

GEORGIA HEALTH POLICY CENTER



Health Impact Assessment of The Underline

*Technical Report
February 2017*



HIA of the Underline

Table of Contents

Contents

<i>Health Impact Assessment of The Underline</i>	1
<i>HIA of the Underline</i>	2
<i>Planning for a Healthier Future</i>	5
Healthy Places, Healthy Communities.....	5
Health Impact Assessment	5
How Could The Underline Affect Health?	6
About The Underline	6
<i>Assessment</i>	15
Baseline Data.....	15
Plans	40
<i>Health Impact Focus Areas: Assessment Results</i>	50
Physical Activity.....	50
Evidence Review	51
Effect Characterization.....	53
Social Connections	54
Evidence Review	55
Effect Characterization	56
Exposure to Traffic Hazards	58
Effect Characterization.....	62
<i>Recommendations</i>	63
Overall recommendations	66
Focus area specific recommendations	67
Physical activity.....	67
Social connections.....	68
Traffic hazards	69
Station area or neighborhood specific recommendations.....	71
Further data needs or monitoring.....	72
<i>Evaluation</i>	72
Appendix A: Sources:	73

Appendix B: Health Topic Supporting Evidence.....	76
Consortium for a Healthy Miami-Dade Community Health Improvement Plan MAPP Priorities ..	76
Community Health Needs Assessment Findings.....	76
Consortium for a Healthy Miami-Dade Community Health Improvement Plan Strategic Issues Related to Underline.....	77
Priorities from Prior Public Engagement in The Underline Master Plan	78
Appendix C: Stakeholders	80
Key decision makers	80
Other Stakeholders.....	80

Table of Figures

Figure 1: Physical Activity Causal Pathway	10
Figure 2: Social Connections Causal Pathway.....	11
Figure 3: Traffic Exposure Causal Pathway.....	12
Figure 4: Corridor and Jurisdictions.....	14
Figure 5: Percent of Population with Disability and Over 65	16
Figure 6: Racial Dot Map.....	17
Figure 7: Percent of Households Paying over 30% Income for Housing.....	18
Figure 8: Median Per Capita Income	19
Figure 9: Existing M-Path Design	20
Figure 10: Total Path Use by Day of Week	21
Figure 11: Total Path Use by Hour of Day	21
Figure 12: CitiBike Stations.....	22
Figure 13: Map showing the current location, size and shape of each park in Miami-Dade County ..	23
Figure 14: Destinations	23
Figure 15: Map showing existing tree canopy	25
Figure 16: Households without Access to a Motor Vehicle.....	26
Figure 17: Percent of Commuters Walking or Bicycling to Work	27
Figure 18: Percent of Commuters Riding Transit to Work	28
Figure 19: Connectivity Barriers Map	30
Figure 20: Number of Destinations in Walking/Bicycling Distance	30
Figure 21: Bicycle Crashes (North) 2008-12	31
Figure 22: Bicycle Crashes (South) 2008-12	32
Figure 23: Pedestrian Crashes (North) 2008-12	32
Figure 24: Pedestrian Crashes (South) 2008-12	33
Figure 25: Pedestrian Crashes by Severity (North) 2011-13	33
Figure 26: Pedestrian Crashes by Severity (South) 2011-13.....	34
Figure 27: Age-Adjusted Hospitalization Rate/100,000 for Hypertension in Miami-Dade 2010-2014	36
Figure 28: Age-Adjusted Hospitalization Rate/100,000 for Diabetes in Miami-Dade 2010-2014....	36

Figure 29: Age-Adjusted Hospitalization Rate/100,000 for Congestive Heart Failure in Miami-Dade 2010-2014.....	37
Figure 30: Self Inflicted Injury Emergency Department Visits in Miami-Dade 2014	38
Figure 31: Age-Adjusted All-Cause Mortality Rate/100,000 in Miami-Dade 2010-2014	38
Figure 32: Age-Adjusted Hospitalization Rate/100,000 for Asthma in Miami-Dade 2010-2014	39
Figure 33: Premature Birth Rates in Miami-Dade 2014.....	39
Figure 34: ER Visits for Motor Vehicle Crash Injury in Miami-Dade 2014	40
Figure 35: Proposed Trail Separation and Width	42
Figure 36: Fitness Amenities at the Dadeland Trail Connection	42
Figure 37: Gathering space at The Grove Gallery.....	43
Figure 38: Character Zones	43
Figure 39: Path Location	44
Figure 40: Path Location with Trees.....	44
Figure 41: Overall planting strategies along the corridor	45
Figure 42: Hardwood Hammock Canopy Example	46
Figure 43: Growth Schedule	46
Figure 44: Grass and Shrub Example.....	47
Figure 45: Bicycle Path Crosswalk Design	49
Figure 46: Physical Activity Theoretical Pathway.....	51
Figure 47: Social Connections Causal Pathway	54
Figure 48: Census tracts with high, low, and no green space	55
Figure 49: Traffic Exposure Theoretical Pathway	58
Figure 50: This wood and rope climbing structure is exciting for children and adults.	67
Figure 51: Public dance classes or dance parties can combine music, fun, and exercise.	67
Figure 52: Centennial Park Cafe, Sydney.....	68
Figure 53: Complete Street Example (8 80 Cities).....	70
Figure 54: Particle Concentration Simulation Results	71

Table of Tables

Table 1: Health Priority Connections	8
Table 2: Key Stakeholders	13
Table 3: Metrorail Monthly and Average Daily Boardings by Station (September 2016).....	28
Table 4: Metrorail Station Parking Occupancy Rates (September 2016)	29
Table 5: Effect Characterization for Physical Activity	53
Table 6: Effect Characterization for Social Connections.....	57
Table 7: Effect Characterization for exposure to traffic hazard.....	62

Planning for a Healthier Future

Healthy Places, Healthy Communities

The foundation for this project is the concept of a healthy community. It is becoming increasingly clear that health and wellbeing are a product of our home, work, and social environments. To improve health, we work to strengthen the link between health and policies from other sectors such as housing, transportation, education, labor, and land use to create an environment that enables people to lead healthy lives. Health impact assessments are one of the tools used in this work.

Health Impact Assessment

Health Impact Assessment, or **HIA**, is a 'systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects."¹

HIA is a process that uses a variety of methods and approaches to identify and measure potential health impacts, both positive and negative, that may result from a particular project. The final product of an HIA is a set of evidence-based recommendations intended to inform decision-makers and the general public about the health-related issues associated with that project. The recommendations provide practical solutions that aim to magnify positive health impacts and minimize negative impacts. As an adaptable process intended to provide information in a timely and useful manner, HIAs can take many forms depending on available resources and decision-making timelines. The HIA process typically includes six phases, in one form or another:

1. **Screening** determines whether a proposed decision is likely to have considerable health effects and whether the HIA will provide useful information
2. **Scoping** establishes the health topics that will be included in the analysis, the populations likely to be impacted by the project, and the sources of data and methods to be used in the assessment
3. **Assessment** consists of a two-step process that first describes the baseline health status in the population of concern and then characterizes the potential impacts of the project
4. **Recommendations** are developed based on the assessment findings and suggest possible actions decision-makers can take to enhance health benefits and mitigate any potential negative health impacts
5. **Reporting** presents findings and recommendations to decision makers and stakeholders
6. **Monitoring and evaluation** considers the implementation of recommendations and reflects upon the process, impacts, or outcomes of the completed HIA process

This HIA is a rapid assessment that relies on readily available data, input from a small group of key stakeholders, a single round of public engagement, and a limited number of health-related focus

¹ "Improving Health in the United States: The Role of Health Impact Assessments" by the National Research Council, September 2011

areas. In conducting an HIA of The Underline, the goals are to identify potential effects on health and health disparities which could be influenced by the design and implementation of The Underline, to increase awareness of such health needs and the opportunity to address them, and to gain understanding about future directions for promoting a healthy community in The Underline corridor and beyond.

How Could The Underline Affect Health?

The Underline is a vision to transform the land underneath MetroRail, currently the M-Path, into a contiguous 10-mile walking/biking/exercise path and linear park, from Brickell Station to Dadeland South Station. Steered by the Friends of The Underline, the initiative is intended to provide healthy alternatives to driving, increase exercise, engage communities, boost the economy, and increase greenspace – all things which support social, emotional, and physical wellbeing. In order to achieve these goals, The Friends of The Underline’s board of directors and committee members include a Health Advisory Committee, and the Health Advisory Committee established an HIA Workgroup. In August 2016, The Underline’s HIA Workgroup solicited proposals for a rapid HIA to determine the potential community health effects of the full implementation (including all planned elements) of The Underline.

The purpose of the HIA was to ensure that Underline elements that demonstrate greatest potential for positive health outcome would be prioritized, and that recommendations to enhance and replicate positive effects or mitigate negative effects would be provided based on the findings. The HIA was conducted by the Georgia Health Policy Center. The established the following goals of the HIA

- Identify The Underline’s likely impacts on health and health disparities
- Lay the foundation for future health questions to be addressed
- Increase awareness of health disparities and potential for The Underline to affect them

About The Underline

The following project description was presented in “The Underline Framework Plan and Demonstration Projects” report:

“The Underline will transform the land below the southern half of Miami’s Metrorail into a 10-mile signature linear park, urban trail, and living art destination that is inspired by the Miami area, well-connected to transit, promoting a healthy lifestyle, and a gateway to the adjacent communities.

Well-positioned in the region, The Underline is anchored on the north end at the Miami River near Brickell Avenue, Miami’s fast-growing financial district, and on the south end by the Dadeland South Metrorail Station serving Dadeland, one of the country’s highest grossing malls.

URBAN TRAIL: First and foremost, The Underline is a transportation solution. As a continuous multimodal corridor, The Underline will be the primary bicycle and pedestrian connection from the southern neighborhoods and cities to downtown Miami and other destinations. It will also be a link between neighborhoods and the central spine in a regional network of existing and proposed trails.

LINEAR PARK: In addition to being an urban trail and multimodal corridor, The Underline will be a linear park. It is part of the Miami Dade County Parks and Public Space Master Plan adopted by the Board of County Commissioners in 2008 and incorporated into the comprehensive development master plan in 2009. From New York City's High Line to Atlanta's Beltline, linear parks have a proven track record of creating value. As a well-connected and unique site along a transit corridor, The Underline presents an extraordinary opportunity to generate a significant amount of economic development in the region by increasing property values along the corridor and thus stimulating new and unique developments that can reinforce The Underline's vision as a new sector of the region.

The Underline will also encourage a healthier lifestyle. Over half of Miami residents don't exercise the recommended 20- 30 minutes per day. Providing an option to walk and bike as an alternative to driving will increase our community's mobility and activity levels. Plus the numerous proposed recreation features, from the walking/running and biking trails, basketball courts, soccer fields, outdoor gyms, and related programming will attract residents and tourists alike to enjoy an active lifestyle, a proven prescription to defending against chronic diseases and enhancing longevity. With a generous width ranging from 70 to 170 feet, the corridor offers an opportunity to create a signature linear park influenced by its inherent attributes - the unique space created by the distinctive overhead structure of the Metrorail viaduct, the large amount of adjacent undeveloped land, and the relationship to existing neighborhoods, institutions, parks, canals, creeks and the Miami River.

INSPIRED BY THE MIAMI AREA: The Framework plan aims to create an exceptional open space rooted in and inspired by Miami that improves functionality for its existing users —commuters, cyclists, runners and pedestrians— while maximizing its potential to foster new types of programming and uses for additional user groups, such as residents, nature and park lovers, art enthusiasts, environmentalists, entrepreneurs, and families.

WELL-CONNECTED TO TRANSIT: Primarily running underneath the Metrorail line and parallel to US-1, The Underline's privileged location allows it to be a transportation solution for the larger Miami Dade region. Capitalizing on its 10-mile length and connection to eight transit stations, the Framework Plan looks to develop a linked corridor that can present an attractive alternative to car-based commuting by promoting public transportation via Metrorail, strengthening linkages to local bus and trolley transportation routes, and creating a safe, off-road biking corridor within a natural and beautiful setting. The Underline will encourage residents to get out of their cars and walk, bike, and take mass transit as an alternative to driving.

GATEWAY TO COMMUNITIES: The Underline will serve as a gateway to the adjacent communities, by improving physical access from north to south, as well as across US-1 / South Dixie Highway, and by tapping into the unique identities of each adjoining neighborhood by providing distinctive places for programs relevant to each community.

Our mission is to create a signature linear park, urban trail, and living art destination. Inspired by South Florida and the Miami region, The Underline will become: an alternative mode of transportation; a significant social and civic spine for the area; a linear experience of inviting spaces that foster community, enhance value, accommodate recreation, facilitate connectivity and improve social exchange, and activate residents to a healthier lifestyle. We envision a unique and sustainable

corridor that supports mobility, community, recreation, public life, and inspires innovation in open space, transportation, planning, and redevelopment.”²

The Framework Plan was finished in December 2015. It was developed with input from several stakeholder meetings and physical assessment of the corridor. The document includes design and planning building blocks for the trails and intersections, parks and plantings, and amenities for the entire corridor, and more detailed plans for specific project areas (the Brickell Backyard and the UM Colonnade). However, the report does not provide many of the specifics regarding siting, engineering, scheduling, financing, and other aspects of implementation. The focus of this HIA was to inform the project implementation process, using the elements of the Framework Plan.

During the Scoping stage, the HIA team narrowed the assessment focus to three priority focus areas. They identified the health needs – major diseases, risk factors, and other impediments to wellness – which place the greatest burden on the community. These issues were identified through pre-existing reports, studies, and data sources. Another element was to trace these health needs through pathways of causality, based on best available research, to elements of the planning, design, and implementation of The Underline. For instance, could plans for The Underline plausibly be expected to change physical activity levels, and how might that affect community health status?

Prior to the selection of the final three topics, scoping identified nine possible impacts on health that related to priorities in existing community health assessments for the area. The HIA team reviewed the Community Health Improvement Plan and Community Health Needs Assessment reports from the Consortium for a Healthy Miami-Dade, as well as the South Miami Hospital Community Health Needs Assessment, South Miami Health Wellness Community Needs Assessment, and assessments from other local hospitals. Table 1 depicts the intersections of priority issues impacting health and wellness in Miami-Dade County with Underline Master Plan implementation.

Table 1: Health Priority Connections

CHIP Priority	Potential Connection to Underline HIA
1. Increase Access to Care	<ul style="list-style-type: none">▪ Mobility to jobs and services▪ Cost of transportation
2. Address Chronic Disease and Prevention	<ul style="list-style-type: none">▪ Increase physical activity▪ Reduce transportation cost▪ Mobility to jobs/goods/services▪ Housing costs
3. Decrease Health Care Disparities	<ul style="list-style-type: none">▪ Mobility▪ Housing costs▪ Revitalization
4. Increase Availability of Primary Care and Medical Homes	<ul style="list-style-type: none">▪ Mobility▪ Revitalization▪ Education/taxes/partners/tech
5. Promote Nutrition and Physical Activity	<ul style="list-style-type: none">▪ Increase physical activity▪ Reduce transportation cost

² The Underline Framework Plan and Demonstration Projects. December 18th, 2015. Prepared by James Corner Field Operations in collaboration with Kimley-Horn, HR&A Advisors, HLB Lighting, Pentagram, Stuart-lynn Company, Fairchild Tropical Botanic Garden. Prepared for: Friends of The Underline, in partnership with: Miami-Dade County Parks Recreation and Open Spaces Department, Miami-Dade Transit Department

	<ul style="list-style-type: none"> ▪ Mobility to jobs/goods/services ▪ Housing costs
6. Address Mental Health and Mental Disorders	<ul style="list-style-type: none"> ▪ Social interaction ▪ Exposure to greenspace ▪ Physical activity ▪ Mobility
7. Address the Social Determinants of Health	<ul style="list-style-type: none"> ▪ Reduce transportation cost ▪ Mobility to jobs/goods/services ▪ Housing costs
8. Increase Interagency Coordination	<ul style="list-style-type: none"> ▪ Interagency participation in HIA
9. Decrease Heart Disease and Stroke	<ul style="list-style-type: none"> ▪ Increase physical activity ▪ Change exposure to traffic emissions
10. Decrease HIV, STDs and Infectious Diseases	<ul style="list-style-type: none"> ▪ Social interaction ▪ Exposure to greenspace ▪ Revitalization

Finally, the focus of the HIA was narrowed down to three central focus areas which trace different pathways from proposals for The Underline to a narrower set of high priority health outcomes. The final decision was developed in consultation with the HIA Workgroup. Through this discussion, physical activity was named as one priority health focus area, due to its broad influence on many of the leading causes of disease and death in the area, such as heart disease, stroke, and depression. Social connections were also a priority for their role in the social determinants of health and overall connections to premature mortality. Exposure to traffic emissions and exposure to traffic-related injuries were merged into a larger traffic exposure category, with the acknowledgement that it would result in some limitations on data collection capacity. The HIA Workgroup offered to contribute data resources to which they had access.

Figures 1-3, below, depict the ways in which The Underline could potentially affect health status through the focus areas. Each link on the pathway is a hypothesized relationship in which the plans for The Underline influence the physical and social environment, which influence behaviors and risks, which ultimately influence health status. The assessment phase of the HIA is devoted to testing those relationships using existing research and input from stakeholders. Each pathway starts with the planned elements of The Underline, such as the shared-use trail, event spaces, and landscaping, and traces the health impacts that may result along the three distinct domains: physical activity, social connections, and exposure to traffic hazards.

Physical activity is one of the most important determinants of health and wellness. It is a factor in many types of heart disease and stroke, mental health, sleep disorders, bone and joint health, diabetes, and many of the leading forms of cancer, thus making it one of the leading causes of disease and death in the U.S. Heart disease, diabetes, cancer, and specifically low rates of physical activity, were all addressed as health concerns in The Underline corridor. The Underline could potentially impact physical activity by providing a place to walk or ride a bicycle for fun or for transportation. It will also provide recreational facilities and open green spaces. However, there are many unknowns that could enhance or inhibit activity levels, such as awareness of the trail, perceptions of convenience and safety, recreational formats that interest potential users, and more.

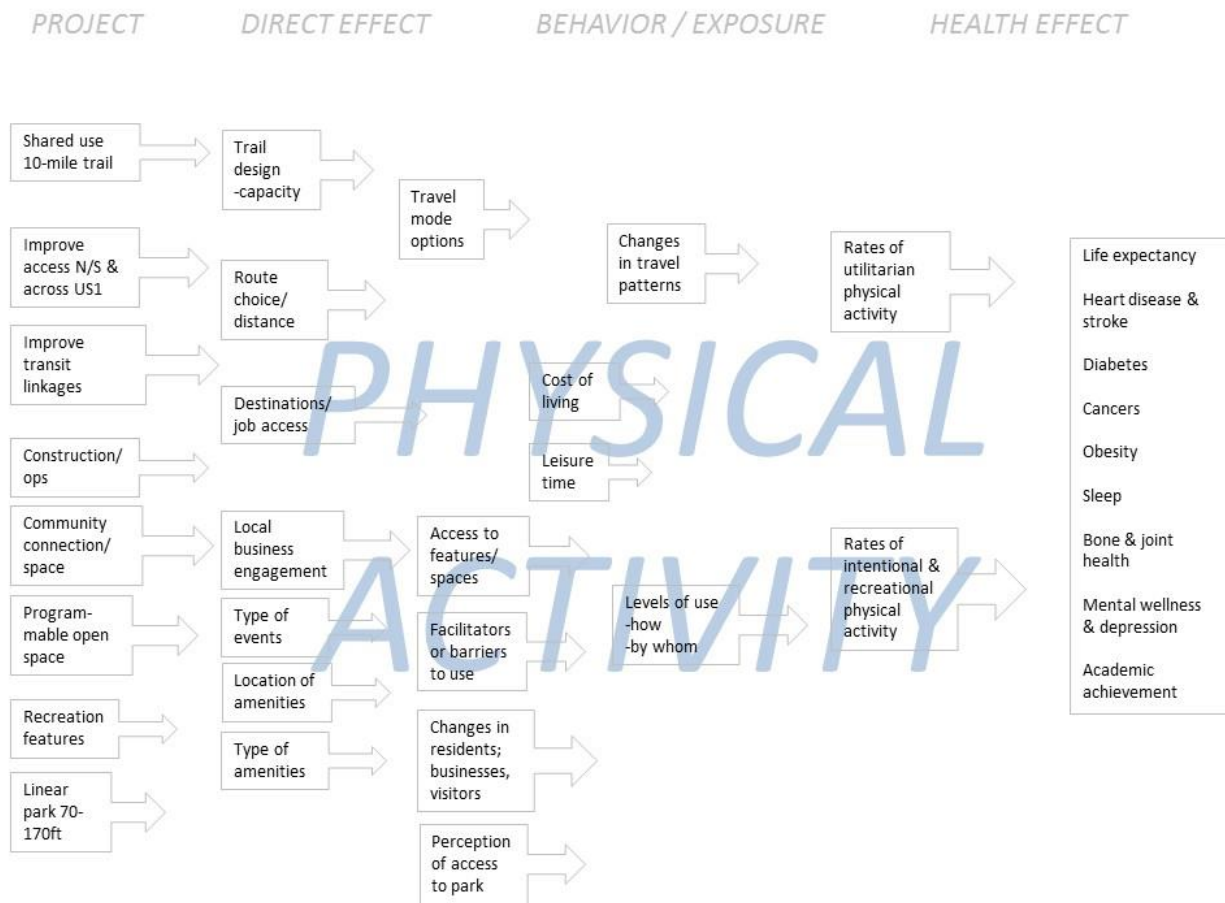


Figure 1: Physical Activity Causal Pathway

Social connections have direct and indirect links to health. In the most direct sense, a certain amount of regular social interaction is essential to maintain mental wellness and good health. However, relationships that develop among neighbors and across communities play a larger role in connecting people with opportunities and resources. Adequate access to ‘social capital’ can affect income, family stability, mental health, and overall life expectancy. Aspects of community design, such as having safe public places to walk, can increase social interaction. Further analysis is needed to determine whether The Underline will foster interaction amongst neighbors, and whether it will bring different neighborhoods and communities together.

