improvements	Atlantic Trail	South Pointe Park / South Pointe Drive	5th Street	0.44	$257,400.00	$38,610.00	$296,010.00
Pedestrian	Pedestrian Facility Improvements	El Portal / 87th Street	NW 5th Avenue	NE 2nd Avenue	0.445	$260,325.00	$39,048.75	$299,373.75
Pedestrian	Pedestrian Facility Improvements	East of Little Havana	Greenways/South River Drive	SW 12th Avenue to J. Marti Park	1.533	$896,805.00	$134,520.75	$1,031,325.75
Pedestrian	Pedestrian Facility Improvements	NE 20th Street	N Miami Avenue/FEC RR	NE 2nd Avenue	0.228	$133,380.00	$20,007.00	$153,387.00
Pedestrian	Safe Routes to Schools	Devon Aire K-8 Center	-	-				
Pedestrian	Safe Routes to Schools	Coral Way K-8 Center	-	-				
Pedestrian	Safe Routes to Schools	Maya Angelou Elementary	-	-				
Pedestrian	Safe Routes to Schools	Winston Park K-8 Center	-	-				
Pedestrian	Safe Routes to Schools	Ernest R Graham Elementary	-	-				
Pedestrian	Safe Routes to Schools	Meadowlane Elementary	-	-				
Pedestrian	Safe Routes to Schools	Ben Sheppard Elementary	-	-				
Pedestrian	Safe Routes to Schools	Brentwood Elementary	-	-				
Pedestrian	Safe Routes to Schools	Gertrude Edelman/Sabal Palm Elementary	-	-				
Pedestrian	Safe Routes to Schools	Spanish Lake Elementary	-	-				
Pedestrian	Safe Routes to Schools	Melrose Elementary	-	-				
Pedestrian	Safe Routes to Schools	Dr. Robert B. Ingram Elementary	-	-				
Pedestrian	Safe Routes to Schools	Biscayne Elementary	-	-				
Pedestrian	Safe Routes to Schools	North Beach Elementary	-	-				
Pedestrian	Safe Routes to Schools	Fienberg/Fisher K-8 Center	-	-				
Pedestrian	Safe Routes to Schools	Miami Lakes K-8 Center	-	-				

CATEGORY	TYPE	FACILITY/LOCATION			Length (miles)	Construction Cost (YOE $)	Design Cost (YOE $)	Total Cost (YOE $)
		FACILITY/ITEM	FROM	TO				
Pedestrian	Safe Routes to Schools	Redondo Elementary	-	-				
Pedestrian	Safe Routes to Schools	Shenandoah Elementary	-	-				
Pedestrian	Safe Routes to Schools	Silver Bluff Elementary	-	-				
Pedestrian	Safe Routes to Schools	Kinloch Park Elementary	-	-				
Pedestrian	Safe Routes to Schools	Fairlawn Elementary	-	-				
Pedestrian	Safe Routes to Schools	Nathan Young Elementary	-	-				
Pedestrian	Safe Routes to Schools	James H. Bright Elementary	-	-				
Pedestrian	Safe Routes to Schools	Morningside Elementary	-	-				
Pedestrian	Safe Routes to Schools	Hialeah Gardens Elementary	-	-				
Pedestrian	Safe Routes to Schools	Perrine Elementary	-	-				
Pedestrian	Safe Routes to Schools	Palmetto Elementary	-	-				
Pedestrian	Safe Routes to Schools	Howard Drive Elementary	-	-				
Pedestrian	Safe Routes to Schools	Coral Reef Elementary	-	-				
Pedestrian	Safe Routes to Schools	Pinecrest Elementary	-	-				
Pedestrian	Safe Routes to Schools	Saunders Elementary	-	-				
Pedestrian	Safe Routes to Schools	Avocado Elementary	-	-				
Pedestrian	Safe Routes to Schools	Kensington Park Elementary	-	-		$159,120.00	$23,868.00	$182,988.00
Pedestrian	Safe Routes to Schools	Santa Clara Elementary	-	-		$136,890.00	$20,533.50	$157,423.50
Pedestrian	Safe Routes to Schools	Linda Lentin K-8 Center	-	-		$197,730.00	$29,659.50	$227,389.50
Pedestrian	Safe Routes to Schools	Natural Bridge Elementary	-	-		$152,100.00	$22,815.00	$174,915.00