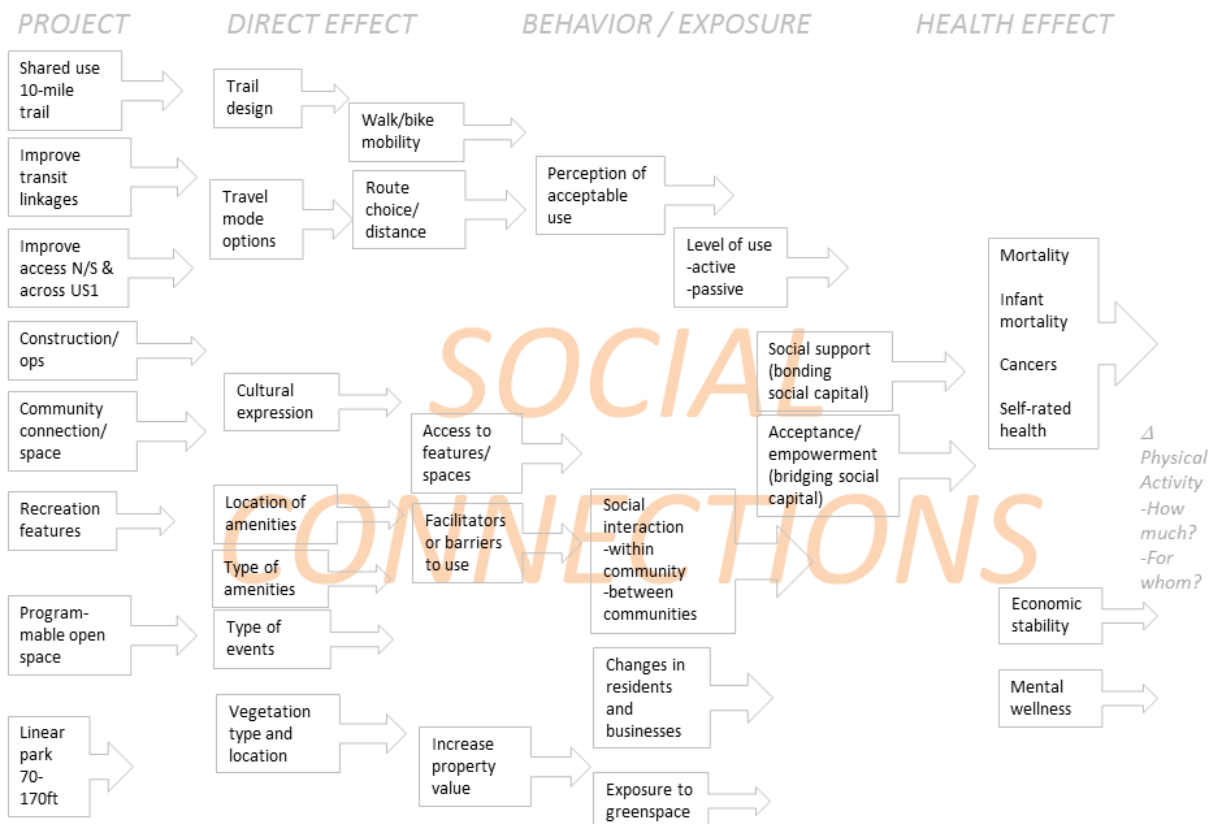


Figure 2: Social Connections Causal Pathway

Exposure to traffic hazards addresses the risks that users of The Underline potentially face travelling to and using the corridor. This includes perceived risks which could discourage use and thus inhibit the mobility, social interaction, and physical activity to be potentially gained from The Underline. The primary risks of concern include exposure to traffic injuries and exposure to traffic emissions. The Miami region has been ranked fourth in the US for danger to pedestrians. Pedestrian and bicyclist injuries are a concern for people crossing intersections on The Underline, as well as when they travel to and from surrounding areas. Pediatric asthma appears to be a significant concern in the project corridor, and asthma attacks can be triggered by ground level ozone. Traffic emissions can also increase the risk for obstructive heart disease and heart attack. The assessment phase can help determine whether users of The Underline could be at increased risk from traffic hazards, and if so, which mitigation strategies could be most effective.

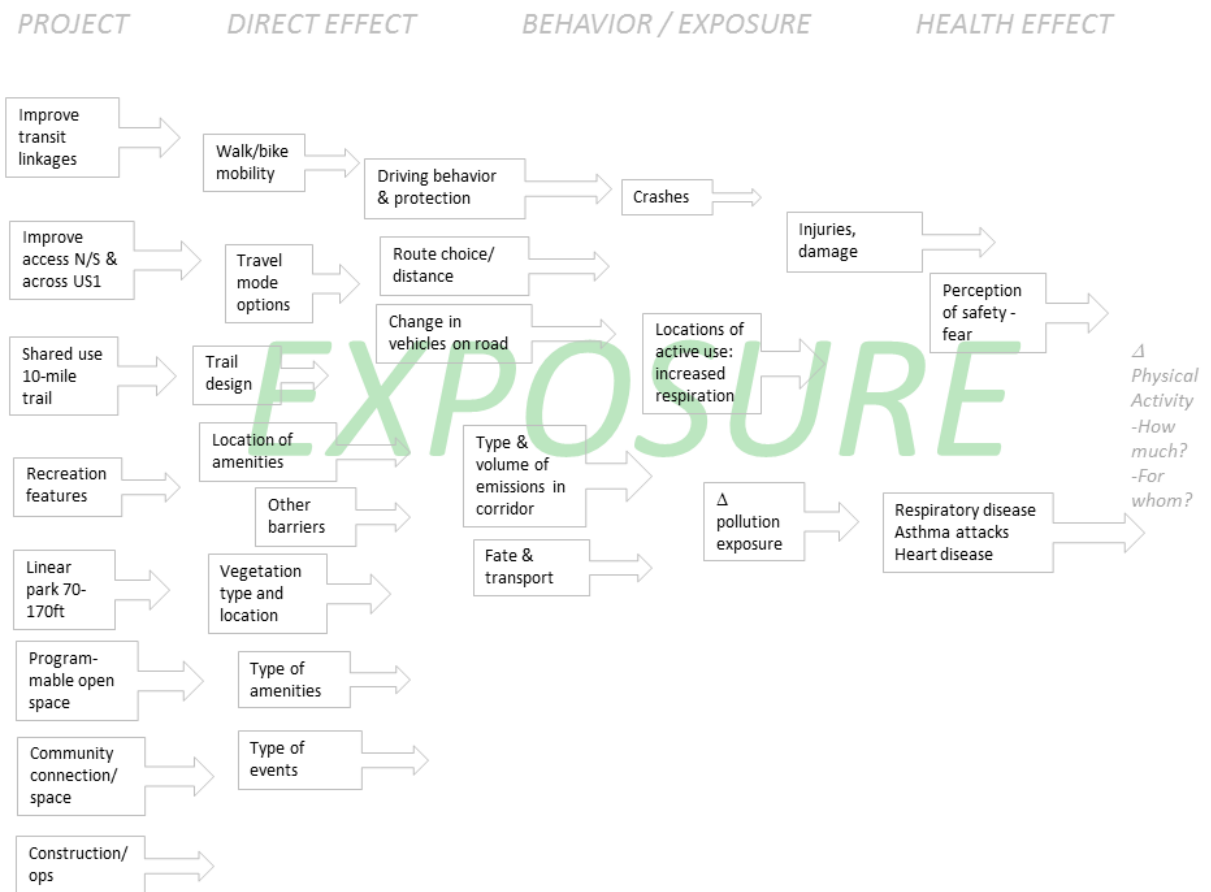


Figure 3: Traffic Exposure Causal Pathway

Stakeholder knowledge is very important too – people who live or work in the corridor may have unique information regarding the number of people who actually use local parks, what they do there, and any factors that promote or discourage park use. Throughout the HIA, input was sought from many different partners who have a stake in The Underline and its impact on health – community members, health professionals, city and county agencies, and funders and planners. These partners have various levels of understanding and influence over the corridor and the proposals for The Underline. Ongoing engagement is essential: when the HIA generates recommendations for designing, building, and operating The Underline in ways to maximize healthy living for all, the Friends of The Underline and all of their partners will be prepared to act on them.

One set of stakeholders for the HIA is the leadership of Friends of The Underline: President/CEO Meg Daly and the Board of Directors. A secondary set of stakeholders are the other people and agencies who have some influence over the design and implementation of The Underline, such as city planning directors, development partners, environmental reviewers, and key health influencers, listed in Table 2. Finally, there is a large but important group of stakeholders composed of community residents, local businesses and property owners, commuters, and others who are likely to be affected by The Underline. It includes some groups which face disadvantages and limited options, described further in the section on Baseline Data.

Table 2: Key Stakeholders

Organization	Name	Title	Reviewer	Approver
Banyan Street Capital	Karin Dunne	Associate	X	
City of Coral Gables	Ramon Trias	Planning & Zoning Director		
City of Miami	Collin Worth	Bicycle Ped Coordinator		
City of Miami	Francisco Garcia	Director of Planning		
City of Miami	Jeovanny Rodriguez	Director, Capital Improvements and Transportation Program		X
City of Miami	Juvenal Santana	Interim Director Public Works		
County ISD, ADA	Heidi Johnson-Wright	ADA Coordinator		X
County RER, DERM	Wilbur Mayorga			X
County RER, Regulatory & Economic Resources	Noel Stillings	Senior Planner, Planning Division		
Florida Department of Health in Miami-Dade County	Karen Weller	Director, Office of Community Health and Planning		
Florida Department of Transportation District 6	Aiah Yassin	District Local Program Administrator		X
Florida Department of Transportation District 6	James Wolfe, P.E	District 6 Secretary		
Florida Department of Transportation District 6	Ken Jeffries	Consultant Project Engineer		
Florida Department of Transportation District 6	Lisa Colmenares	Transportation Planning Manager		
Miami Dade County Parks, Rec and Open Spaces	Maria Nardi	Chief of Planning and Design Excellence		
Miami Dade Transportation & Public Works	Alice Bravo	Director		X
Miami Dade Transportation & Public Works	David Hays	Professional Engineer		X
Miami Dade Transportation & Public Works	Yanek Fernandez	Traffic Engineer III		X
Miami Dade Metropolitan Planning Organization (MPO)	David Henderson	Bicycle Pedestrian Administrator	X	
South Miami Hospital	Jessica Berrin	Director, Government & Community Relations at Baptist Health South Florida		
Village of Pinecrest	Stephen Olmsted	Planning Director		

The corridor passes through the City of Miami, City of Coral Gables, City of South Miami, and unincorporated sections of Miami-Dade County, and along the border of the City of Pinecrest, as shown in Figure 4. Each city and the county have their own planning, parks, and transportation or public works staff, with variations in their plans and policies.

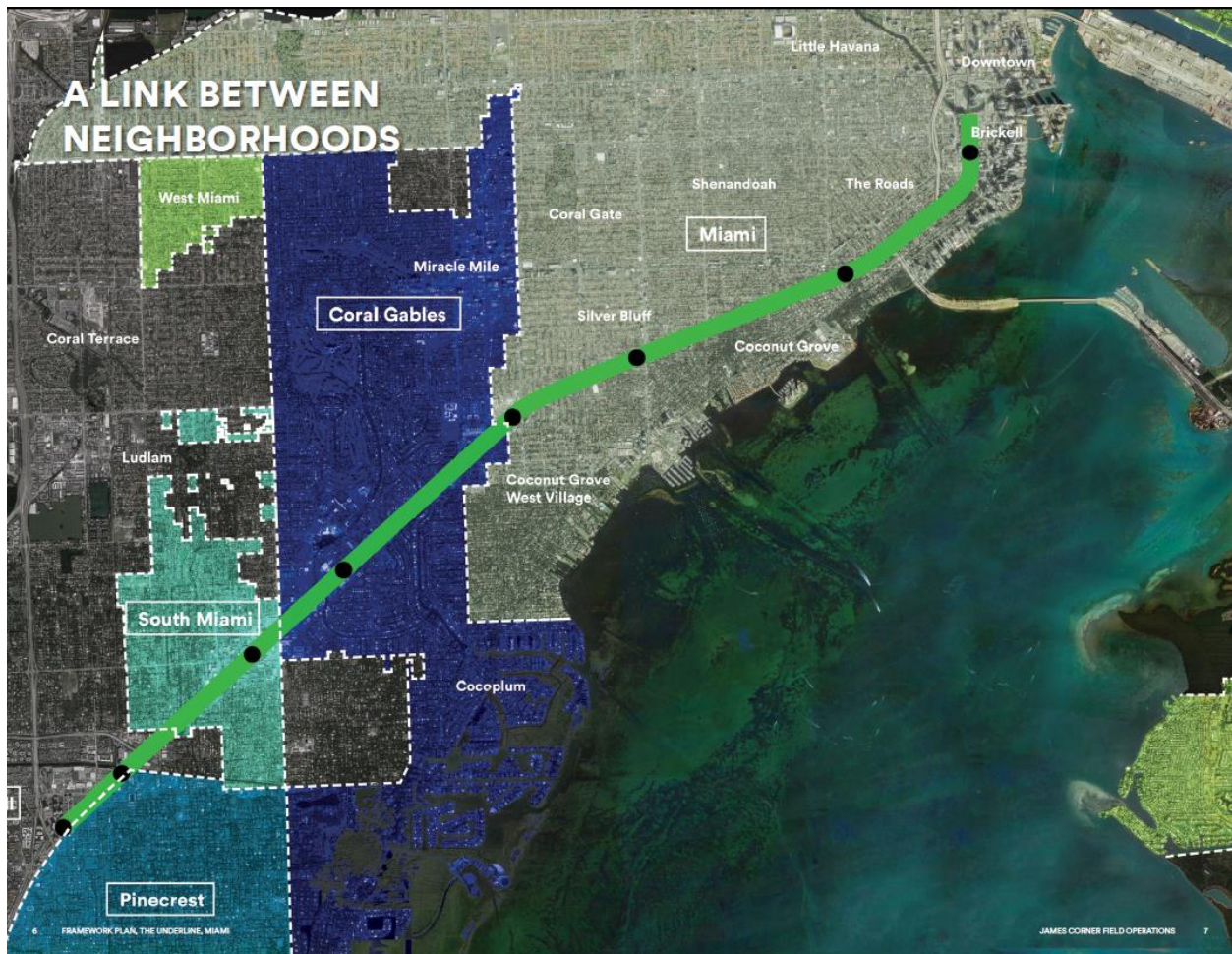


Figure 4: Corridor and Jurisdictions

Assessment

The next stage of the HIA is assessment, which encompasses three parts: baseline data collection, a review of relevant scientific evidence, and finally, synthesizing the data and evidence into predicted impacts with the help of informed stakeholders. Each link on the pathway is a hypothesized relationship in which the plans for The Underline influence the physical and social environment, which influence behaviors and risks, which ultimately influence health status. The assessment phase of the HIA is devoted to testing those relationships using existing research and input from stakeholders. Baseline data, or information about living environments and behaviors before The Underline, might include the current availability of park space in the corridor or the percent of people who commute by bicycle. This information will be incorporated with existing research – for instance, a systematic reading of all of the published studies which measure park usage and the factors which influence it. This process of data and evidence coordination are performed for each of the potential pathways from implementation of The Underline to environment and behavior to health effects, ultimately resulting in predictions regarding the likelihood of each possible outcome. The assessment relies on the detailed planning descriptions from The Underline Framework Plan and Demonstration Projects, data obtained from multiple public and semi-public sources, and a high-level review of published research and evaluation.

The HIA also convened three Community Consultation meetings on December 13 and 14, 2016. The meetings were held in Coral Way, with 15 participants, South Miami with 12 participants, and Brickell with 12 participants. At each meeting, attendees learned about the HIA process to date, were presented with an overview of the most relevant data and potential causal relationships. Then, they were asked to provide feedback on existing conditions, areas of interest or concern, and predicted impacts. Ways to mitigate concerns or expand access to healthful elements of The Underline were discussed for the three topics. The findings are presented below.

Baseline Data

Population

In terms of population, there was interest in people who live and work near the corridor, through commuters (who might be able to use it), people who come to it as a destination/recreation. There are an estimated 400,000 residents within walking distance (www.theunderline.org). According to the 2010-2014 American Community Survey (U.S. Census Bureau), Miami-Dade County's population is around 2.5 million; 150,000 of those are children under 5; 450,000 are between the ages 5-18. In all, 21.1% of the population is under 18 and 14.6% are 65 and over. 10.4% of kids live with grandparents; 37.1% live in households receiving some sort of public assistance; 3.1% of kids have a disability. There are 115,000 adults with a disability – about 5.5%. Figure 5 shows the proportion of the population with a disability (green) and the proportion age 65 or over (orange) – darker colors indicate higher proportions.

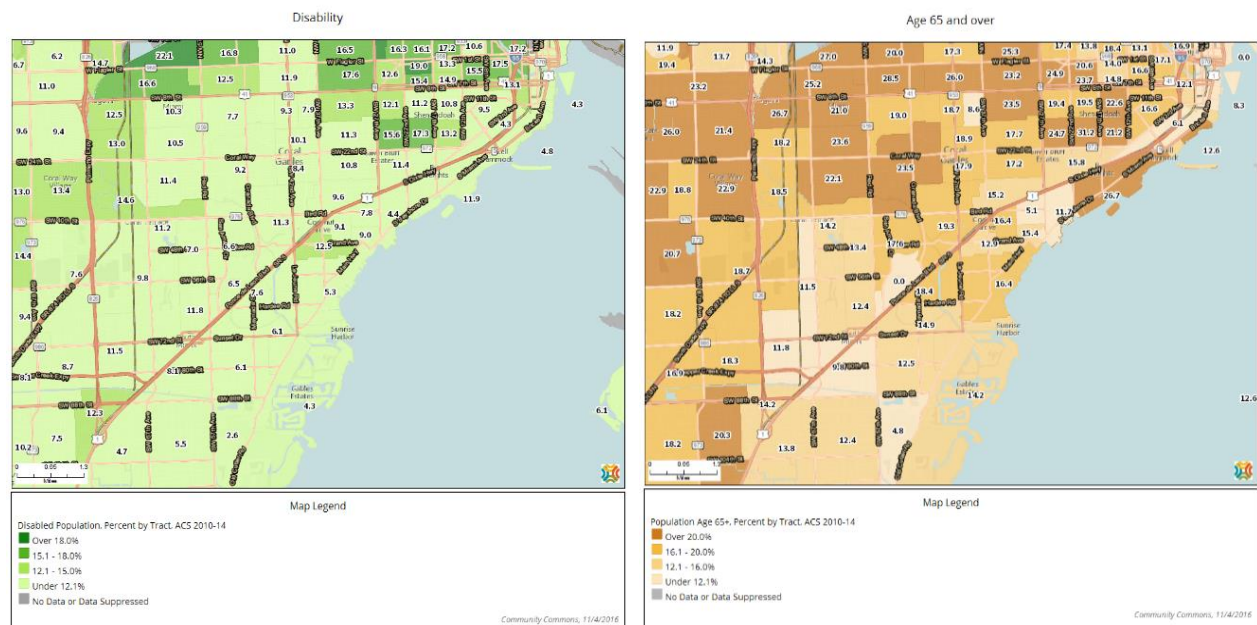


Figure 5: Percent of Population with Disability and Over 65

Race/Ethnicity

The corridor, similar to the rest of the county, is predominantly Hispanic/Latino. County residents are 18.8% Black; 15.4% non-Hispanic White; and 65.2% Hispanic/Latino of many different origins. Around 50% are foreign born (of whom about half are naturalized). One-third of the population over 5 has limited English proficiency, and a quarter live in linguistically isolated households. Some areas are diverse, while others exhibit concentrations of a predominant racial or ethnic group. There are concentrations to a greater or lesser degree of Black, White, and Asian residents along the corridor as well. In some cases, the corridor seems to serve as a barrier between identity groups. The Racial Dot Map shown in Figure 6, depicts the distribution of residents by race and ethnicity. Orange areas are Hispanic, green dots represent non-Hispanic Black, blue dots represent non-Hispanic White, and red dots indicate Asian residents. The corridor, represented with a gray line, appears to create a division between racial/ethnic density. Certain racial/ethnic divisions also appear to correlate with poverty, recommending racial and ethnic identity as one source of structural disparity that deserves attention. However, within Latino ethnicity, there is also considerable variation in access to opportunity, from established families to those who have recently immigrated.

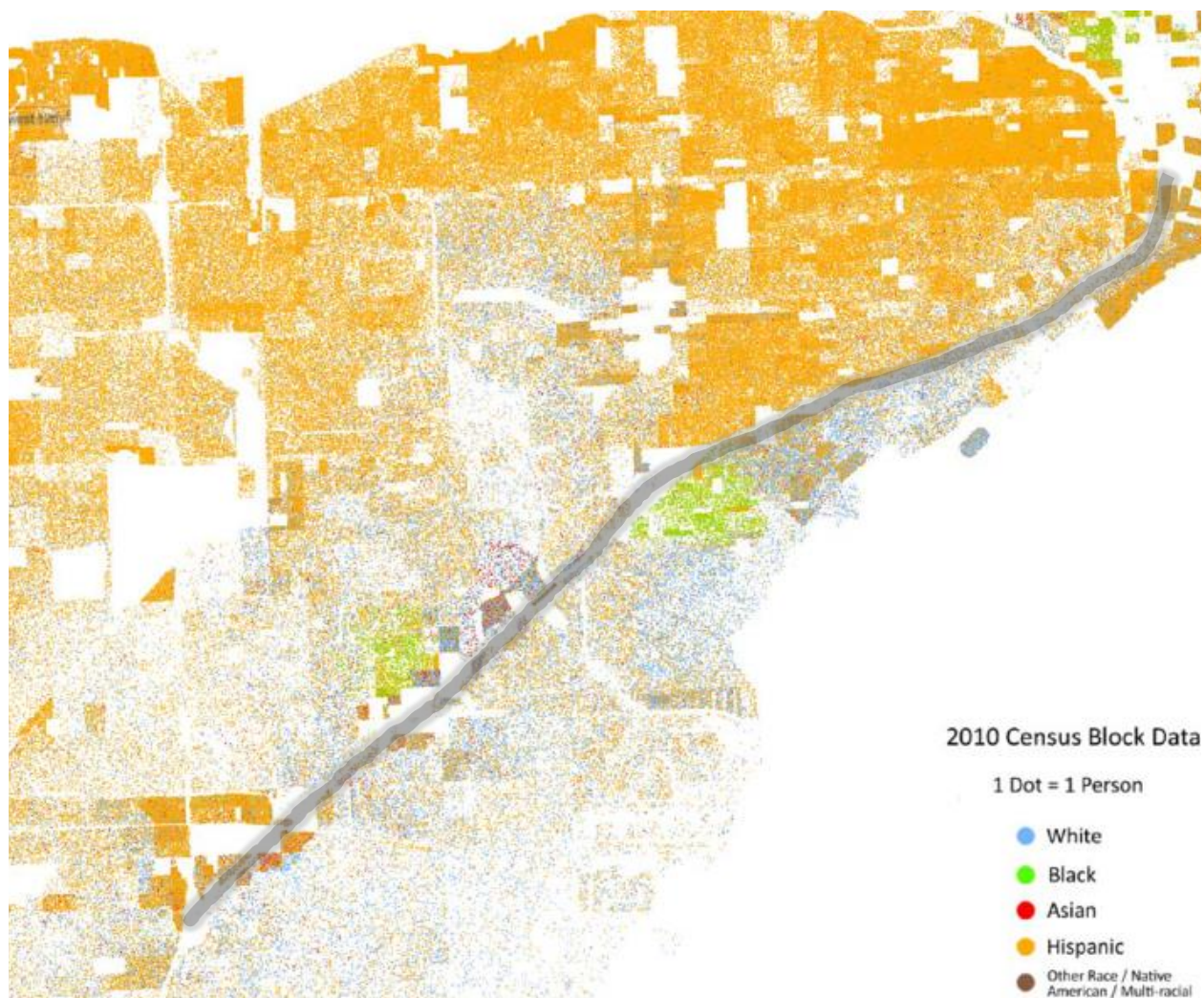


Figure 6: Racial Dot Map

Source: <http://demographics.coopercenter.org/DotMap/index.html>

Socioeconomic Status

Based on input from Census data and the various CHNAs, housing also seems to contribute to disparities in the area. Housing factors of concern include apartment-dwellers vs single family homes, home ownership, and housing cost burden (overpaying for housing). 40.8% of homes are single family detached; 10.2% single family attached (townhomes/ cluster homes); 30.5% are in multifamily buildings with 20+ units. 55.0% of households own their home. Average owning household size is 3.2 people; average renting households are 2.9 people. 5.7% of homes are overcrowded. 16.2% are vacant. Among households with a mortgage, 53.1% pay more than 30% of income for housing. 66.1% of renting households pay 30% or more for housing. Figure 7 shows the high percentages of housing cost burdened households near the corridor. (Data sources: factfinder.census.gov; CHNA.org)

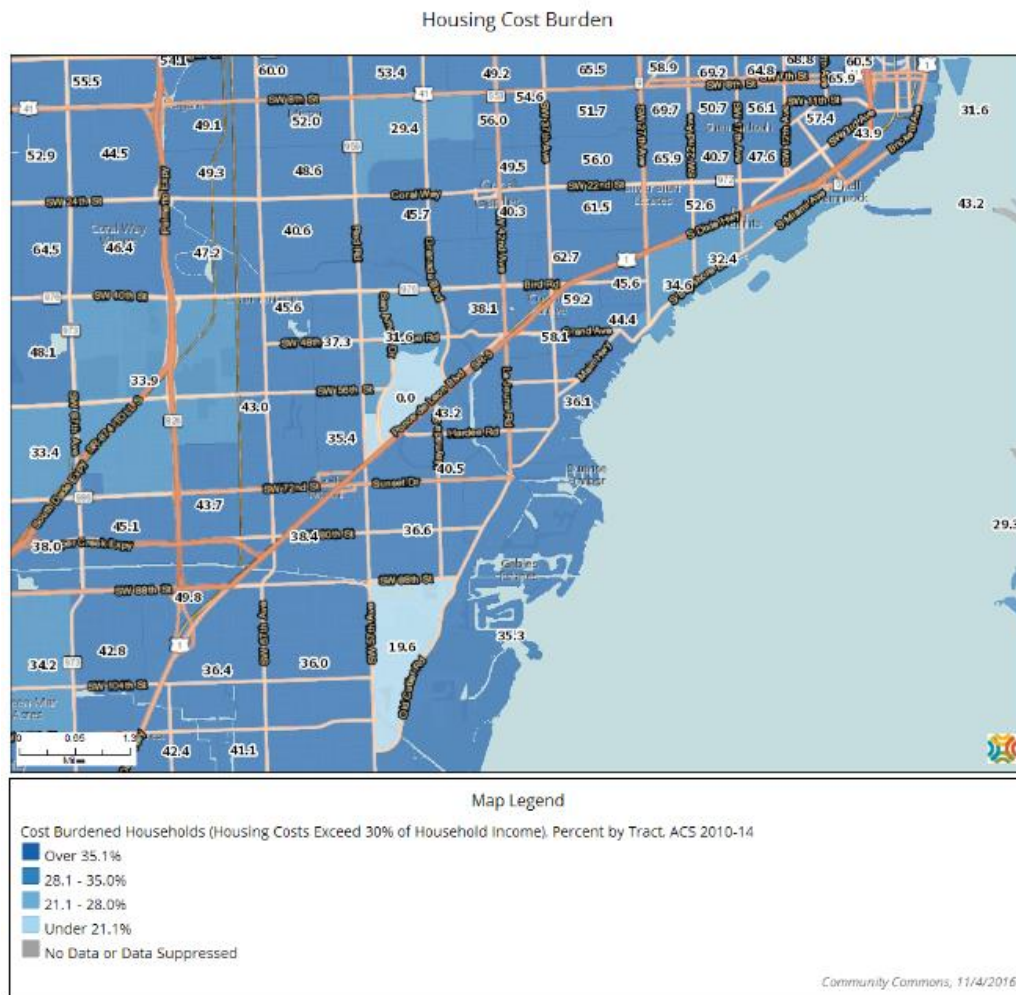


Figure 7: Percent of Households Paying over 30% Income for Housing

Several of the sources referenced (community health assessments and others) disparities in income as being one of the more significant differences between people and neighborhoods. Per capita income varies from a median value of around \$14,000 to over \$80,000 by Census tract, as shown in Figure 8. The county had a 5.6% unemployment rate in August 2016, according to CHNA.org. About 20.5% of the population lived in poverty. 20.5% of adults 25-64 lack a high school degree or equivalent, while 26.4% have a college degree. 28.3% of the population lacks health insurance.

Per Capita Income - North

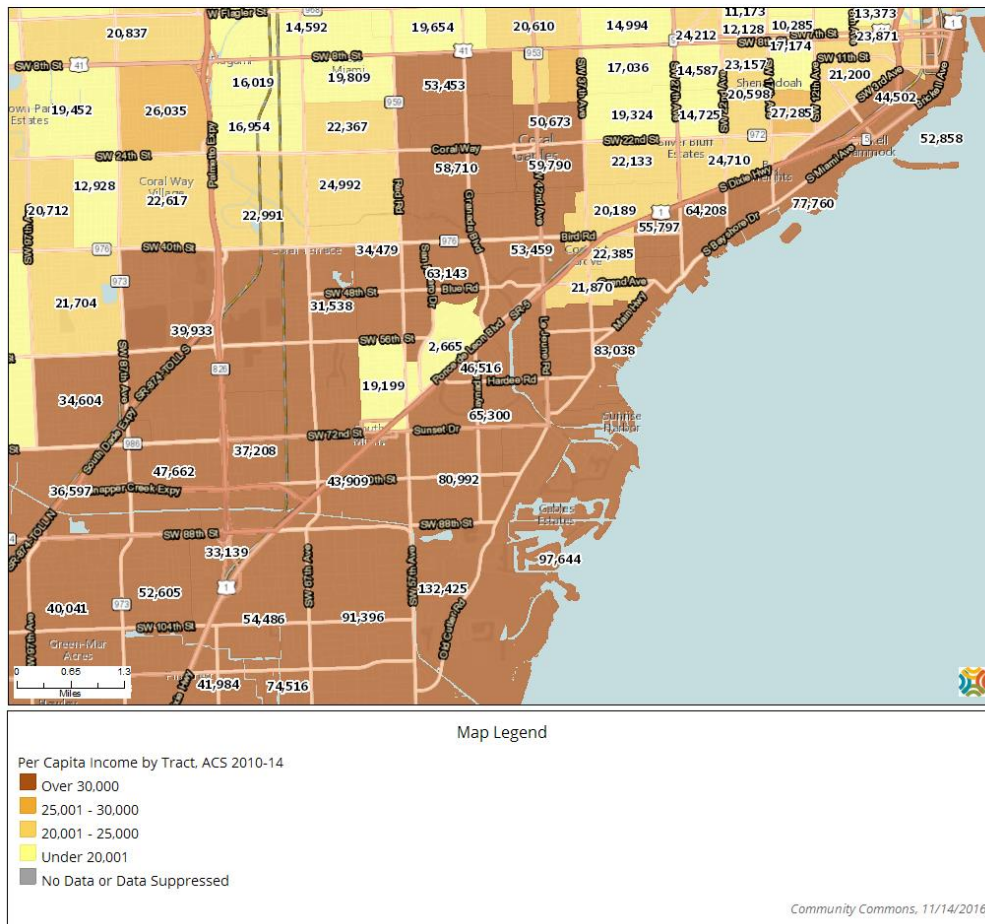


Figure 8: Median Per Capita Income

Trails

Current paths and path condition.

According to the framework document, the existing paved path is 7 to 10 feet wide and shared by all users (bicycling, walking, or other form of travel). The crossings are slightly enhanced crosswalks with standard crossing signals associated with the adjacent roadway. Figure 9 shows the current path cross section, including potential capacity.

CURRENT / SHARED PATH
PAVED WIDTH = 7' TO 10'

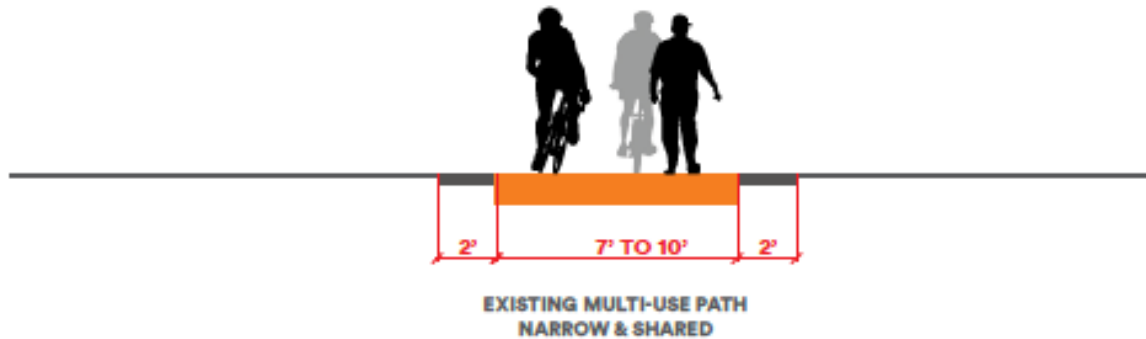


Figure 9: Existing M-Path Design

Current path usage

The Rails to Trails Conservancy observed over 500 users along the M-Path near Vizcaya station, and surveyed 79 of them. 55% were walking, 9% were running, and 36% were riding bicycles. 44% indicated they were using the path for utilitarian (transportation) purposes, and 55% reported recreational use at the time of the survey. 62% of users were men relative to 37% women, which can be an indicator of a perceived lack of safety or security. The median age was 48. The majority of respondents indicated that they were in excellent or very good health; however, 9% did indicate that their health was fair or poor. 44% of those surveyed indicated that they would be unlikely or very unlikely to engage in other physical activity than use of the path (Bryan, Loh, & Valenzuela, 2016; Jacobsen, 2003).

A trail counter located on the M-Path near Vizcaya station has counted around 90,000 users since January 1st, 2016, of which about 60,000 were on bicycle. That is an average of 277 users per day, 88 on foot and 185 by bicycle. The highest level of use occurred at 7:00 PM on March 15th, with 372 total users (346 pedestrians); the highest bicycle ridership was on June 7th with 121 bicycles passing within one hour. However, an eight to ten foot trail has been calculated to have the capacity to carry up to 10,000 bicycles per hour, so the current facility is underutilized (Allen, Roupail, Hummer, & Milazzo, 1998). Figure 10 depicts that bicycle trips are higher on the weekend, while pedestrian travel is highest on Tuesdays. On a daily basis, the highest level of use is from 5:00PM to 8:00 PM, with a smaller peak around 8:00 AM as shown in Figure 11. There is also occasionally high usage at midnight during the summer, which may be due to special events; aside from these anomalies, nearly all nighttime usage is by bicycle.

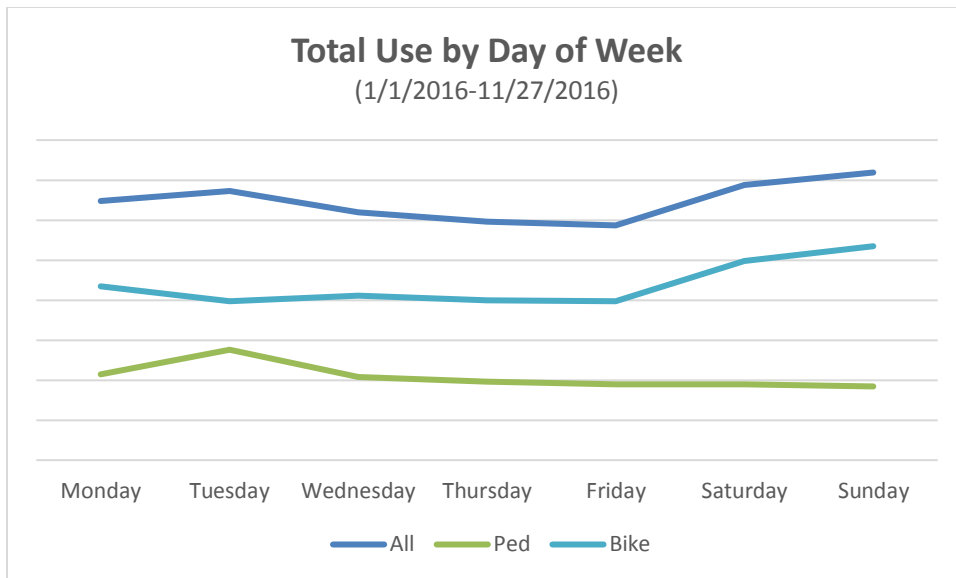


Figure 10: Total Path Use by Day of Week

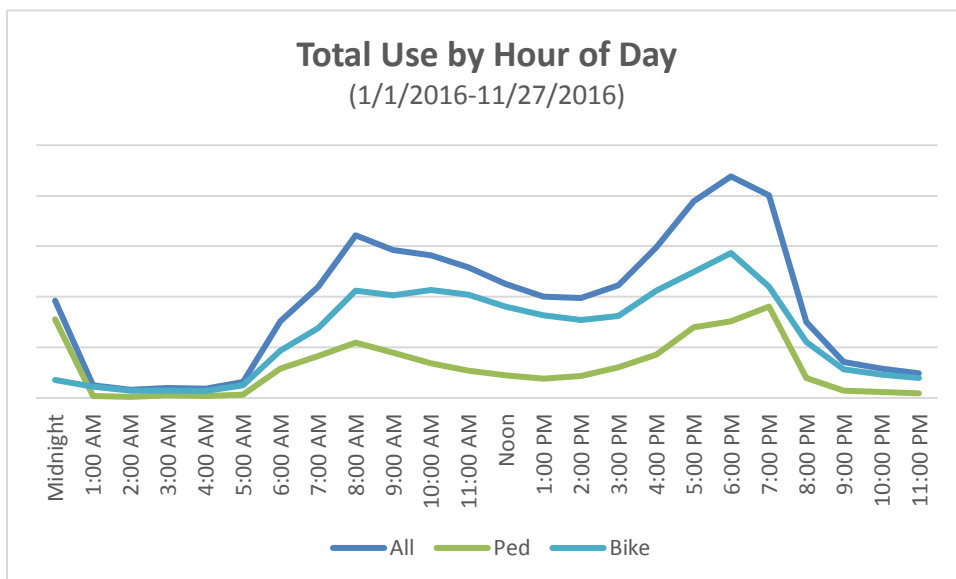


Figure 11: Total Path Use by Hour of Day

The perception of Community Consultation participants was that older adults frequently walk for exercise and socialization along existing parks and trails. They also noted that there was insufficient information about children’s path usage. Some participants indicated that the current M-Path configuration was not good for bicycling due to curving paths and difficult, dangerous crossings. Participants in the community consultations indicated that they were hesitant to use the existing path due to security concerns, including insufficient lighting, sense of isolation, and high utilization by people who are homeless.

Bike Share

There are currently two bike share locations adjacent to the corridor, at SW 7th Street and SW 15th Road (see Figure 12 for location of CitiBike stations). There are no locations at Metrorail stations along the corridor.