Pedestrian	Safe Routes to Schools	Little River Elementary	-	-		$146,250.00	$21,937.50	$168,187.50
Pedestrian	Safe Routes to Schools	Phyllis Ruth Miller Elementary	-	-		$87,750.00	$13,162.50	$100,912.50
Pedestrian	Safe Routes to Schools	Phillis Wheatley Elementary	-	-		$145,080.00	$21,762.00	$166,842.00
Pedestrian	Safe Routes to Schools	Toussaint L'ouverture Elementary	-	-		$182,520.00	$27,378.00	$209,898.00
Pedestrian	Safe Routes to Schools	Oak Grove Elementary	-	-		$234,000.00	$35,100.00	$269,100.00
PRIORITY 2								
On-Road Bicycle	Bicycle Facility Improvements	NE 2nd Avenue	NE 20th Street	NE 36th Street	1.03	$107,944.00	$16,191.60	$124,135.60
On-Road Bicycle	Bicycle Facility Improvements	NE 2nd Avenue	NE 62nd Street	West Little River Canal/NE 84th Street	1.36	$142,528.00	$21,379.20	$163,907.20
On-Road Bicycle	Bicycle Facility Improvements	Federal Highway	NE 36th Street	NE 38th/39th Street	0.119	$62,356.00	$9,353.40	$71,709.40

Miami-Dade MPO 2040 Bicycle and Pedestrian Plan

Non-Motorized Element of 2040 Long Range Transportation Plan (LRTP)

Prioritized List of Projects

CATEGORY	TYPE	FACILITY/LOCATION			Length (miles)	Construction Cost (YOE $)	Design Cost (YOE $)	Total Cost (YOE $)
		FACILITY/ITEM	FROM	TO				
On-Road Bicycle	Bicycle Facility Improvements (Restriping)	NW 22nd Avenue	NW 111th Street	NW 183rd Street	4.481	$58,701.10	$8,805.17	$67,506.27
On-Road Bicycle	Bicycle Facility Improvements / Road Diet	NW 22nd Avenue	NW 36th Street	NW 111th Street	4.442	$465,521.60	$69,828.24	$535,349.84
On-Road Bicycle	Bicycle Facility Improvements	NW 2nd Avenue	NW 20th Street	NW 79th Street	4.585	$480,508.00	$72,076.20	$552,584.20
Shared-Use Pathway	Trail Improvements	Commodore Trail improvements	Darwin Street	Mercy Hospital	1.508	$493,870.00	$74,080.50	$567,950.50
Shared-Use Pathway	Trail Improvements	Atlantic Trail	4600 Block / Indian Beach Park	6400 Block / Allison Park	1.855	$1,215,025.00	$182,253.75	$1,397,278.75
Shared-Use Pathway	Trail Improvements	SW side of SW 117th Avenue	Roberta Hunter Park	South Dade Trail & Black Creek Trail junction	0.378	$198,072.00	$29,710.80	$227,782.80
Shared-Use Pathway	Trail Improvements	Snapper Creek Trail "A"	K-Land Park / SW 88th Street	SW 72nd Street	2.08	$1,362,400.00	$204,360.00	$1,566,760.00
Shared-Use Pathway	Trail Improvements	Snapper Creek Trail "A"	SW 72nd Street	SW 8th Street / FIU	4.902	$3,210,810.00	$481,621.50	$3,692,431.50
Shared-Use Pathway	Trail Improvements	Dade Blvd Bike Path	Meridian Avenue	Atlantic Trail / Beachwalk	0.768	$402,432.00	$60,364.80	$462,796.80
Shared Space / Festival Street	Trail Improvements	Beachwalk Greenway/5th Street	Ocean Drive	Atlantic Trail / Beachwalk	0.049	$25,676.00	$3,851.40	$29,527.40
Shared-Use Pathway	Trail Improvements	Black Creek Trail "B"	Larry and Penny Thompson Park	Krome Trail	7.85	$4,113,400.00	$617,010.00	$4,730,410.00
Shared-Use Pathway	Trail Improvements	Miami River Greenway (complete missing segments)	NW 36th Street	NW 12th Avenue	3.361	$1,100,727.50	$165,109.13	$1,265,836.63
Pedestrian	Pedestrian Facility Improvements	NW 103rd Street	W 28th Avenue	W 24th Avenue	0.316	$103,490.00	$15,523.50	$119,013.50