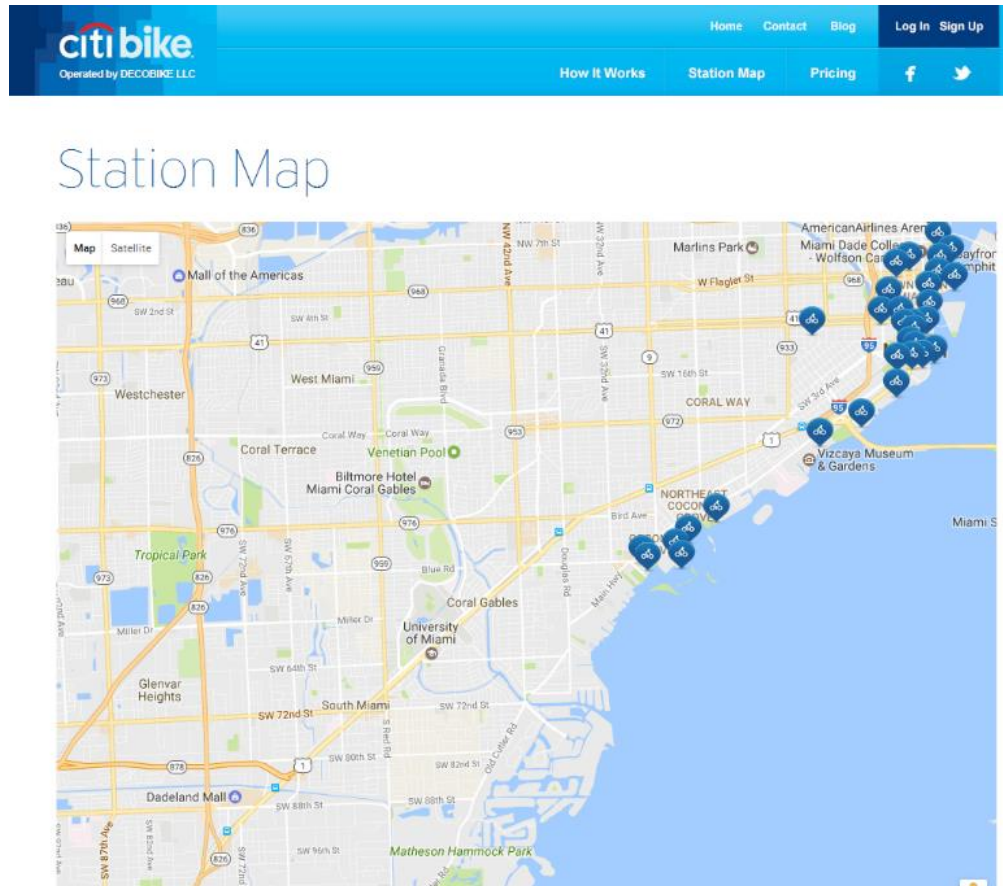


Figure 12: CitiBike Stations

Source: <http://citibikemiami.com/station-map>

Parks

Park Locations

Figure 13, taken from <http://gisweb.miamidade.gov/parks305/>, shows the current location, size, and shape of each park in Miami-Dade. Parks shown in brown are municipal parks, while green indicates county parks; state parks are blue. The vast majority of existing park supply in the communities near The Underline are small city parks. Some areas are currently well served with parks. However, the area north of the corridor from 32nd Avenue to Vizcaya station (circled in red) appears to lack any park space. There are also some gaps in the Dadeland area (circled in blue). The pattern is reiterated in Figure 14, in which the segment southwest of Vizcaya (again circled in red) shows a similar lack of parks or other major destinations other than the rail stations themselves.

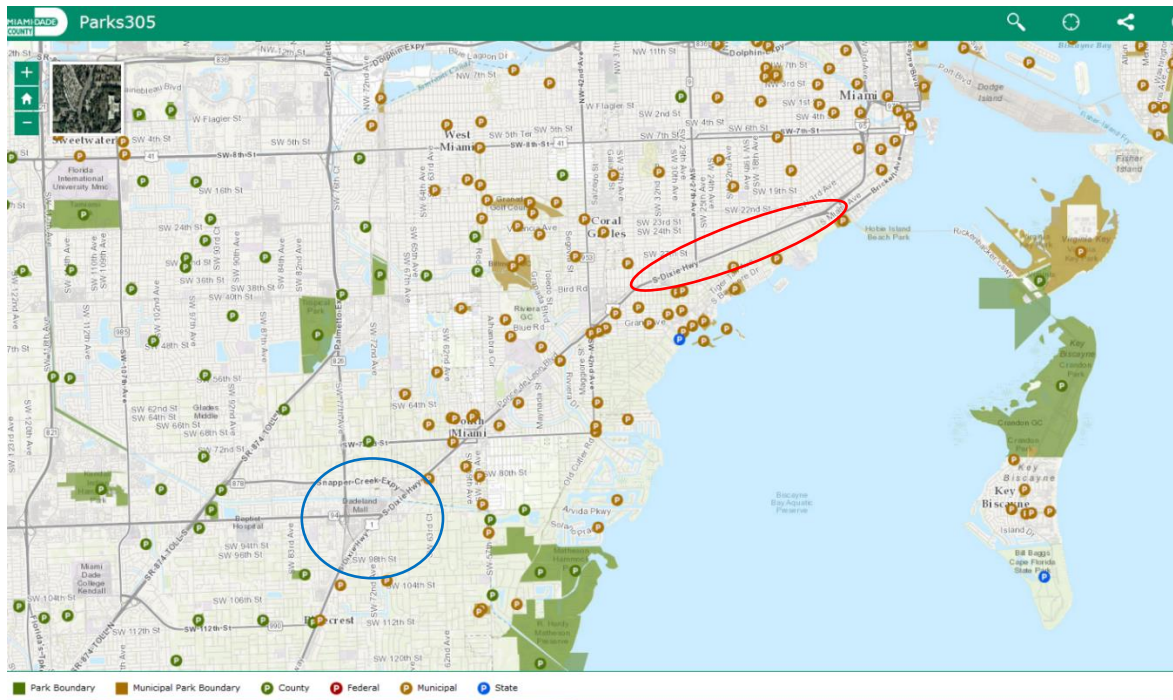


Figure 13: Map showing the current location, size and shape of each park in Miami-Dade County

Source: <http://gisweb.miamidade.gov/parks305/>

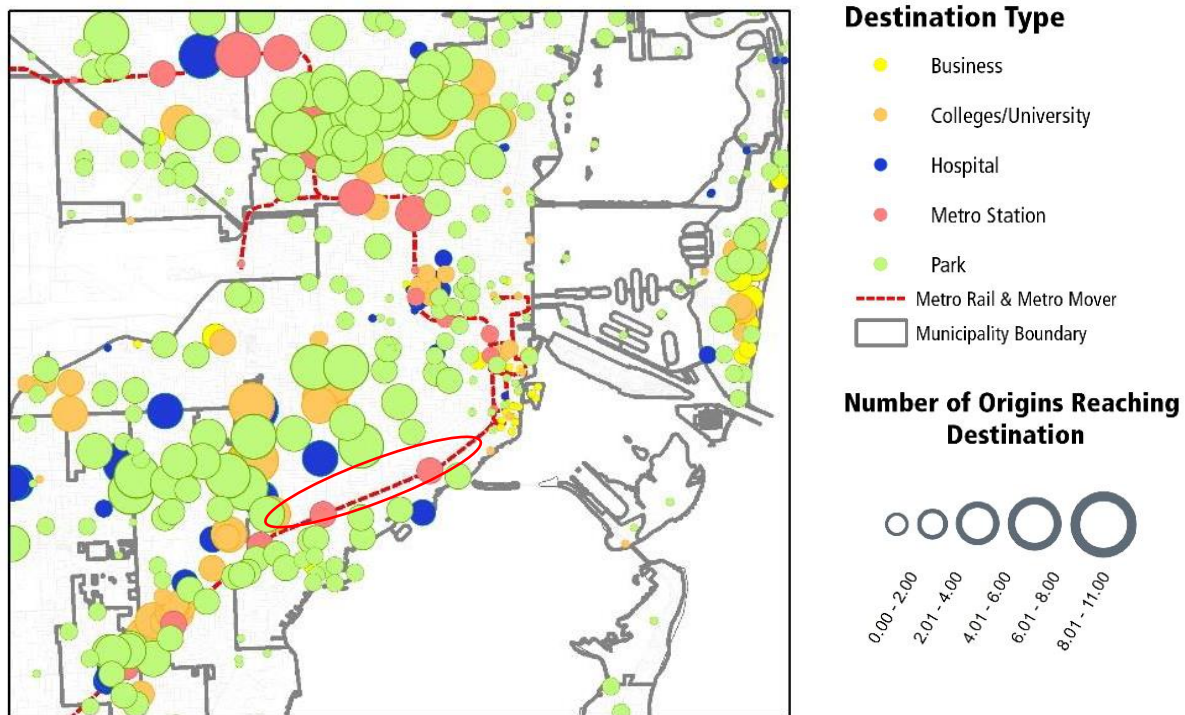


Figure 14: Destinations

Current park usage

In the 2014 Miami-Dade County Community Leisure Interest Survey, conducted with 7,880 households, 77% of respondents reported that they visited local parks in order to walk or run. Location, safety, and information were the primary barriers to using parks. Additionally, 96% of respondents believed that parks and trails benefitted their health. Skateboarding facilities, food options, fitness opportunities, and water-based amenities were most desired in future parks. Bike lanes and paths were identified as the most important facilities in Commission District 7, which includes The Underline. Bicycling was considered the top priority in the district, with festivals and theater prioritized as well. District 7 residents were more likely than average to feel that parks were not well maintained.

The City of South Miami currently has 48 acres of parks, which is 8 acres short of their goal, to provide 4 acres for every 1,000 residents. Many of South Miami's parks are close to the corridor of The Underline, although there may be barriers to reaching them as shown further on in Figure 19. The Underline would create 11 additional park acres in South Miami. The City of South Miami reports that 4,995 people participated in parks and recreational activities in 2016.

In the Dadeland area, active recreation fields were the most highly sought amenity to be created by The Underline according to participants in the planning meetings (James Corner Field Operations et al., 2015).

Current tree cover

According to the Framework, there are 281 trees along the corridor between the Miami River and SW 17th Road, and 373 trees from Stanford Drive to Red Road. Figure 15 shows the amount of existing tree canopy. The darker, leaf green areas indicate presence of tree canopy. Light green areas are vegetated with grass or other planting. Meanwhile, buildings are shown in orange, transportation infrastructure in gray, and other impervious surfaces such as parking lots and driveways are yellow. It appears that parks and some of the residential neighborhoods (generally in the higher income neighborhoods) have fairly large amounts of tree canopy. On the other hand, much of the corridor lacks tree coverage, and it passes through retail and business areas which are also lacking in trees.

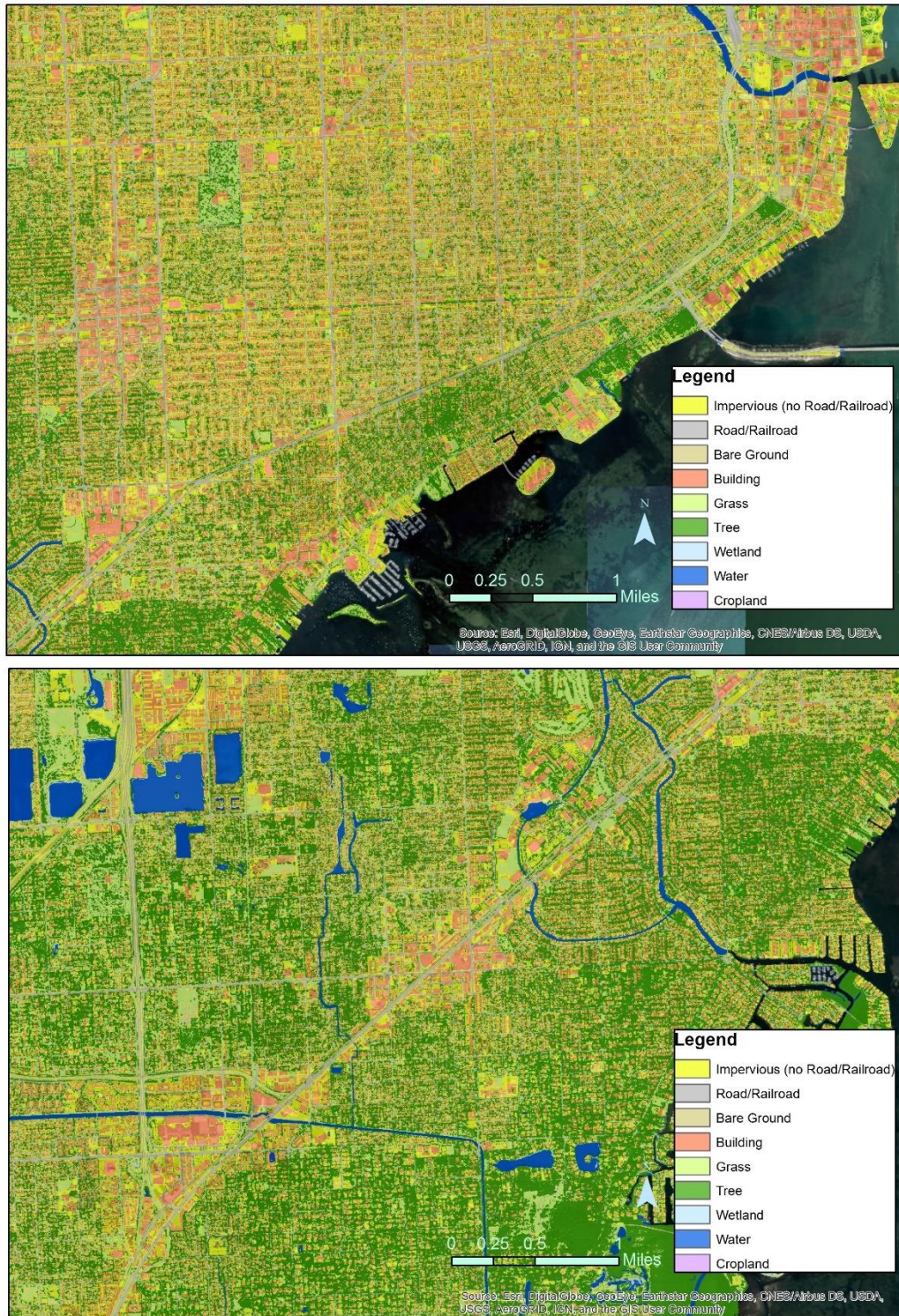


Figure 15: Map showing existing tree canopy

According to Community Consultation participants, some of the surrounding communities, such as the city of South Miami, have good tree protection ordinances, but the corridor does not. They were concerned that proposed utility lines would reduce tree canopy in the corridor. Participants at public

meetings for The Underline prioritized shade trees over all other amenities that might be added to The Underline, and native vegetation received the fourth-highest priority.

Transportation Patterns

Across all travel modes, 9.7% of commuters travel over 60 minutes each way; 19.9% over 45 minutes. Median travel time to work is 29.4 minutes. There are large variations in travel options in the corridor area. In some areas, over half of all households do not have access to a motor vehicle. These correspond with high poverty areas, so this status may be more necessity than choice. 11.3% of households do not have a motor vehicle; 4.6% of workers don't have access to a motor vehicle. Figure 16 shows the areas with the lowest vehicle ownership rates in darker red.

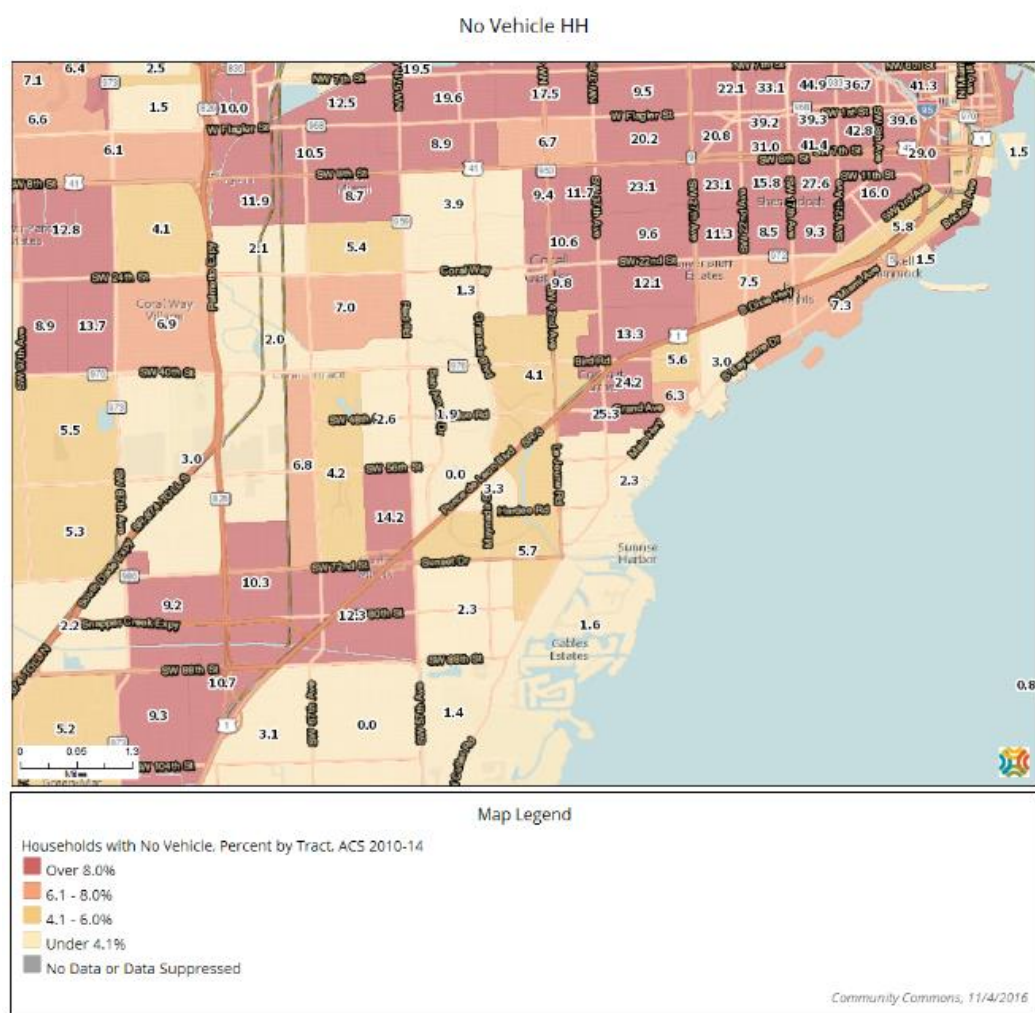


Figure 16: Households without Access to a Motor Vehicle

Additionally, there are large differences in the percentage of people who commute by transit, foot or bicycle. Across the county, 76.9% of workers drive alone; 9.4% carpool; 5.4% ride transit; 2.3% walk; 0.6% bike. However, along the corridor, walking and bicycling rates are much higher in some areas. Depicted in Figure 17, 57% of commuters in the University of Miami area commute by walking or

bicycling, while other sections of the corridor have no recorded pedestrian or bicycle commuters (highest rates shown in darker purple). The Brickell and South Miami areas have about 15% walking or bicycling commuters. The perception of community consultation participants was that rates of bicycle travel are increasing more rapidly than is captured in the available data. Participants also noted that there are many pedestrians in the Brickell area throughout the day, which is not entirely represented by trip to work data. However, participants also felt that few people were walking or riding bicycles in other neighborhoods along the corridor due to traffic danger.

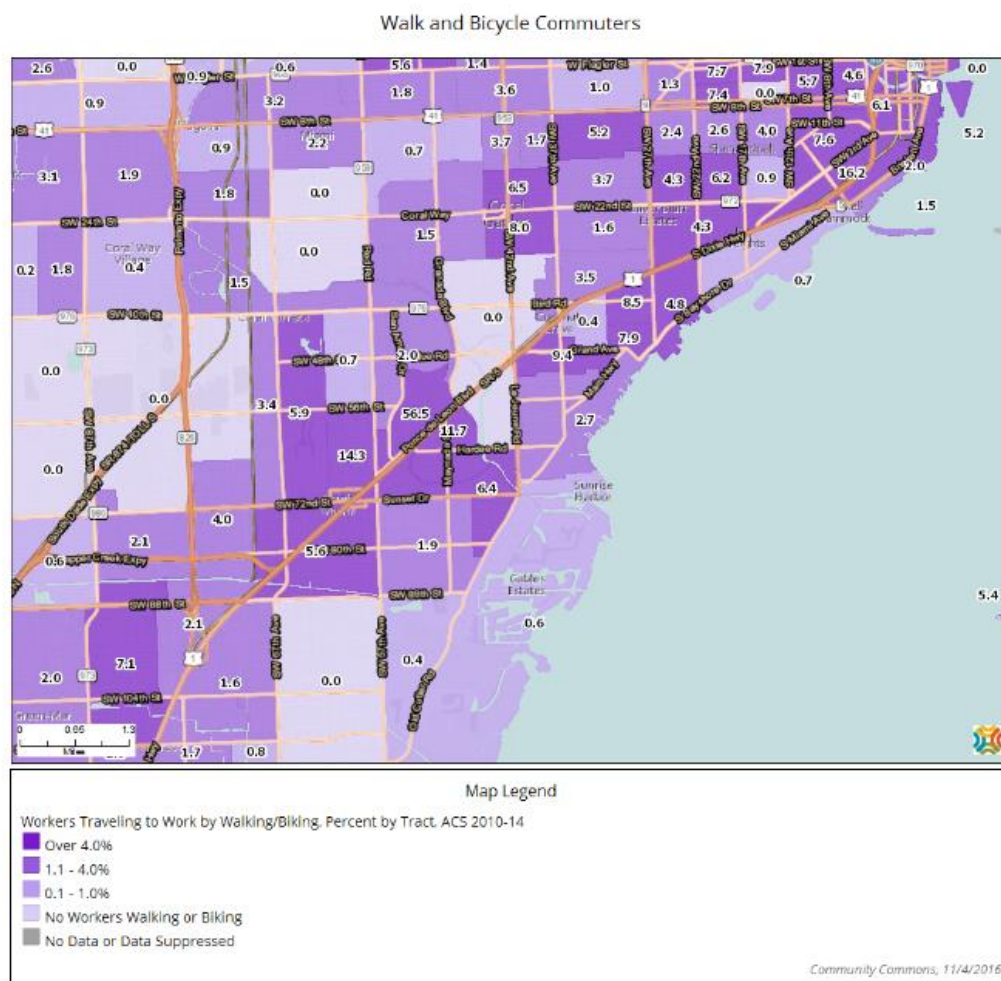


Figure 17: Percent of Commuters Walking or Bicycling to Work

Transit use in neighborhoods along the corridor ranges from less than one percent, to over 30% in the Brickell area, as shown in Figure 18. Ten to fifteen percent of Dadeland area residents commute by transit. Transit trips are considered a form of active transportation since nearly all involve some walking or bicycling at one or both ends of the trip. Additionally, Tables 3 and 4 show the current volume of people boarding at Metrorail stations along The Underline and parking at station park-and-ride lots. These numbers indicate the total volume of commuters whose travel patterns could potentially involve The Underline in the future – over 31,000 transit commuters of which at least 4,700 are currently driving to the corridor. These numbers also indicate that some Metrorail stations have extra capacity to provide parking for activities on The Underline. Participants in the Community

Consultations indicated that active commute rates are generally low for several reasons, including insufficient bicycle parking, lack of accommodations for managing sweat, lack of driver compliance at crosswalks, and difficulty of using the M-Path for long distance bicycle travel due to unsafe crossings.

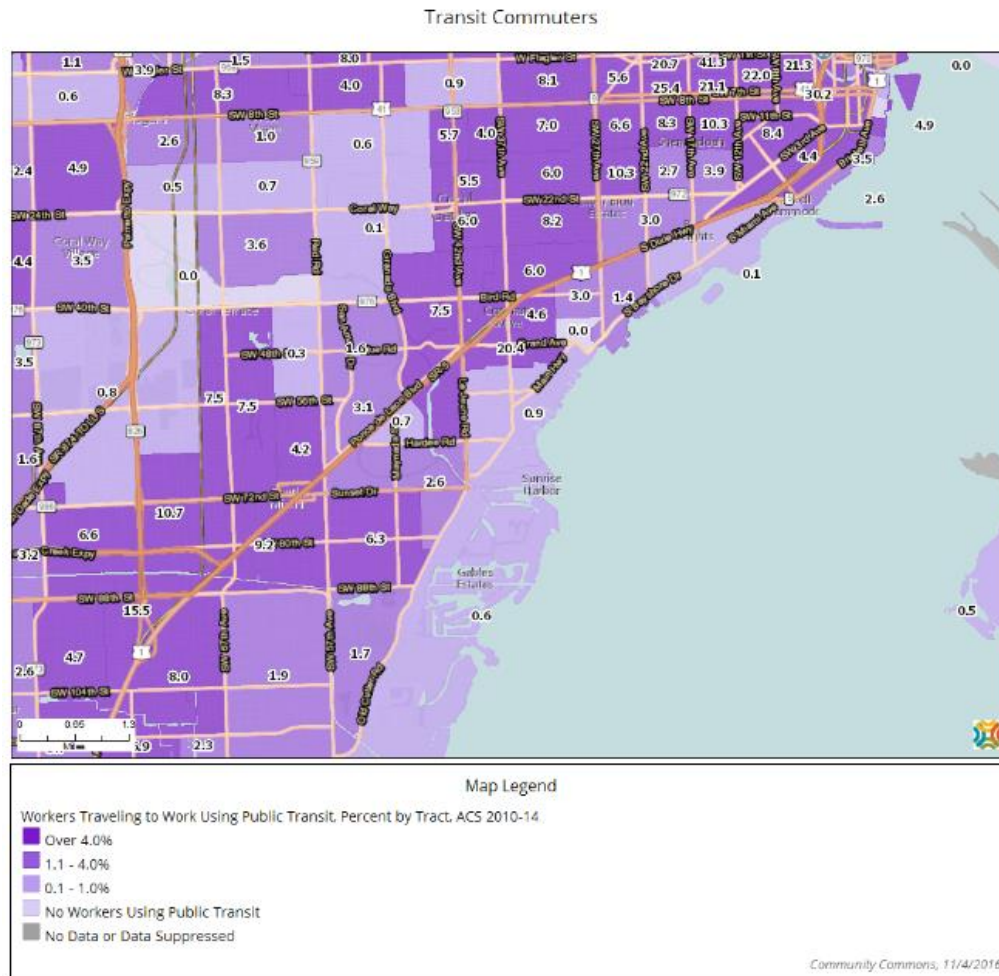


Figure 18: Percent of Commuters Riding Transit to Work

Table 3: Metrorail Monthly and Average Daily Boardings by Station (September 2016)

	Average Weekday	Average Saturday	Average Sunday	Total Monthly	Total Monthly	Percent Change
STATIONS	Sept-16	Sept-16	Sept-16	Sept-16	Sept-15	16 vs 15
BRICKELL	6,658	2,937	2,032	162,107	157,863	2.7%
COCONUT GROVE	1,944	986	760	48,678	52,382	-7.1%
DADELAND NORTH	6,728	2,221	1,545	158,278	165,377	-4.3%
DADELAND SOUTH	6,807	2,736	2,086	164,650	188,917	-12.8%
DOUGLAS ROAD	4,039	1,616	1,108	96,992	102,903	-5.7%
SOUTH MIAMI	3,485	1,437	1,009	84,111	91,343	-7.9%
UNIVERSITY	2,280	595	434	52,476	56,707	-7.5%
VIZCAYA	1,423	626	482	34,802	37,335	-6.8%

Table 4: Metrorail Station Parking Occupancy Rates (September 2016)

PARK-RIDE LOT	AVAILABLE SPACES	OCCUPANCY	OCCUPANCY
DADELAND SOUTH	1,290	1,267	98%
DADELAND NORTH	1,963	1,950	99%
SOUTH MIAMI	1,081	991	92%
UNIVERSITY	230	216	94%
DOUGLAS ROAD	220	210	96%
COCONUT GROVE	204	105	51%
VIZCAYA	120	63	53%

Source: Miami-Dade County Transportation and Public Works, 2016

Motor vehicle traffic volumes

Traffic volumes on Route 1 range between 77,000 and 93,000 motor vehicles per day between North Dadeland and Vizcaya stations. The segments to the south of North Dadeland average around 50,000, and the segment north of Vizcaya averages 65,000 vehicles per day. The section of Ponce de Leon that parallels the corridor adds another 22,000 vehicles, and the cross street vary from less than 10,000 to over 40,000. According to a 2014 freight study, Route 1 is a freight corridor. Around 3,000 vehicles on the corridor each day are trucks, with the Dadeland area under 2,000 and the Brickell segment less than 1,000. Overall, Route 1 has a crash score above the state and district average. The perception of Community Consultation participants was that the area is very high in traffic; they were curious where cars on the corridor were travelling from and to.

Current physical barriers to interaction

A number of roadways in the corridor were identified as “high stress” connections in the State of the Trails report, as shown in Figure 19. This can limit usage of the corridor. However, as shown in Figure 20, overall access and connectivity in the corridor area is relatively high; the highest access levels are in the Coral Gables and South Miami areas while access to the northern portion of The Underline is moderate (Bryan et al., 2016). Community Consultation participants felt that there were not enough places to socialize. Places that were present were underused due to lack of lighting and a large number of people who were homeless in the area. The participants also noted that access across US Route 1 was a significant barrier.

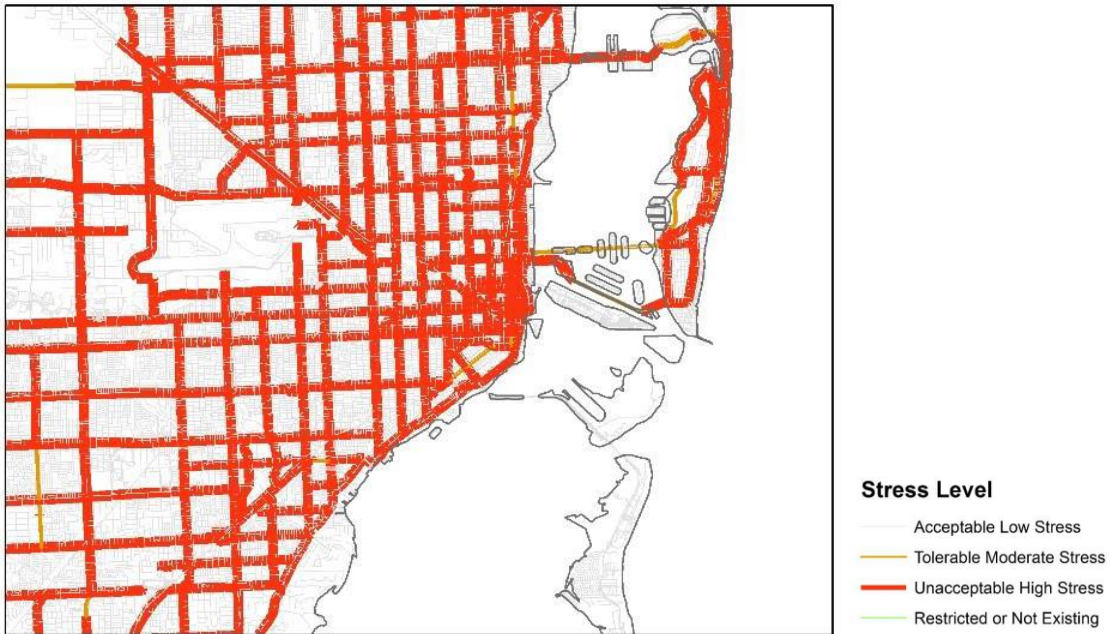


Figure 19: Connectivity Barriers Map

Source: Bryan, K., Loh, T. H., & Valenzuela, A. (2016). *State of the Trails Miami*.

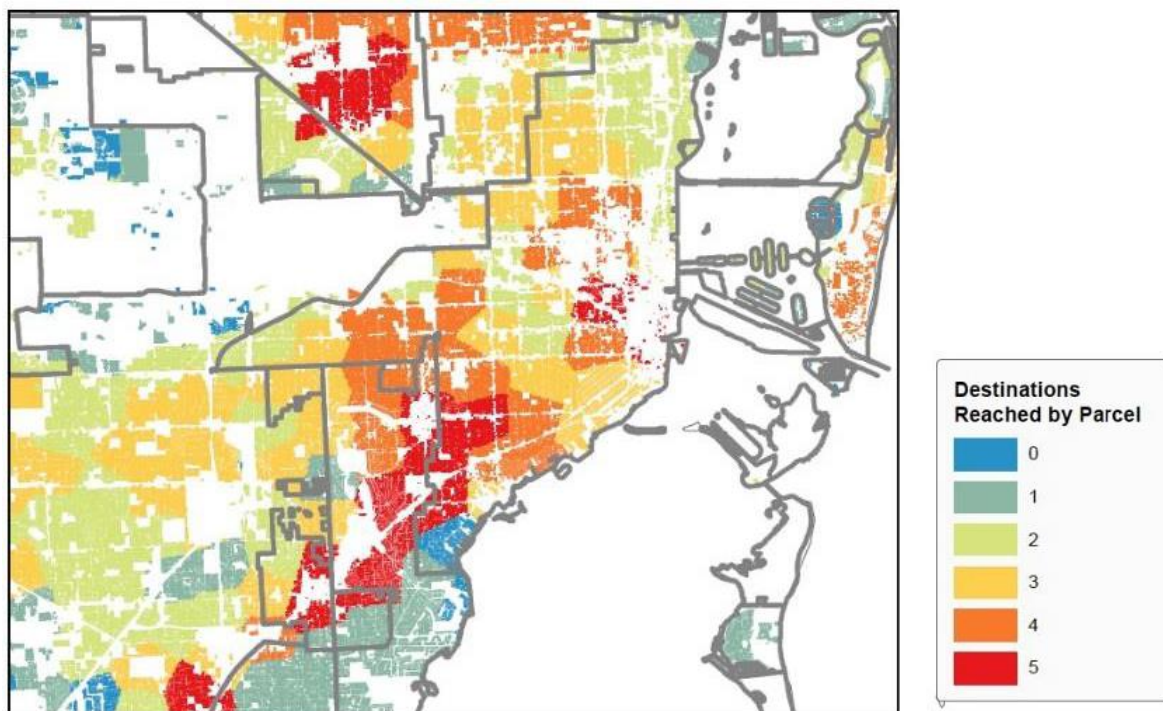


Figure 20: Number of Destinations in Walking/Bicycling Distance

Source: Bryan, K., Loh, T. H., & Valenzuela, A. (2016). *State of the Trails Miami*.

Traffic crashes

There is a high rate of bicycle crashes around University station and some in the Dadeland, which are depicted by darker shades of blue in Figures 21 and 22. Pedestrian crash frequency is shown in Figures 23 and 24; Figures 25 and 26 show where fatal pedestrian crashes have occurred (red dots) as well as those resulting in severe injury (orange). There have been relatively few fatal pedestrian crashes in the corridor in recent years – two near Dadeland and one around SW 31st Avenue. According to participants in the Community Consultations, the area is extremely dangerous for walking or riding a bicycle; drivers behave dangerously and don't stop at crosswalks. Perception of danger prevents many people from walking and riding bikes. Participants wanted more information about the times of day when crashes occurred, and who was involved – they believed that children, elderly, people of color, and immigrants were disproportionately impacted. Children often walk alone in the area.

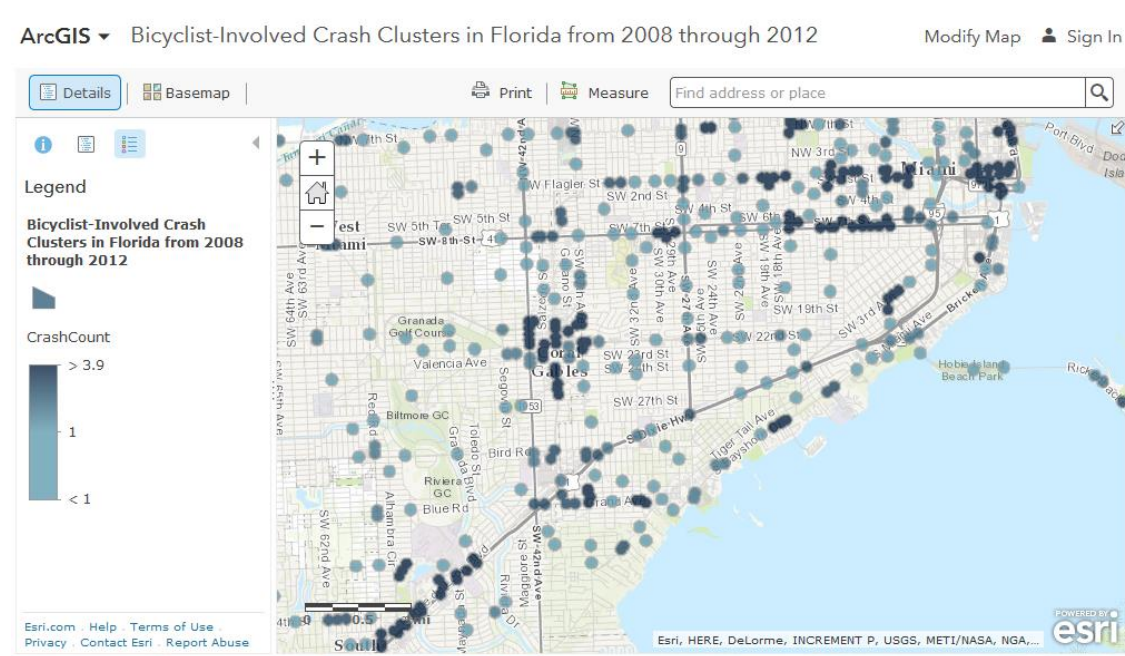


Figure 21: *Bicycle Crashes (North) 2008-12*

Source:

<http://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=87bfd2b7e4e14d20836ae48a23e6463f>

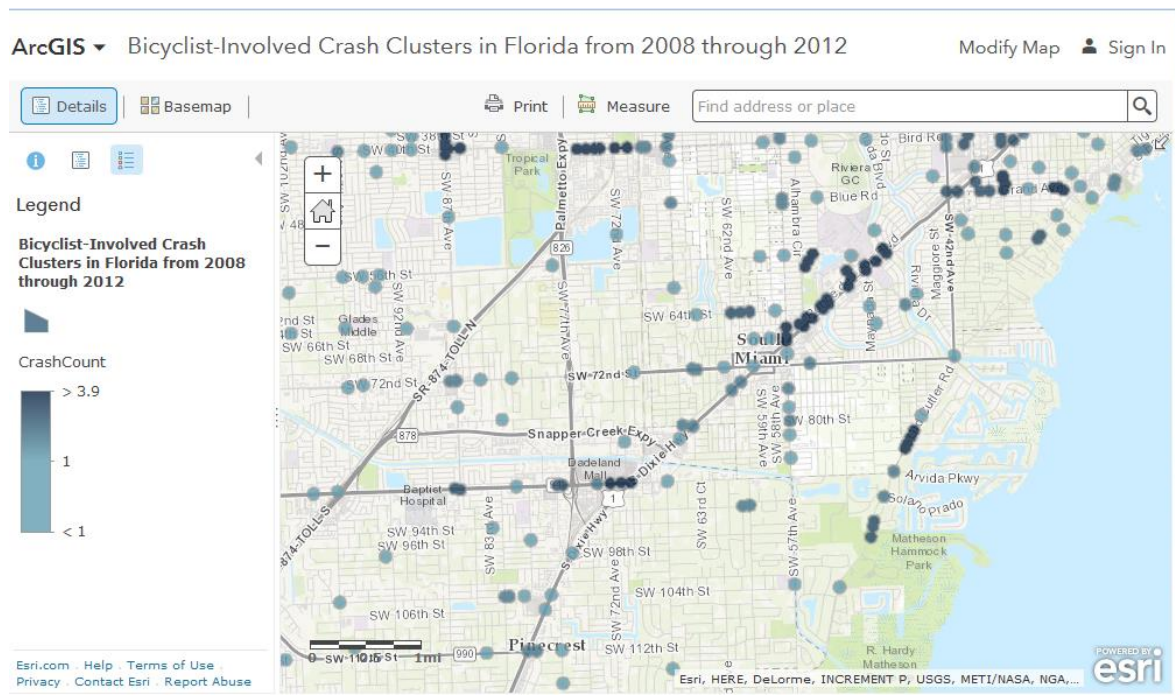


Figure 22: Bicycle Crashes (South) 2008-12

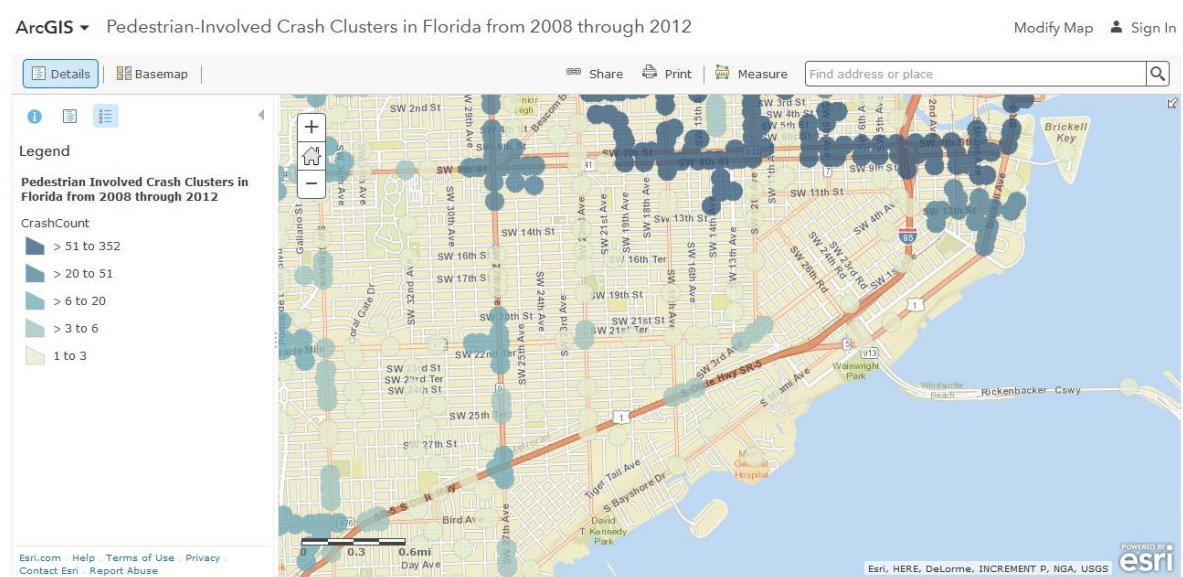


Figure 23: Pedestrian Crashes (North) 2008-12

Source: <http://www.arcgis.com/home/webmap/viewer.html?webmap=694f656af19c41618a4f313a8d82a2a1>