Pedestrian	Pedestrian Facility Improvements	NW 103rd Street	W 24th Avenue	W 49th Street	0.522	$170,955.00	$25,643.25	$196,598.25
Pedestrian	Pedestrian Facility Improvements	Biscayne Boulevard	NE 191st Street	Aventura Boulevard	0.537	$175,867.50	$26,380.13	$202,247.63
Pedestrian	Pedestrian Facility Improvements	SW 142nd Avenue	SW 26th Street	SW 8th Street	2.253	$737,857.50	$110,678.63	$848,536.13
Pedestrian	Pedestrian Facility Improvements	Granada Boulevard	Ponce De Leon Boulevard	Blue Road	0.531	$347,805.00	$52,170.75	$399,975.75
Pedestrian	Pedestrian Facility Improvements	Blue Road	SW 57th Avenue	Ponce De Leon	1.526	$999,530.00	$149,929.50	$1,149,459.50
Pedestrian	Pedestrian Facility Improvements	S Miami Avenue	S Dixie Highway	SW 26th Road	0.076	$24,890.00	$3,733.50	$28,623.50
Pedestrian	Pedestrian Facility Improvements	Alhambra Circle	Blue Road	SW 40th Street	0.538	$352,390.00	$52,858.50	$405,248.50
Pedestrian	Pedestrian Facility Improvements	Urban Center Pedestrian Safety and Mobility Improvements	Various Locations			$1,310,000.00	$196,500.00	$1,506,500.00
Pedestrian	Pedestrian Facility Improvements	Lehman Causeway Pedestrian Facility	Aventura	Sunny Isles Beach	1.647	$539,392.50	$80,908.88	$620,301.38
Pedestrian	Safe Routes to Schools	Non-motorized Facility Improvements	Various Locations			$1,310,000.00	$196,500.00	$1,506,500.00
Non-motorized	Non-motorized Safety Program	Improve safety by public outreach initiatives	Various Locations	Improve safety through public outreach initiatives		$1,310,000.00	$196,500.00	$1,506,500.00

CATEGORY	TYPE	FACILITY/LOCATION			Length (miles)	Construction Cost (YOE $)	Design Cost (YOE $)	Total Cost (YOE $)
		FACILITY/ITEM	FROM	TO				
PRIORITY 3								
On-Road Bicycle	Bicycle Facility Improvements	S 13th Street / Coral Way	SW 3rd Avenue	Brickell Avenue	0.474	$145,992.00	$21,898.80	$167,890.80
On-Road Bicycle	Bicycle Facility Improvements	Tamiami Canal Road	West Flagler Street	NW 7th Street	0.905	$27,874.00	$4,181.10	$32,055.10
On-Road Bicycle	Bicycle Facility Improvements	South Miami Avenue	SW 15th Road	SW 14th Terrace	0.057	$35,112.00	$5,266.80	$40,378.80
On-Road Bicycle	Bicycle Facility Improvements	South Miami Avenue	SW 7th Street	SW 3rd Street	0.298	$45,892.00	$6,883.80	$52,775.80
On-Road Bicycle	Bicycle Facility Improvements	North Miami Avenue	NW 17th Street	NW 29th Street	0.87	$133,980.00	$20,097.00	$154,077.00
On-Road Bicycle	Bicycle Facility Improvements	North Miami Avenue / NE 1st Avenue	NW 5th Street	NW 17th Street	0.855	$131,670.00	$19,750.50	$151,420.50
On-Road Bicycle	Bicycle Facility Improvements	NE 62nd Street	Biscayne Boulevard	NE 2nd Avenue	0.521	$80,234.00	$12,035.10	$92,269.10
On-Road Bicycle	Bicycle Facility Improvements	SW 32nd Road	Vizcaya Metrorail Station	Coral Way	0.185	$28,490.00	$4,273.50	$32,763.50
On-Road Bicycle	Bicycle Facility Improvements	SW 32nd Road	Brickell Avenue	Vizcaya Pedestrian Bridge	0.28	$43,120.00	$6,468.00	$49,588.00
On-Road Bicycle	Bicycle Facility Improvements	SW 25th Road	Brickell Avenue	Coral Way	0.439	$67,606.00	$10,140.90	$77,746.90
On-Road Bicycle	Bicycle Facility Improvements	NW 5th Avenue	NW 22nd Street	NW 36th Street	0.879	$135,366.00	$20,304.90	$155,670.90
On-Road Bicycle	Bicycle Facility Improvements	Tamiami Canal Road	SW 8th Street	West Flagler Street	0.666	$102,564.00	$15,384.60	$117,948.60
On-Road Bicycle	Bicycle Facility Improvements	SW 137th Avenue	SW 72nd Street	SW 56th Street	1	$123,200.00	$18,480.00	$141,680.00
On-Road Bicycle	Bicycle Facility Improvements	SW/NW 1st Avenue	SW 2nd Street	NW 11th Street	0.865	$26,642.00	$3,996.30	$30,638.30
On-Road Bicycle	Bicycle Facility Improvements	SW 72nd Avenue	SW 4th Street	West Flagler Street	0.253	$38,962.00	$5,844.30	$44,806.30
On-Road Bicycle	Bicycle Facility Improvements	NW 11th Street	NW 27th Avenue	NW 22nd Avenue	0.52	$80,080.00	$12,012.00	$92,092.00
On-Road Bicycle	Bicycle Facility Improvements	NW 23rd Avenue	NW 7th Street	NW 11th Street	0.233	$35,882.00	$5,382.30	$41,264.30
On-Road Bicycle	Bicycle Facility Improvements	NW 5th Avenue	NW 4th Street	NW 11th Street	0.459	$70,686.00	$10,602.90	$81,288.90
Shared-Use Pathway	Trail Improvements	Snapper Creek Trail "B"	SW 94th Avenue / K-Land Park	SW 57th Avenue	3.803	$2,342,648.00	$351,397.20	$2,694,045.20
Shared-Use Pathway	Trail Improvements	M-Path GreenLink (long-term improvements)	SW 67th Avenue	Miami River Greenway	9.048	$6,966,960.00	$1,045,044.00	$8,012,004.00
Shared-Use Pathway	Trail Improvements	NW/NE 131st Street	NW 22nd Avenue	NE 16th Avenue	0.43	$66,220.00	$9,933.00	$76,153.00
Shared-Use Pathway	Trail Improvements	Overtown Greenway (except portion between NW 3rd and 7th Avenue)	Miami River Greenway	Musuem Park	1.6041	$49,406.28	$7,410.94	$56,817.22
Pedestrian	Pedestrian Facility Improvements	W Okeechobee Road	NW 103rd Street	W 18th Avenue	5.79	$2,229,150.00	$334,372.50	$2,563,522.50
Pedestrian	Pedestrian Facility Improvements	Hialeah Expressway	W 8th Avenue	W 4th Avenue	0.512	$394,240.00	$59,136.00	$453,376.00

CATEGORY	TYPE	FACILITY/LOCATION			Length (miles)	Construction Cost (YOE $)	Design Cost (YOE $)	Total Cost (YOE $)
		FACILITY/ITEM	FROM	TO				
Pedestrian	Pedestrian Facility Improvements	SR 9 Extension Frontage Road	NW 27th Avenue	SR 9 Extension	2.739	$1,054,515.00	$158,177.25	$1,212,692.25
Pedestrian	Pedestrian Facility Improvements	SW 117th Avenue	SW 17th Street	SW 8th Street	0.74	$284,900.00	$42,735.00	$327,635.00
Pedestrian	Pedestrian Facility Improvements	NW 82nd Street	NW 114th Path	NW 109th Avenue	0.3	$115,500.00	$17,325.00	$132,825.00
Pedestrian	Pedestrian Facility Improvements	SW 152nd Avenue	SW 184th Street	SW 181st Terrace	0.167	$64,295.00	$9,644.25	$73,939.25
Pedestrian	Pedestrian Facility Improvements	Granada Boulevard	Hardee Road	S Dixie Highway	0.546	$420,420.00	$63,063.00	$483,483.00
Pedestrian	Pedestrian Facility Improvements	Granada Boulevard	Blue Road	SW 40th Street	0.528	$406,560.00	$60,984.00	$467,544.00
Pedestrian	Pedestrian Facility Improvements	NE 159th Street	N Miami Avenue	NE 6th Avenue	0.755	$290,675.00	$43,601.25	$334,276.25
Pedestrian	Pedestrian Facility Improvements	NW 167th Street	NW 57th Avenue	NW 47th Avenue	1.073	$413,105.00	$61,965.75	$475,070.75