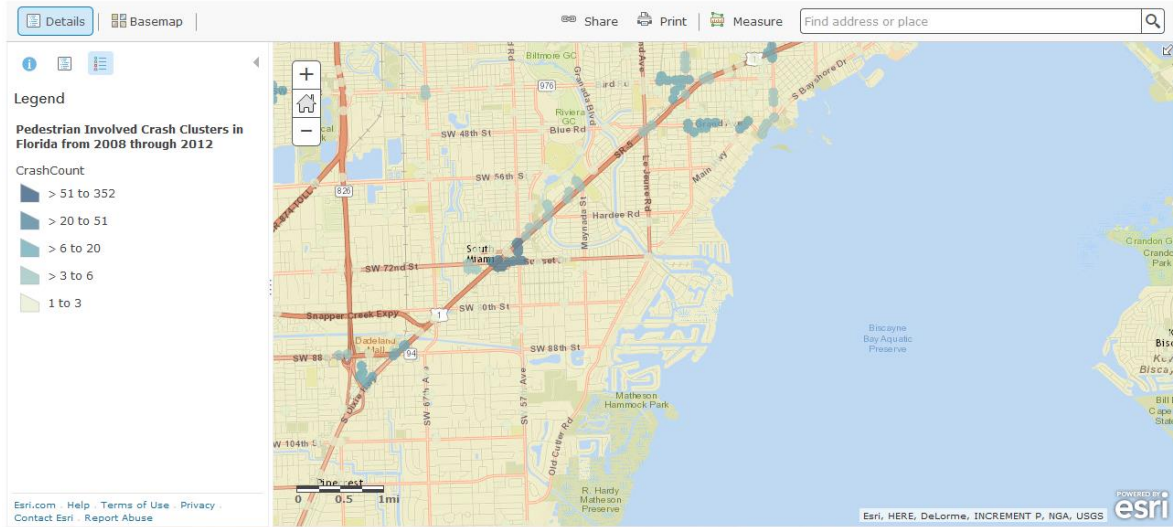


Figure 24: Pedestrian Crashes (South) 2008-12

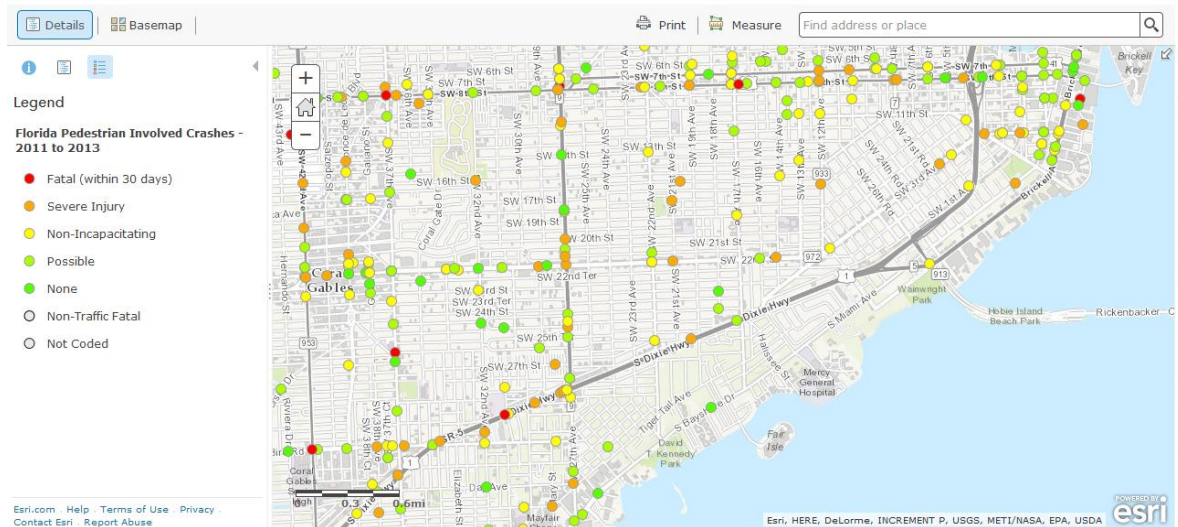


Figure 25: Pedestrian Crashes by Severity (North) 2011-13

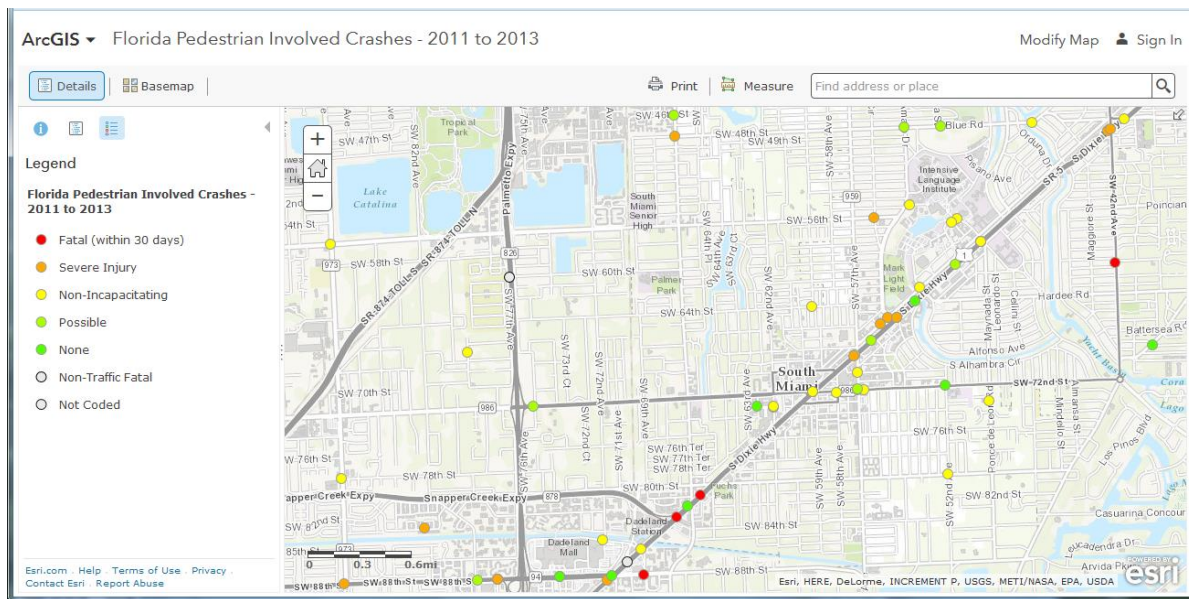


Figure 26: Pedestrian Crashes by Severity (South) 2011-13

The Bicycle/Pedestrian Safety Plan Update from 2014 contains much more detail about crash locations and conditions. Note that crash data typically does not include bicycle and pedestrian injuries that do not occur on a public roadway or involving a collision with a motor vehicle.

Ambient and local air quality

The Miami region experiences particulate matter and ozone. Insufficient data exists regarding air quality on the corridor. The perception of Community Consultation participants was that traffic emissions were a major concern in the area.

Prevailing winds are from the East at an average of eight knots (9.2 miles per hour), suggesting that emissions from Route 1 will blow towards and across The Underline the majority of the time (Windfinder, 2016). Actual concentrations of air pollution at specific locations will likely vary with enclosure (height of adjacent structures), traffic conditions, weather, and vegetation. A few sections of the corridor currently have tall buildings along the western side (South Miami, Douglas Road, Brickell, and South Dadeland) which may reduce the rate at which pollutants can disperse.

Leisure time and utilitarian physical activity

For the South Miami Health Wellness Community Needs Assessment, researchers surveyed 426 households located in four Census blocks (roughly four square miles) just north of South Miami Hospital. They included 331 single-family homes and 95 apartments. Of those surveyed, 61% reported that they were physically active three or more times per week. Another 15% were physically active one or two times per week, while 24% reported no physical activity. There was relatively little difference in physical activity rates relative to housing type or community distress; 27% of those living in the areas of greatest need did not get any physical activity, 58% in those areas (and those living in apartments) were active three or more times per week. (Acuña et al., 2013).

The 2013 Behavioral Risk Factor Surveillance System data for Miami-Dade reported that 23.8% of adults were obese, and 39.8% were overweight. Obesity was most prevalent in non-Hispanic Black

women, and least prevalent in non-Hispanic White men. Adults under 45 were significantly more likely to be at a healthy weight (46.4%) than those 65 and over (24.5%).

Community consultation participants believed that few people intentionally engaged in exercise in the communities near The Underline. However, they also referenced many popular and engaged organizations which were fostering interest and growing participation in physical activity programs. These included creative movement classes for children using public parks and evening running events along the M-Path.

Social and Civic Participation

For the South Miami Health Wellness Community Needs Assessment, researchers surveyed 426 households located in four Census blocks (roughly four square miles) just north of South Miami Hospital. They included 331 single-family homes and 95 apartments. Overall, about three-quarters of those surveyed were unfamiliar with local community organizations or associations. Apartment dwellers reported lower rates of many kinds of civic and social engagement than those in single-family houses: they were more likely to report low or very low community spirit of participation (26% vs 17%), less likely to rate their neighborhood conditions as good or very good (46% vs 66%), more likely to report neighborhood conflict (13% vs 3%). They were much less likely to have voted (71% vs 86%), met with community leaders (14% vs 31%), or participated in a community campaign (7% vs 18%). On the other hand, they were more likely to be aware of many different types of community development organizations, activity groups, and committee. Over a quarter of the apartment-dwelling households had a household income below \$10,000 per year, relative to ten percent of the county-wide population. Although they were employed full-time at about the same rate as households in single-family homes, they were more likely not to receive health insurance through their employer (41% vs 54%), lack health insurance (32% vs 24%), and participate in Medicaid (41% vs 18%). In addition to cost barriers, they also reported transportation issues in accessing healthcare (11% vs 4%). Of the households surveyed, seven percent of the children living in an apartment had missed more than ten days of school, while none of the children in single-family housing had missed that much school. (Acuña et al., 2013) Participants in the Community Consultations felt that, throughout the corridor, neighbors did not trust each other and did not access amenities in other communities. Professionals agreed that networking was occurring intentionally via events and social media, but that they lacked places to interact spontaneously especially in Brickell and Dadeland.

Mortality and hospitalization

Diabetes and Hypertension

People earning less than \$25,000 per year were significantly more likely to report diabetes (15.0%) than those earning \$25,000 or more (4.9%) and \$50,000 or more (2.7%). Adults over 65 had the highest rates. 32.7% of the population had hypertension. Hispanic residents had higher rates, and people who lacked a high school degree had significantly higher rates (53.8%) than those with a high school degree (29.7%) or higher level of education (25.3%). Figures 27 through 29 depict the most recent age-adjusted hospitalization rates (per 100,000 people) for hypertension (high blood pressure), diabetes, and congestive heart failure by ZIP code for the neighborhoods near The Underline.

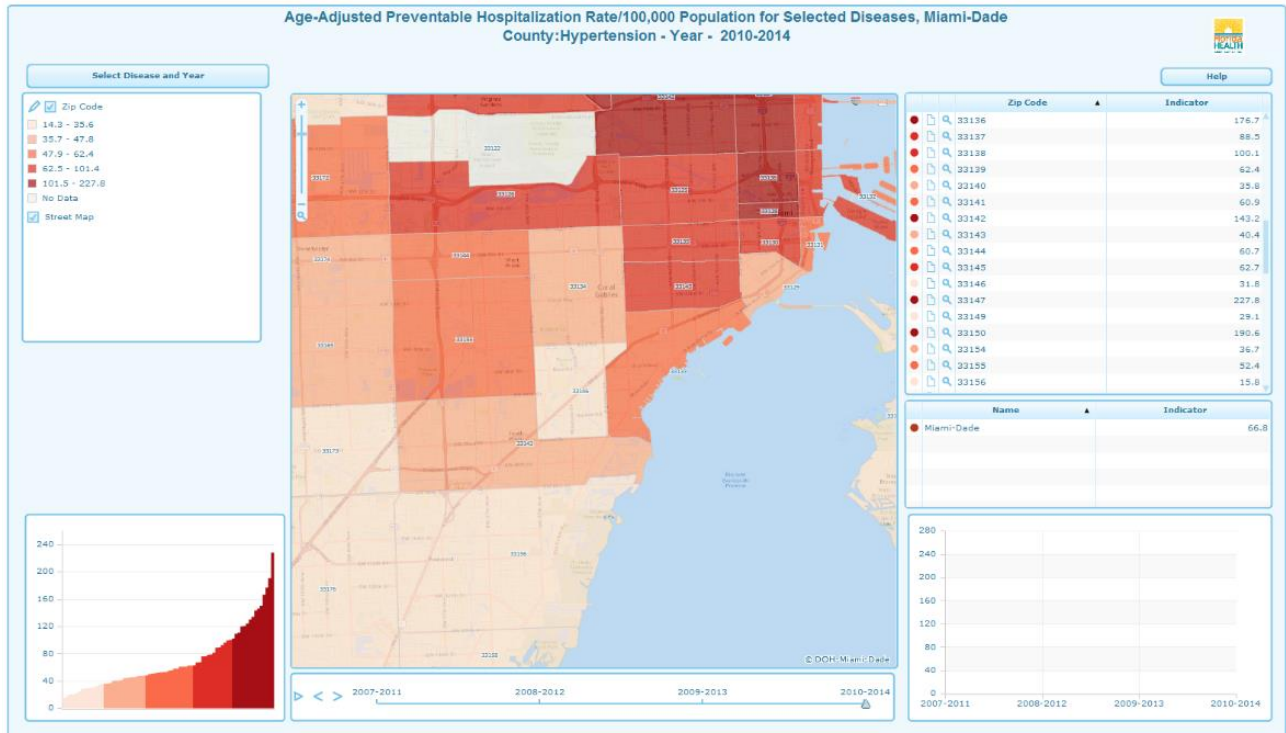


Figure 27: Age-Adjusted Hospitalization Rate/100,000 for Hypertension in Miami-Dade 2010-2014

Source: [Florida Department of Health: Miami-Dade County](#)

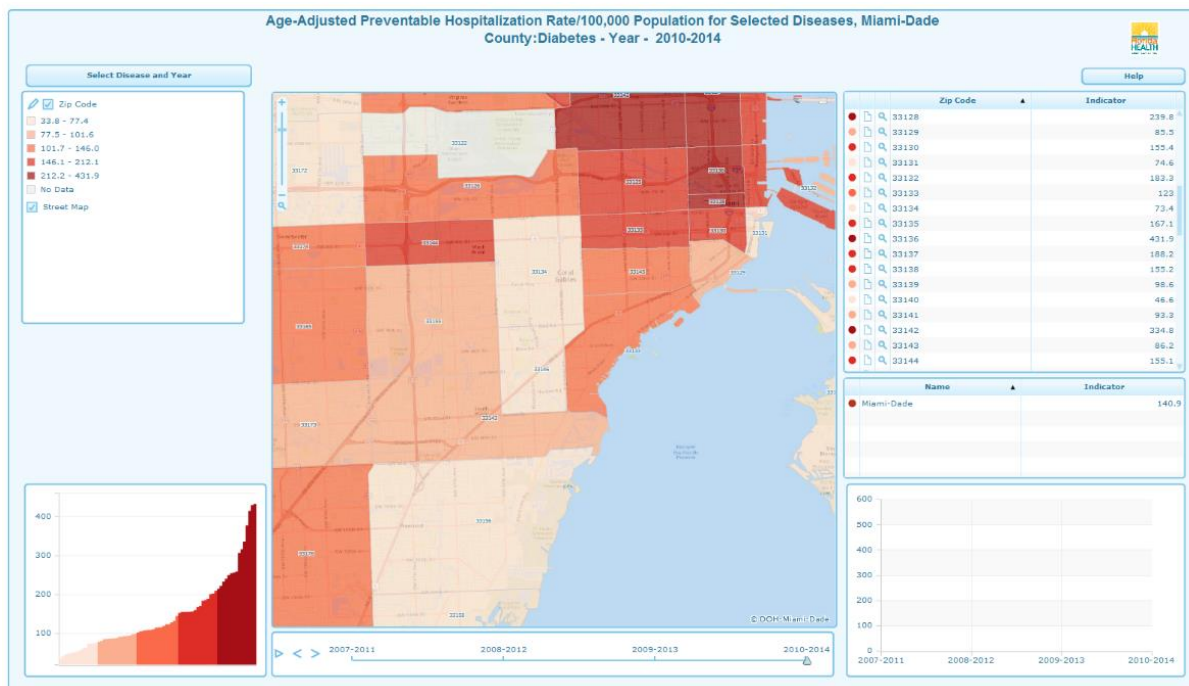


Figure 28: Age-Adjusted Hospitalization Rate/100,000 for Diabetes in Miami-Dade 2010-2014

Source: [Florida Department of Health: Miami-Dade County](#)

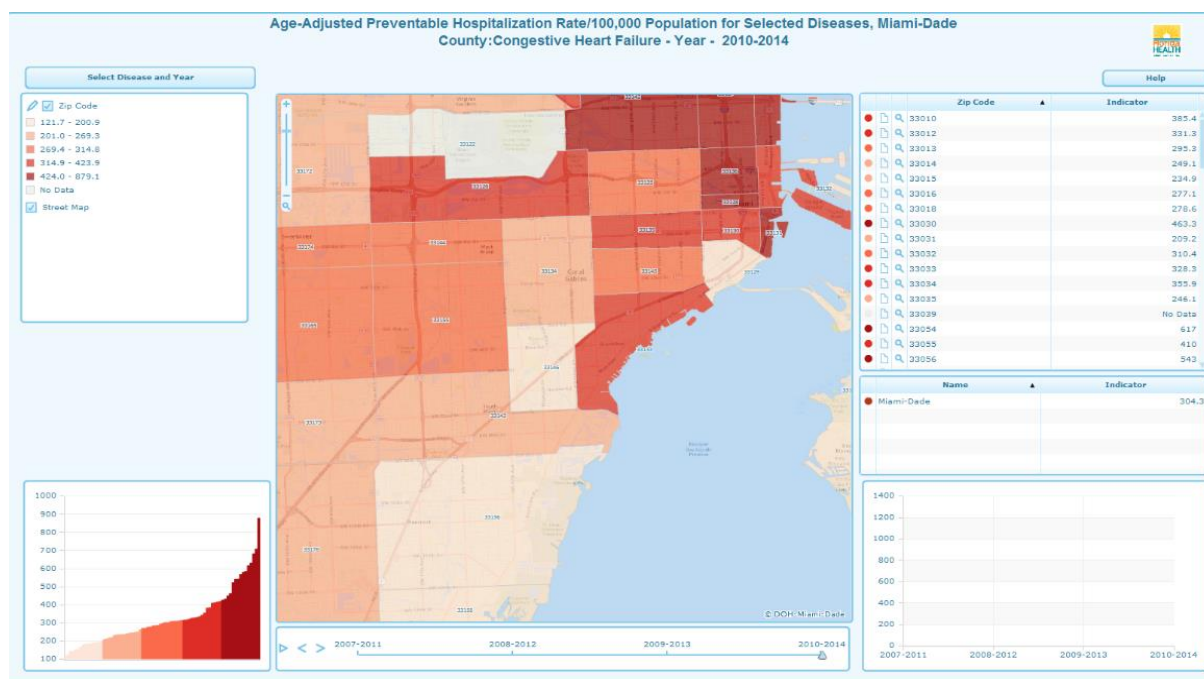


Figure 29: Age-Adjusted Hospitalization Rate/100,000 for Congestive Heart Failure in Miami-Dade 2010-2014

Source: [Florida Department of Health: Miami-Dade County](#)

In the South Miami Health Wellness Community Needs Assessment, 45% of participating households reported having a member with high blood pressure, 14% included someone who was diabetic, and 12% had a household member with heart disease or suffered a heart attack. Additionally, 10% of households reported medical issues with obesity, and 8% had been affected by a household member with cancer (Acuña et al., 2013).

Self-Harm and Depression

While countywide rates of adults who suffered from depression were lower than the state average, it is important to note that people earning less than \$25,000 per year were significantly more likely to experience depression (19.5%) than those earning \$25,000 or more (7.3%) and \$50,000 or more (6.7%).

The corridor did not have measurable levels of emergency room utilization due to self-inflicted injury, such as self-harm or suicide (Figure 30). Overall age-adjusted death rates were average, except for higher levels in Brickell; the highest rate was in downtown (Figure 31).