Pedestrian	Pedestrian Facility Improvements	NW 3rd Court	NW 2nd Street	NW 8th Street	0.403	$155,155.00	$23,273.25	$178,428.25
Pedestrian	Pedestrian Facility Improvements	NW 167th Street	NW 27th Avenue	NW 22nd Avenue	0.532	$409,640.00	$61,446.00	$471,086.00
Pedestrian	Pedestrian Facility Improvements	W 68th Street	W 19th Court	W 17th Court	0.213	$82,005.00	$12,300.75	$94,305.75
Pedestrian	Pedestrian Facility Improvements	SW 40th Street	University Drive	Segovia Street	0.467	$179,795.00	$26,969.25	$206,764.25
Pedestrian	Pedestrian Facility Improvements	SW 40th Street	Segovia Street	SW 42nd Avenue	0.248	$95,480.00	$14,322.00	$109,802.00
Pedestrian	Pedestrian Facility Improvements	Sevilla Avenue	Alhambra Circle	Anastasia Avenue	0.122	$46,970.00	$7,045.50	$54,015.50
Pedestrian	Safe Routes to Schools	Non-motorized Facility Improvements	Various Locations			$1,540,000.00	$231,000.00	$1,771,000.00
Non-motorized	Non-motorized Safety Program	Improve safety by public outreach initiatives	Various Locations	Improve safety through public outreach initiatives		$1,540,000.00	$231,000.00	$1,771,000.00
PRIORITY 4								
On-Road Bicycle	Bicycle Facility Improvements	SW 137th Avenue	US-1	SW 184th Street	4.153	$163,628.20	$24,544.23	$188,172.43
On-Road Bicycle	Bicycle Facility Improvements	NW 79th Place / NW 79th Avenue	Palmetto Metrorail Station	US-27 / Okeechobee Road	0.872	$137,427.20	$20,614.08	$158,041.28
On-Road Bicycle	Bike Boulevard Improvements	Bike Boulevard Demonstration Project	NW 32nd Avenue/NW 41st Street	NW 11th Avenue/Little River Drive		$5,910,000.00	$886,500.00	$6,796,500.00
On-Road Bicycle	Bike Boulevard Improvements	SW 137th Avenue	SW 152nd Street	SW 72nd Street	5.052	$796,195.20	$119,429.28	$915,624.48
On-Road Bicycle	Bicycle Facility Improvements	SW 137th Avenue	SW 56th Street	SW 8th Street	3.194	$503,374.40	$75,506.16	$578,880.56
On-Road Bicycle	Bicycle Facility Improvements	SW 16th Street	SW 107th Avenue	SW 82nd Avenue	2.501	$394,157.60	$59,123.64	$453,281.24
On-Road Bicycle	Bicycle Facility Improvements	SW 48th Street	SW 117th Avenue	SW 82nd Avenue	3.534	$3,480,990.00	$522,148.50	$4,003,138.50
On-Road Bicycle	Bicycle Facility Improvements	NW 344th Street	SW 192nd Avenue	NW 6th Avenue	1.024	$40,345.60	$6,051.84	$46,397.44
On-Road Bicycle	Bicycle Facility Improvements	SW 376th Street	Ingraham Highway	SW 192nd Avenue	0.684	$26,949.60	$4,042.44	$30,992.04
On-Road Bicycle	Bicycle Facility Improvements	Ingraham Highway	SW 376th Street	SW 392nd Street	2.274	$89,595.60	$13,439.34	$103,034.94
On-Road Bicycle	Bicycle Facility Improvements	SW 392nd Street	Ingraham Highway	Everglades National Park	2.984	$117,569.60	$17,635.44	$135,205.04

CATEGORY	TYPE	FACILITY/LOCATION			Length (miles)	Construction Cost (YOE $)	Design Cost (YOE $)	Total Cost (YOE $)
		FACILITY/ITEM	FROM	TO				
On-Road Bicycle	Bicycle Facility Improvements	SW 192nd Avenue	SW 344th Street	SW 376th Street	2.029	$79,942.60	$11,991.39	$91,933.99
On-Road Bicycle	Bicycle Facility Improvements	SW 137th Avenue	SW 288th Street	HEFT	0.701	$110,477.60	$16,571.64	$127,049.24
On-Road Bicycle	Bicycle Facility Improvements	Blue Road	SW 67th Avenue	SW 42nd Avenue	2.573	$101,376.20	$15,206.43	$116,582.63
On-Road Bicycle	Bicycle Facility Improvements	SW 40th Street	SW 117th Avenue	SW 57th Avenue	6.066	$956,001.60	$143,400.24	$1,099,401.84
On-Road Bicycle	Bicycle Facility Improvements	NW 22nd Avenue	SW 22nd Street	Airport Expyway/SR 112	4.229	$666,490.40	$99,973.56	$766,463.96
On-Road Bicycle	Bicycle Facility Improvements	Pine Tree Drive/La Gorce	23rd Street	63rd Street	3.135	$494,076.00	$74,111.40	$568,187.40
Shared-Use Pathway	Trail Improvements	Atlantic Trail (Boardwalk Replacement Project)	23rd Street	4600 Block / Indian Beach Park	1.647	$1,297,836.00	$194,675.40	$1,492,511.40
Shared-Use Pathway	Trail Improvements	M-Path / Overtown Greenway	North of Miami River		9.166	$7,222,808.00	$1,083,421.20	$8,306,229.20
Shared-Use Pathway	Trail Improvements	Atlantic Trail (north of Miami Beach)	North Shore Park	Haulover Park	5.321	$4,192,948.00	$628,942.20	$4,821,890.20
Shared-Use Pathway	Trail Improvements	Atlantic Trail (north of Haulover Park)	Haulover Park	Broward County Line	3.181	$2,506,628.00	$375,994.20	$2,882,622.20
Pedestrian	Pedestrian Facility Improvements	W 4th Avenue	W 53rd Street	NW 114th Street	1.95	$960,375.00	$144,056.25	$1,104,431.25
Pedestrian	Pedestrian Facility Improvements	W 4th Avenue	NW 114th Street	NW 119th Street	0.245	$120,662.50	$18,099.38	$138,761.88
Pedestrian	Pedestrian Facility Improvements	NE 16th Avenue	NE 159th Street	NE 163rd Street	0.273	$134,452.50	$20,167.88	$154,620.38
Pedestrian	Pedestrian Facility Improvements	NW 17th Avenue	NW 157th Street	NW 167th Street	0.656	$323,080.00	$48,462.00	$371,542.00
Pedestrian	Pedestrian Facility Improvements	NW 167th Street	NW 32nd Avenue	NW 27th Avenue	0.505	$248,712.50	$37,306.88	$286,019.38
Pedestrian	Pedestrian Facility Improvements	SW 104th Street	SW 97th Avenue	SW 92nd Avenue	0.511	$251,667.50	$37,750.13	$289,417.63
Pedestrian	Pedestrian Facility Improvements	NW 2nd Avenue	N Biscayne River Drive	NW 159th Street	0.313	$154,152.50	$23,122.88	$177,275.38
Pedestrian	Pedestrian Facility Improvements	Hialeah Expressway	W Okeechobee Road	W 10th Avenue	0.121	$59,592.50	$8,938.88	$68,531.38
Pedestrian	Pedestrian Facility Improvements	NW 167th Street	NW 22nd Avenue	NW 17th Avenue	0.522	$257,085.00	$38,562.75	$295,647.75
Pedestrian	Pedestrian Facility Improvements	NW 2nd Avenue	NW 17th Street	NW 20th Street	0.248	$122,140.00	$18,321.00	$140,461.00
Pedestrian	Pedestrian Facility Improvements	W Okeechobee Road	W 8th Avenue	W 4th Avenue	0.68	$334,900.00	$50,235.00	$385,135.00
Pedestrian	Pedestrian Facility Improvements	Biscayne Road	NE 187th Street	NE 191st Street	0.239	$117,707.50	$17,656.13	$135,363.63
Pedestrian	Pedestrian Facility Improvements	NW 36th Street	East Drive	N Le Jeune Road	0.519	$255,607.50	$38,341.13	$293,948.63
Pedestrian	Pedestrian Facility Improvements	SW 64th Street	SW 72nd Avenue	SW 67th Avenue	0.519	$255,607.50	$38,341.13	$293,948.63
Pedestrian	Pedestrian Facility Improvements	NW 37th Avenue	NW 71st Street	NW 79th Street	0.556	$273,830.00	$41,074.50	$314,904.50
Pedestrian	Pedestrian Facility Improvements	Hialeah Expressway	NW 72nd Avenue	N Royal Poinciana Boulevard	0.524	$258,070.00	$38,710.50	$296,780.50