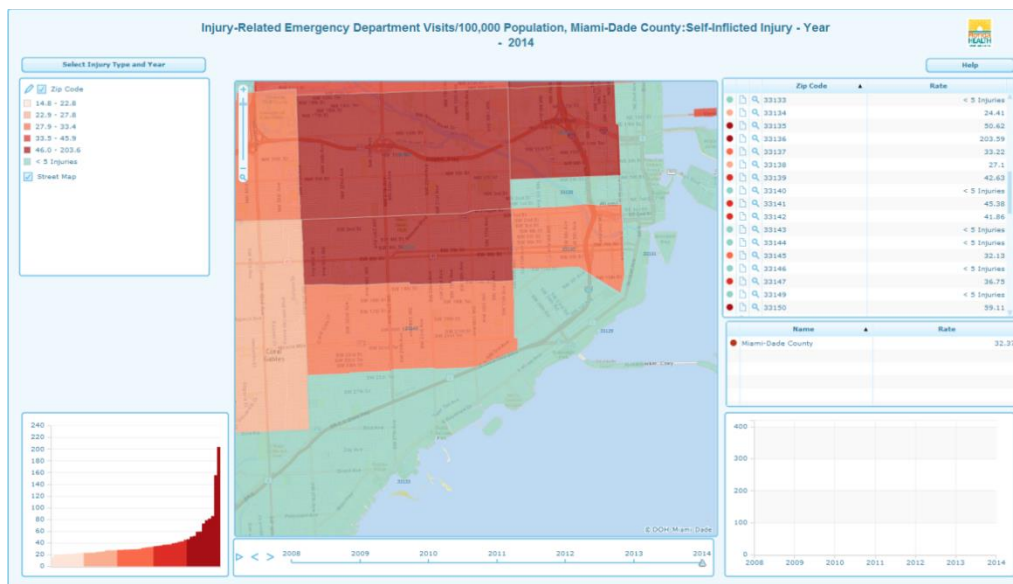


Figure 30: Self-Inflicted Injury Emergency Department Visits in Miami-Dade 2014

Source: [Florida Department of Health: Miami-Dade County](#)

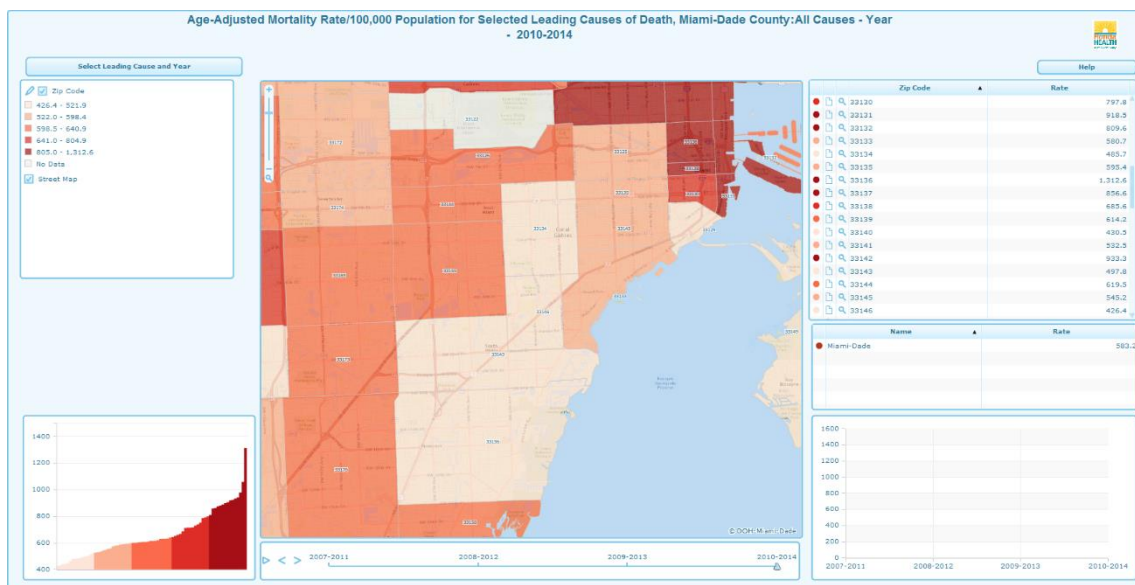


Figure 31: Age-Adjusted All-Cause Mortality Rate/100,000 in Miami-Dade 2010-2014

Source: [Florida Department of Health: Miami-Dade County](#)

Respiratory Disease

The Brickell area had above average rates of age-adjusted preventable hospitalization for asthma, shown in Figure 32. It appeared to follow the I-95 corridor. The rest of The Underline corridor was relatively moderate. In the South Miami Health Wellness Community Needs Assessment, 15% of participating households reported having a member with asthma; the rate was around 25% in

apartment-dwelling households. These households were also more likely to suffer from other respiratory problems.

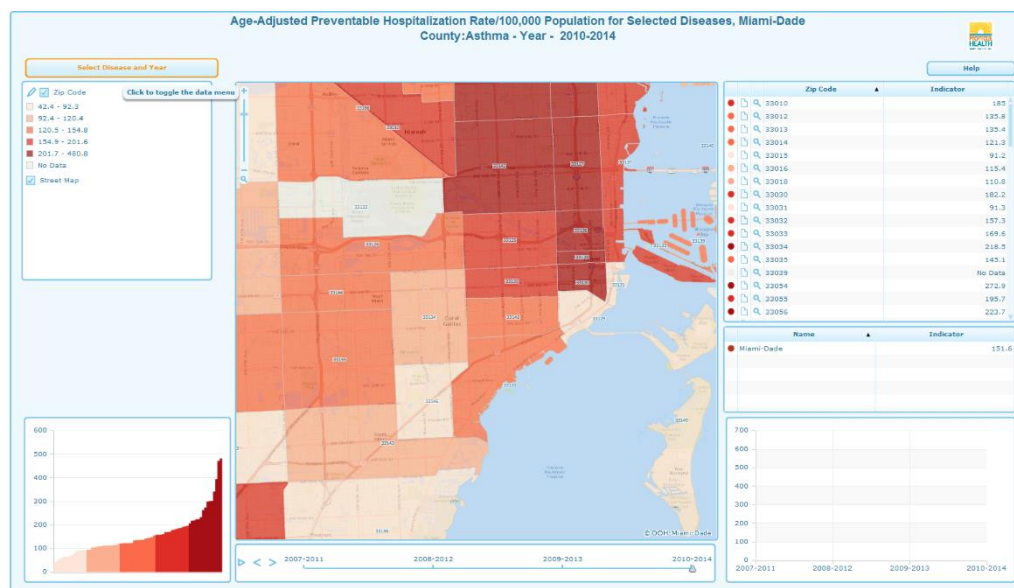


Figure 32: Age-Adjusted Hospitalization Rate/100,000 for Asthma in Miami-Dade 2010-2014

Source: [Florida Department of Health: Miami-Dade County](#)

Birth Outcomes

As shown in Figure 33, premature birth rates were worse in ZIP codes 33143 and 33145.

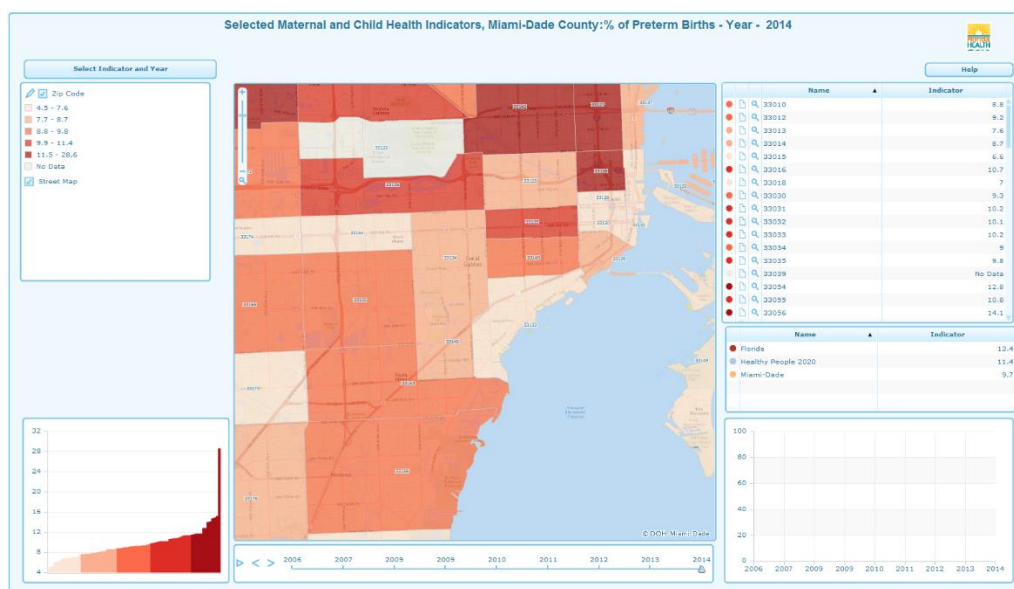


Figure 33: Premature Birth Rates in Miami-Dade 2014

Source: [Florida Department of Health: Miami-Dade County](#)

Injury

Relative to the rest of the county, corridor residents visit the emergency room for crash-related injuries at a lower rate, shown in Figure 34.

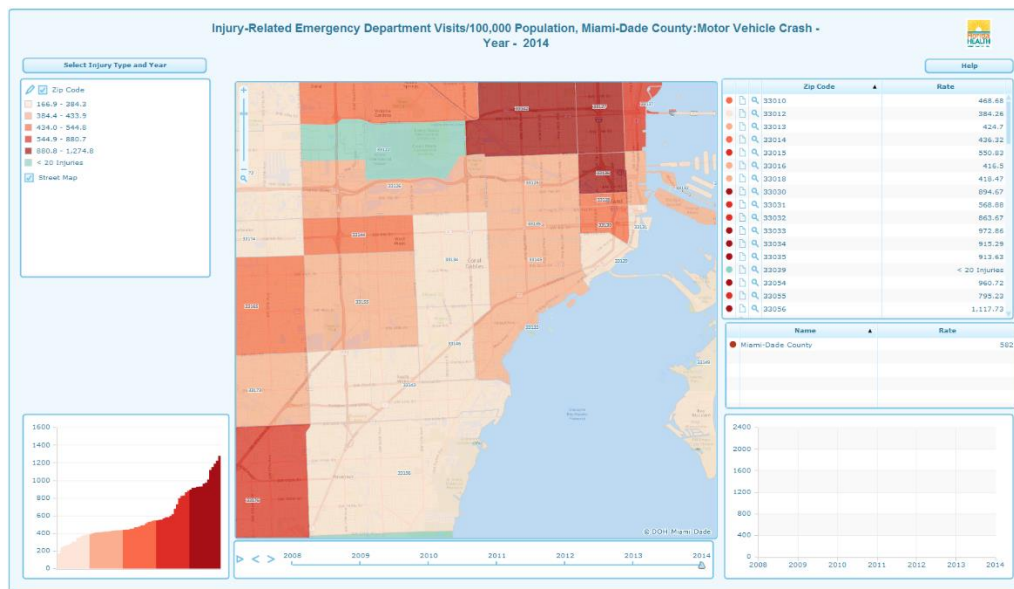


Figure 34: ER Visits for Motor Vehicle Crash Injury in Miami-Dade 2014

Source: [Florida Department of Health: Miami-Dade County](#)

Plans

The Underline Framework Plan and Demonstration Projects report generated design elements and renderings, materials and plantings guidance, and specifications for placement for the corridor. For instance, it depicts different types of intersection treatments where the trail crosses roadways, and provides a suggested list regarding the intersections at which each treatment should be used. There are lists of tree and vegetation ‘palettes’ and maps indicating where to install each. There are lighting options, renderings of artwork and recreational features, character area definitions, and much more. In addition, there are more detailed designs for the Brickell Backyard and the UM Colonnade. This section of the document highlights framework elements which are particularly relevant for their potential impact on physical activity, social connections, and/or exposure to traffic hazards. This includes proposed path design, recreational amenity design and location, station area design, community space planning and siting, vegetation type and siting, intersection design, and others.

The following is a description of the four main character areas, and a list of specific project locations. Overall, it prioritizes physical activity from South Dadeland to University, environmental quality from University to Douglas Road and from Miami River/Brickell to Coconut Grove, and social connections from Miami River/Brickell to Douglas Road. There are no character areas that specifically reference safety. However, the character area classification is simply a focus, and does not exclude elements for exercise, nature, safety, and community interaction anywhere in the corridor.

Nature + Play: Miami River to SW 24th Ave Much of this area of The Underline is dense and highly developed - especially at the north, in Brickell. A majority of responses to our initial public presentation voiced a desire for a park-like, nature-based setting to contrast this highly urban area. In addition, as residents increase, so will the need for play spaces. We aim to incorporate play into the natural setting, as well as to provide other amenities, such as areas for birdwatching, dog-walking, and nature education – all easily accessible to nearby residents.

Art + Craft Incubator: SW 24th Ave to SW 38th Ave: Miami has developed an international reputation for art and design. Assisted by Miami Dade County Art in Public Places, The Underline will incorporate art into its entire length, using the park itself as a canvas for art, whether on the paths, the Metrorail columns, or on adjacent blank walls. The neighborhoods surrounding this particular portion of The Underline also have strong arts and craft traditions, especially Coconut Grove and Coconut Grove Village West, which makes this area ideal for a focus on art. Amenities within the Arts + Craft Incubator zone will tap into the existing culture and provide opportunities to bring it into the public realm, with spaces that focus on art installations, performance space, and more interaction with businesses that front The Underline.

Green Technologies + Sustainable Initiatives: SW 38th Ave to Red Road Throughout the corridor we will implement green technology and sustainable elements where possible. However, this zone will focus on green tech in particular, leveraging its adjacency to the University of Miami and ability to tap into the existing academic culture. Green technology and sustainable elements will be legible and visible for educational purposes and will contribute to a distinct identity for this area.

Active Recreation: Red Road to Dadeland South Station: This zone is bordered to the north by the University of Miami, which has a strong athletic tradition, as well as the South Miami Hospital, part of Baptist Health South Florida and a leading healthcare institution looking to partner with The Underline to promote public health and wellness. Furthermore, the area around this zone offers connections to multiple other trails, such as the South Dade Trail and the future Ludlam Trail, potentially bringing fitness-minded visitors from much farther away, and making it a great place for a focus on active recreation. The southern end of this zone near the Dadeland North Station is one of the widest portions of the corridor and as such presents a great opportunity for locating sports facilities like soccer fields that will not otherwise fit within the typical dimensions of the corridor's right-of-way.

Specific elements:

- *The Brickell Backyard. Miami River to SW 13th St:*
- *The Hammock Trail. SW 13th St to SW 17th Rd.*
- *The Grove Gallery. SW 24th Ave to SW 31st Ave*
- *The Douglas-Bird Triangle. Bird Road to SW 38th Ave*
- *The University Colonnade. Stanford Drive to South Alhambra Circle*
- *The South Miami Gardens: SW 72nd St to SW 62nd Ave*
- *Dadeland Trail Connect. Snapper Creek Expwy to SW 88th Street*

Figures 35 through 38 show the proposed trail and amenity designs, and overall character zone locations.

PROPOSED/ DEDICATED PATHS

MIN TOTAL PAVED WIDTH = 18'

(AT LEAST 4" TO 8" WIDER THAN RECOMMENDED WIDTH FOR SHARED USE PATHS BY AASHTO *)



Figure 35: Proposed Trail Separation and Width



Figure 36: Fitness Amenities at the Dadeland Trail Connection



Figure 37: Gathering space at The Grove Gallery

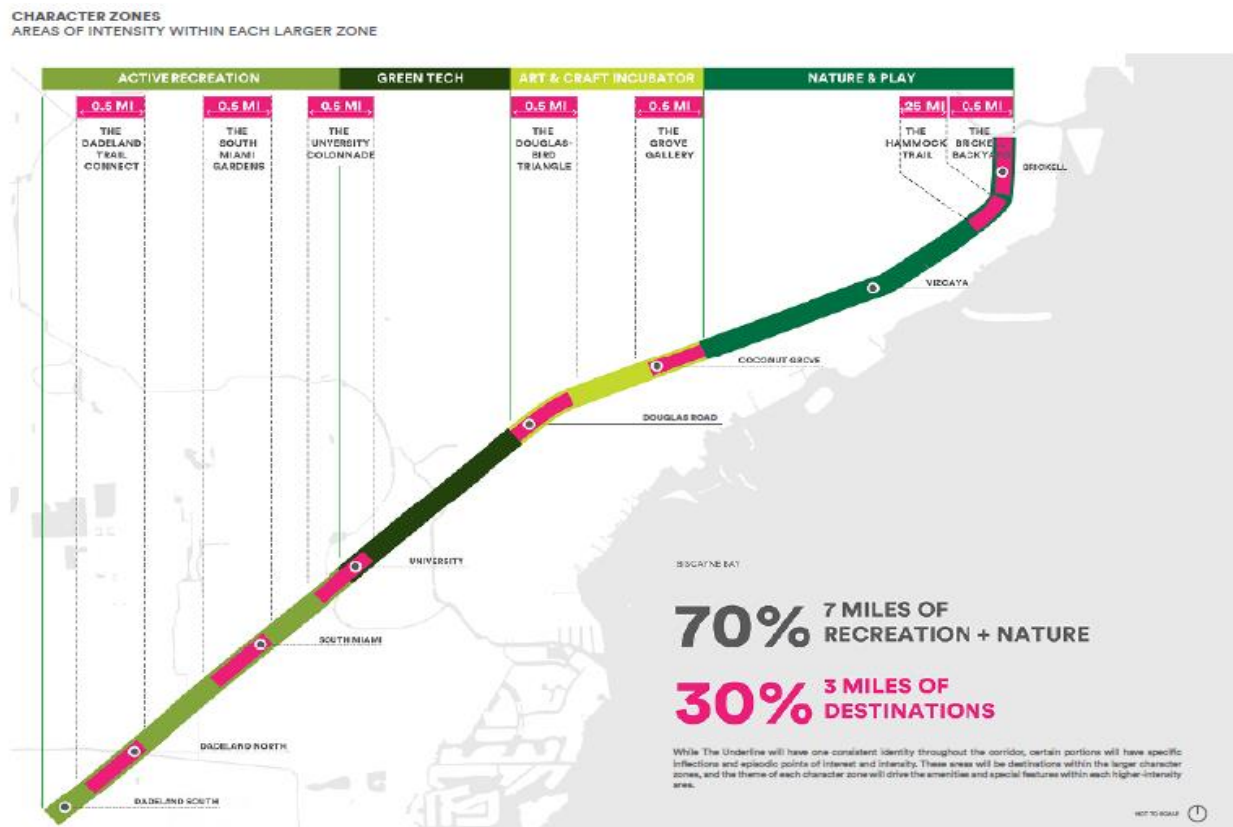


Figure 38: Character Zones

The Underline framework document shows a planting buffer between the bicycling path and the roadway, plus a two foot clear zone (Figure 39). The pedestrian path is on the other (eastern) side of the corridor. The plans indicate that trees will be planted in the buffer area where it is at least four feet wide. (Figure 40) (James Corner Field Operations et al., 2015).