Pedestrian	Pedestrian Facility Improvements	SW 72nd Street	SW 72nd Avenue	SW 67th Avenue	0.572	$281,710.00	$42,256.50	$323,966.50
Pedestrian	Pedestrian Facility Improvements	Hialeah Expressway	W 10th Avenue	W 8th Avenue	0.254	$125,095.00	$18,764.25	$143,859.25
Pedestrian	Pedestrian Facility Improvements	SW 67th Avenue	SW 72nd Street	SW 67th Street	0.487	$239,847.50	$35,977.13	$275,824.63
Pedestrian	Pedestrian Facility Improvements	NW 71st Street	NW 32nd Avenue	NW 27th Avenue	0.51	$251,175.00	$37,676.25	$288,851.25

Miami-Dade MPO 2040 Bicycle and Pedestrian Plan

Non-Motorized Element of 2040 Long Range Transportation Plan (LRTP)

Prioritized List of Projects

CATEGORY	TYPE	FACILITY/LOCATION			Length (miles)	Construction Cost (YOE $)	Design Cost (YOE $)	Total Cost (YOE $)
		FACILITY/ITEM	FROM	TO				
Pedestrian	Pedestrian Facility Improvements	NW 81st Street	NW 37th Avenue	NW 36th Avenue	0.106	$52,205.00	$7,830.75	$60,035.75
Pedestrian	Pedestrian Facility Improvements	W 4th Avenue	W 33rd Street	W 37th Street	0.223	$109,827.50	$16,474.13	$126,301.63
Pedestrian	Pedestrian Facility Improvements	NE 12th Avenue	NE 8th Street	NE 15th Street	0.49	$241,325.00	$36,198.75	$277,523.75
Pedestrian	Pedestrian Facility Improvements	E Okeechobee Road	E 1 Avenue	East Drive	0.538	$264,965.00	$39,744.75	$304,709.75
Pedestrian	Pedestrian Facility Improvements	W 4th Avenue	W 49th Street	W 53rd Street	0.336	$165,480.00	$24,822.00	$190,302.00
Pedestrian	Pedestrian Facility Improvements	NE 2nd Avenue	NW 111th Street	W Dixie Highway	0.524	$516,140.00	$77,421.00	$593,561.00
Pedestrian	Pedestrian Facility Improvements	NE 10th Avenue	NE 82nd Street	NE 95th Street	0.9	$886,500.00	$132,975.00	$1,019,475.00
Pedestrian	Pedestrian Facility Improvements	NE 12th Avenue	NE 159th Street	N Miami Beach Boulevard	0.255	$251,175.00	$37,676.25	$288,851.25
Pedestrian	Safe Routes to Schools	Non-motorized Facility Improvements	Various Locations			$1,970,000.00	$295,500.00	$2,265,500.00
Non-motorized	Non-motorized Safety Program	Improve safety by public outreach initiatives	Various Locations	Improve safety through public outreach initiatives		$1,970,000.00	$295,500.00	$2,265,500.00
ILLUSTRATIVE								
Shared-Use Pathway	Trail Improvements	Completion of North Dade Greenways Master Plan (corridors not listed in Priority 1-4)						
Shared-Use Pathway	Trail Improvements	Completion of South Dade Greenways Master Plan (corridors not listed in Priority 1-4)						
Shared-Use Pathway	Trail Improvements	River of Grass Greenway (Miami-Dade County portion)	Collier County Line	Krome Avenue				
Shared-Use Pathway	Trail Improvements	M-Path over Miami River	M-Path South of Miami River	M-Path North of Miami River	0.054			
On-Road Bicycle	Bicycle Facility Improvements	Rickenbacker Causeway Park	Brickell Avenue	Crandon Park	5.118			
Shared-Use Pathway	Trail Improvements	Flagler Trail (Miami-Dade County portion)	Downtown Miami	Broward County Line	15.923			
Shared-Use Pathway	Trail Improvements	Ludlam Trail	Dadeland North Station	NW 12th Street	6.046			
Bike Commuter Stations	End-of-Trip Facilities	Downtown Miami, Brickell, Dadeland, South Beach						