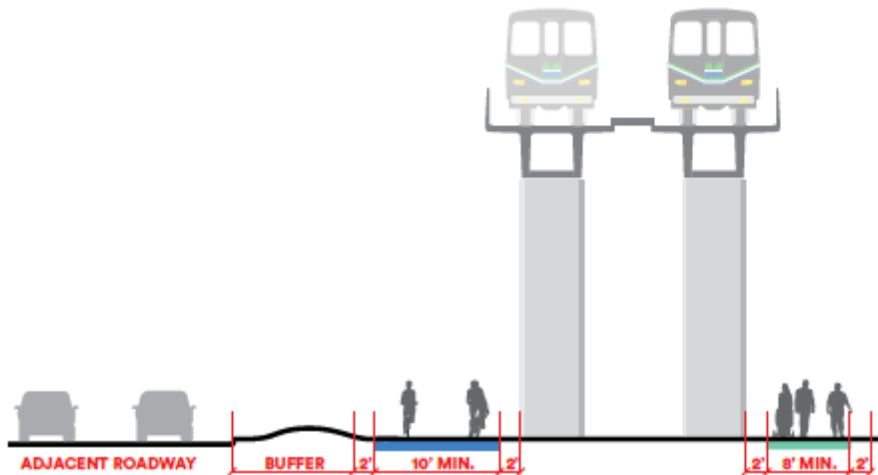


Figure 39: Path Location

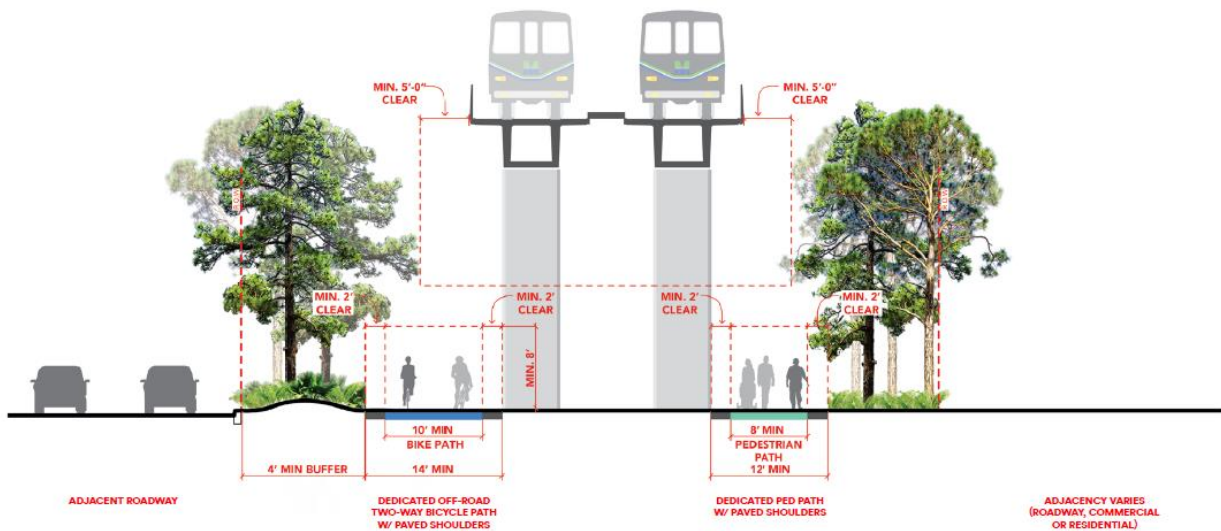


Figure 40: Path Location with Trees

The Framework Plan describes overall planting strategies to “Create a Continuous Green Corridor”. It relies on two native ecologies: Pine Rockland and Hardwood Hammock. Figure 41 shows planned locations for Pine Rockland (dark green) and Hardwood Hammock plantings (yellow green).

OVERALL PLANTING STRATEGIES

CREATE A CONTINUOUS GREEN CORRIDOR

- ① Develop planting palette inspired by native pine rockland and hardwood hammock ecologies.
- ② Enrich existing canal and creek ecologies, while accommodating stormwater runoff.
- ③ Retain existing, healthy, and established trees.
- ④ Minimize maintenance by selecting plants that are well-suited to the existing bedrock and climate, and which are drought-tolerant once established.

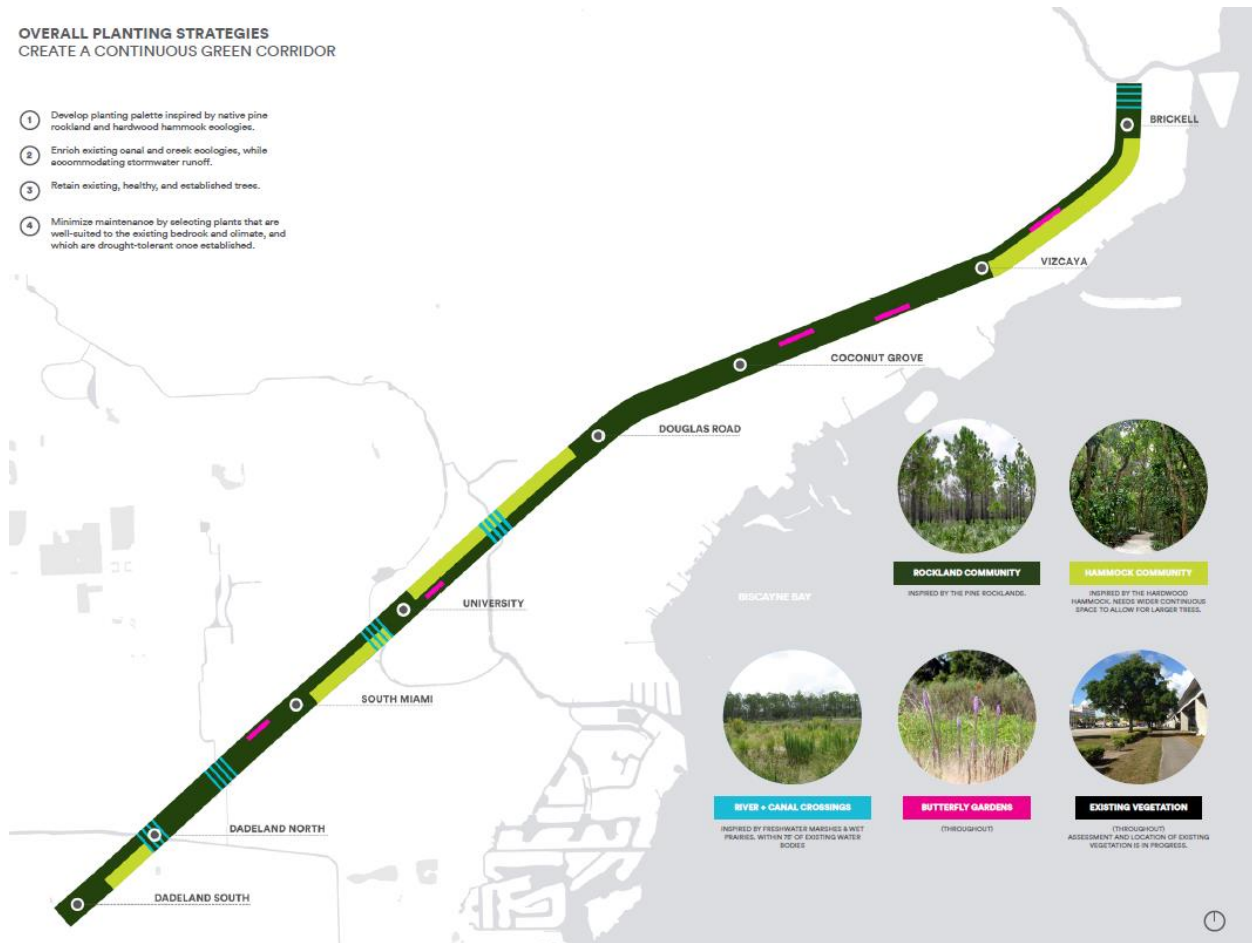
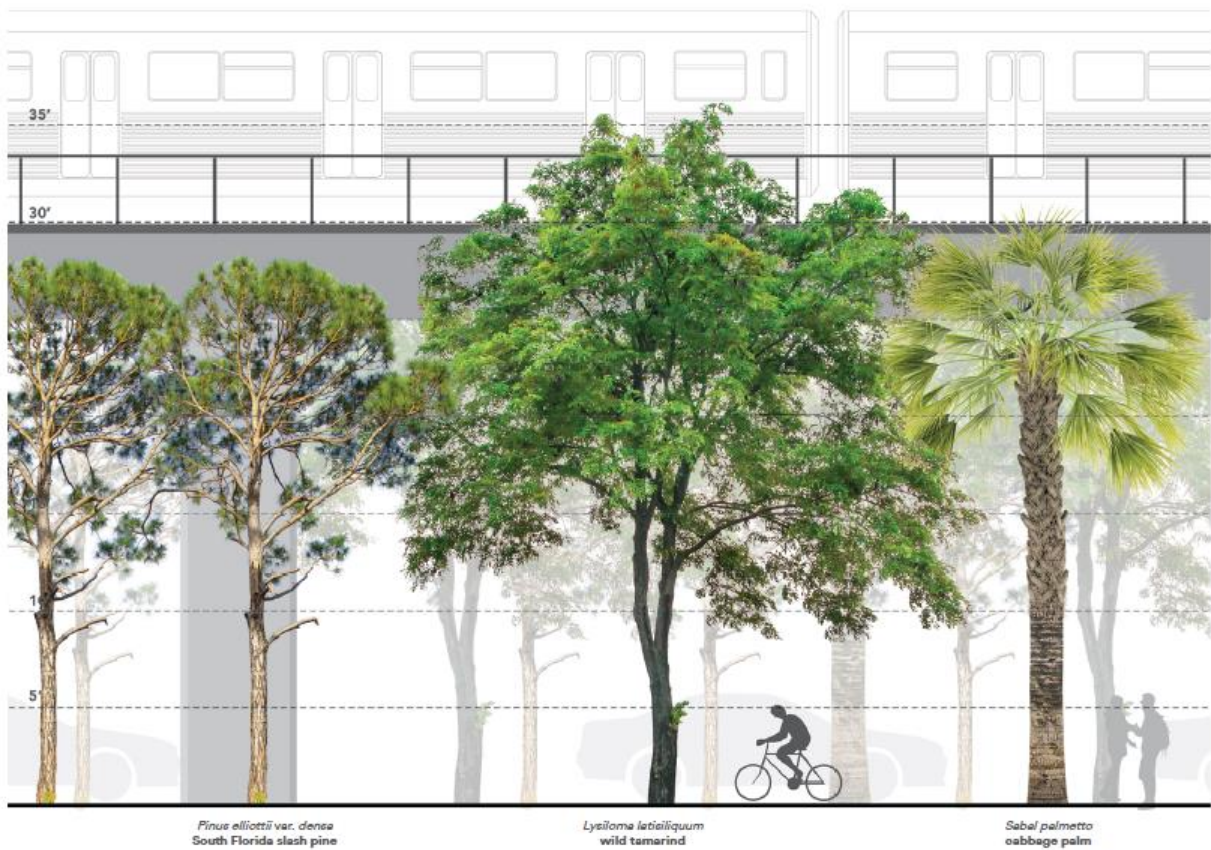


Figure 41: Overall planting strategies along the corridor

According to the Framework Plan, “The Pine Rocklands canopy is dominated by the South Florida slash pine (*Pinus elliotii* var. *densa*) and Cabbage Palm (*Sabal palmetto*), both of which thrive on the rocky limestone soils of the Miami Rock Ridge. We have expanded the canopy palette to include more species that offer shade and are proven to grow well in an urban context, such as Paradise Tree (*Simarouba glauca*) and Wild-tamarind (*Lysiloma latisiliquum*).” Figures 42 and 43 depict some of the proposed tree canopy species and arrangement, and their stages of growth over the initial decades of the corridor.

TYPICAL CANOPY SPECIES



Note: Trees are shown at mature size (20 years)

Figure 42: Hardwood Hammock Canopy Example



Figure 43: Growth Schedule

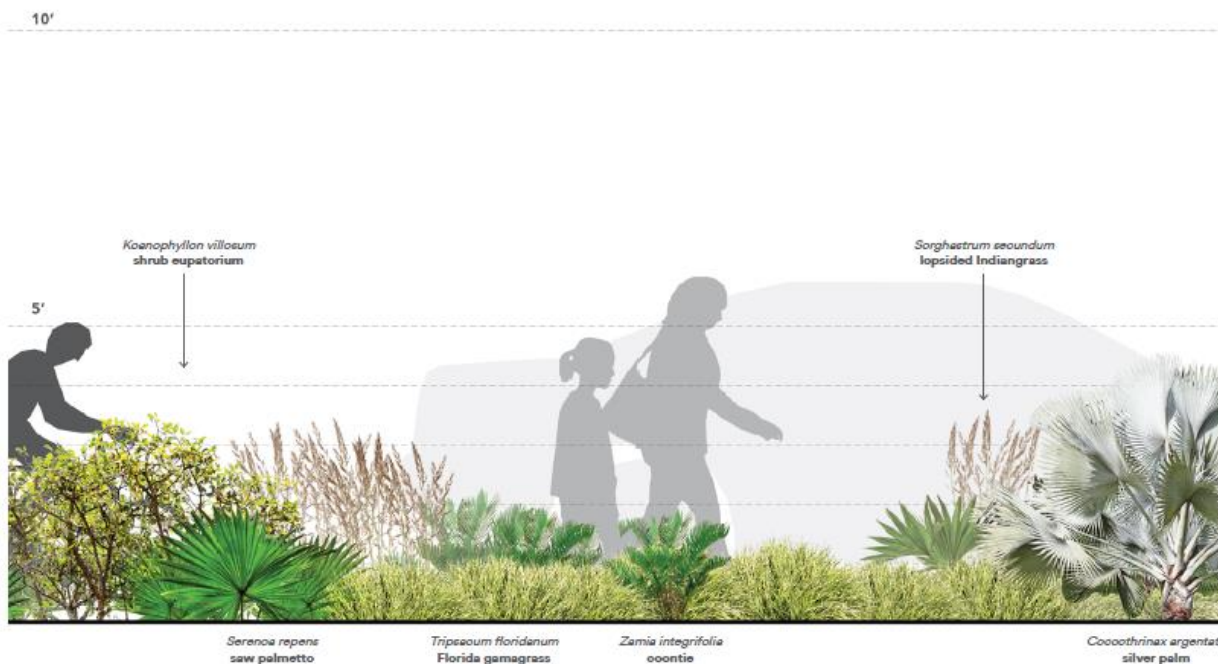


Figure 44: Grass and Shrub Example

Again according to the Framework Plan, “The Pine Rocklands has a minimal shrub layer and a diverse herbaceous layer, comprised of palms, grasses, and woody shrubs. Many of these species provide habitat and food for butterflies. Our approach to this Pine Rockland inspired understory is to mix some key species, such as Saw Palmetto (*Serenoa repens*) with softer grasses, keeping the understory low in order to preserve view corridors, and creating a more natural look than many current public parks. Slash pine and others are 30-50 feet, pine is ‘self-pruning’, some grow fast and some slow. Shrubs are included for areas of The Underline that require screening. Other types include Sweet acacia, deciduous, 15 to 20 feet, and silver palm, evergreen, 3-8 feet. Wild cherry, Wax Myrtle, and Florida privet 8~20 feet and evergreen.”

There are five intersections proposed to receive major upgrades (potential grade-separated crossings), seven intersections planned for medium upgrades (tabled crossings), and twenty-four intersections where minor upgrades are proposed (realignment and wider crosswalks). See the Framework plan for more information and renderings.

Minor Improvements. Recommendations for minor intersection improvements include:

- Re-align path approach to improve visibility and orientation
- Provide early indicators for approaching path users
 - Pavement marking and/or material changes
 - Gradual grading to meet roadway at-grade
- Provide a minimum of 6 feet of buffer space between U.S. 1 travel lane and crossing
- Widen crosswalks and curb openings to 18 feet in width:
 - Bicycle crossing space 10 feet in width
 - Pedestrian crossing space 8 feet in width

- *Flush curb openings*
- *Consider no-turn-on-red for cross-street right-turn movement*
 - *May be required due to sight distance calculations of widened crossings*
 - *Dynamic no-turn-on-red during peak travel times could be considered for the highest volume right-turn movements*
- *Provide leading pedestrian interval (LPI) for Underline crossing*

See the Framework for detailed recommendations for each intersection along the corridor. There are a total of 24 intersections where minor improvements are recommended. These include:

- | | |
|--|---------------------------------------|
| • Datran Drive | • Granada Boulevard |
| • Dadeland Boulevard | • Riviera Drive |
| • SW 70 th Avenue | • SW 32 nd Avenue |
| • SW 84 th Street | • SW 27 th Avenue |
| • Snapper Creek Expressway (eastbound ramp terminus) | • SW 22 nd Avenue |
| • SW 67 th Avenue (Ludlam Road) | • SW 17 th Avenue |
| • SW 80 th Street (Davis Road) | • SW 16 th Avenue |
| • SW 62 nd Avenue | • SW 26 th Road |
| • SW 72 nd Street (Sunset Drive) | • SW 25 th Road |
| • SW 70 th Street | • SW 15 th Road (Broadway) |
| • Alhambra Circle | • Brickell bus turnaround driveway |
| • Stanford Drive | • SW 7 th Street. |

Medium improvements have tabled crossings. Recommendations for medium intersection improvements include:

- *Maintain straight approach path alignment across the intersection*
- *Provide early indicators for approaching path users*
 - *Pavement marking and/or material changes*
- *Provide tabled crossing or lift grade of roadway to provide smooth crossing*
 - *Ramp to tabled crossing encourages motorists to drive slowly with care and notifies motorists of the crossing*
- *Widen crosswalks and curb openings to 18 feet in width (minimum)*
 - *Bicycle crossing space 10 feet in width*
 - *Pedestrian crossing space 8 feet in width*
 - *Flush curb openings*
 - *Consider wider crossings where appropriate*

There are a total of 7 intersections where medium improvements are recommended. These include:

- South Miami Hospital exit driveway
- Merrick Circle
- SW 31st Avenue
- SW 24th Avenue

- SW 19th Avenue
- SW 13th Street (Coral Way)
- SW 8th Street (Calle Ocho)

Major improvements: grade-separated crossings. Recommendations for major intersection improvements include:

- *Consider grade-separated crossing at highest volume intersections and/or crossings with unavoidable constraints*
 - *Elevated/bridge crossings will be accompanied by at-grade solutions*
 - *Explore strategies for significant path re-alignment associated with tactical opportunities*

There are a minimum of 5 intersections where major improvements are recommended. These include but are not limited to:

- SW 88th Street (Kendall Drive)
- SW 57th Avenue (Red Road)
- SW 42nd Avenue/Grand Avenue
- SW 37th Avenue (Douglas Road)
- SW 40th Street (Bird Road)
- Furthermore, there are existing pedestrian bridges adjacent to The Underline that may be considered as opportunities for partnered aesthetic improvement, such as the bridge to Vizcaya Museum and Gardens.

Plans call for special treatment to reduce risk of bicycle-pedestrian collision, as well as utilizing separate facilities for each mode. Figure 45 shows pedestrian crossings in the trail.

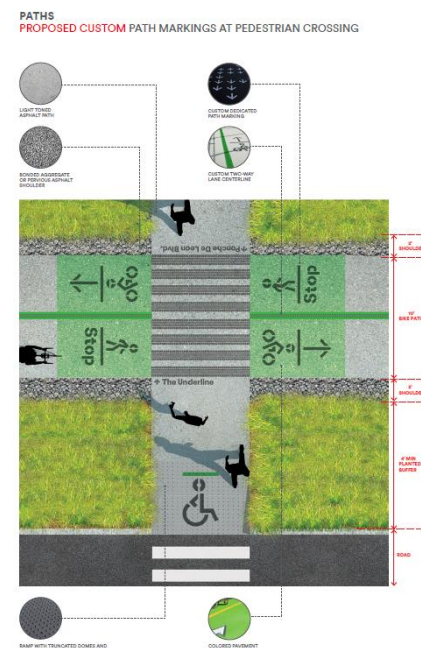


Figure 45: Bicycle Path Crosswalk Design

Health Impact Focus Areas: Assessment Results

Physical Activity

Physical activity will potentially increase as a result of The Underline. There are two types of physical activity to consider: utilitarian physical activity (active living or active transportation), and intentional physical activity (exercise, sports, or recreational physical activity).

Active transportation or active living refer to the moderate and vigorous physical activity that people can obtain simply by living in an environment which facilitates walking, running, bicycling, climbing stairs, and standing. There is extensive research to show that measurable changes in the physical environment are strongly associated with the amount of walking and other physical movement. This is also called 'utilitarian' physical activity, or physical activity which is undertaken for the sake of completing some other activity rather than for the purpose of exercise. This could include walking to lunch or dinner, to a transit station, or to a neighbor's house, skateboarding to school, or riding a bicycle to the beach. Trails and other transportation enhancements often affect active transportation rates for people who live or work in the vicinity. The assessment phase of the HIA of The Underline looks at current levels of active transportation along the corridor and the existing environment, and asks whether plans for The Underline are likely to increase these forms of physical activity, and for whom, based on studies of similar projects.

Intentional physical activity, sometimes called recreational or leisure-time physical activity, refers to walking for fun or for exercise, running or bicycling strictly for exercise, or engaging in any other exercise or physical sport. These activities increase greatly with access to parks, recreational facilities, gyms, and sports facilities, as long as the activities provided are compatible with users' preferences. The assessment phase of the HIA of The Underline also looks at rates of intentional physical activity and access to parks in the area, and considers whether plans for The Underline are likely to facilitate more engagement in sports and exercise, and by whom.

Physical activity levels are an extremely important determinant for health and quality of life. People who get the recommended amount of moderate to vigorous physical activity (150 minutes per week for adults and 60 minutes per day for children) have:

- lower rates of heart disease, heart attacks, high blood pressure, stroke, and diabetes
- reduced occurrence of several leading types of cancer, such as breast cancer
- lower rates of depression, better sleep, and overall improved mental health
- lower rates of bone and joint disorders, such as arthritis
- higher productivity at work
- in children, better performance in school

Figure 46 depicts the entire theoretical pathway from key elements of The Underline project to environmental changes, to behavioral changes or changes in access, to possible changes in physical activity and the many health outcomes associated with achieving adequate physical activity.

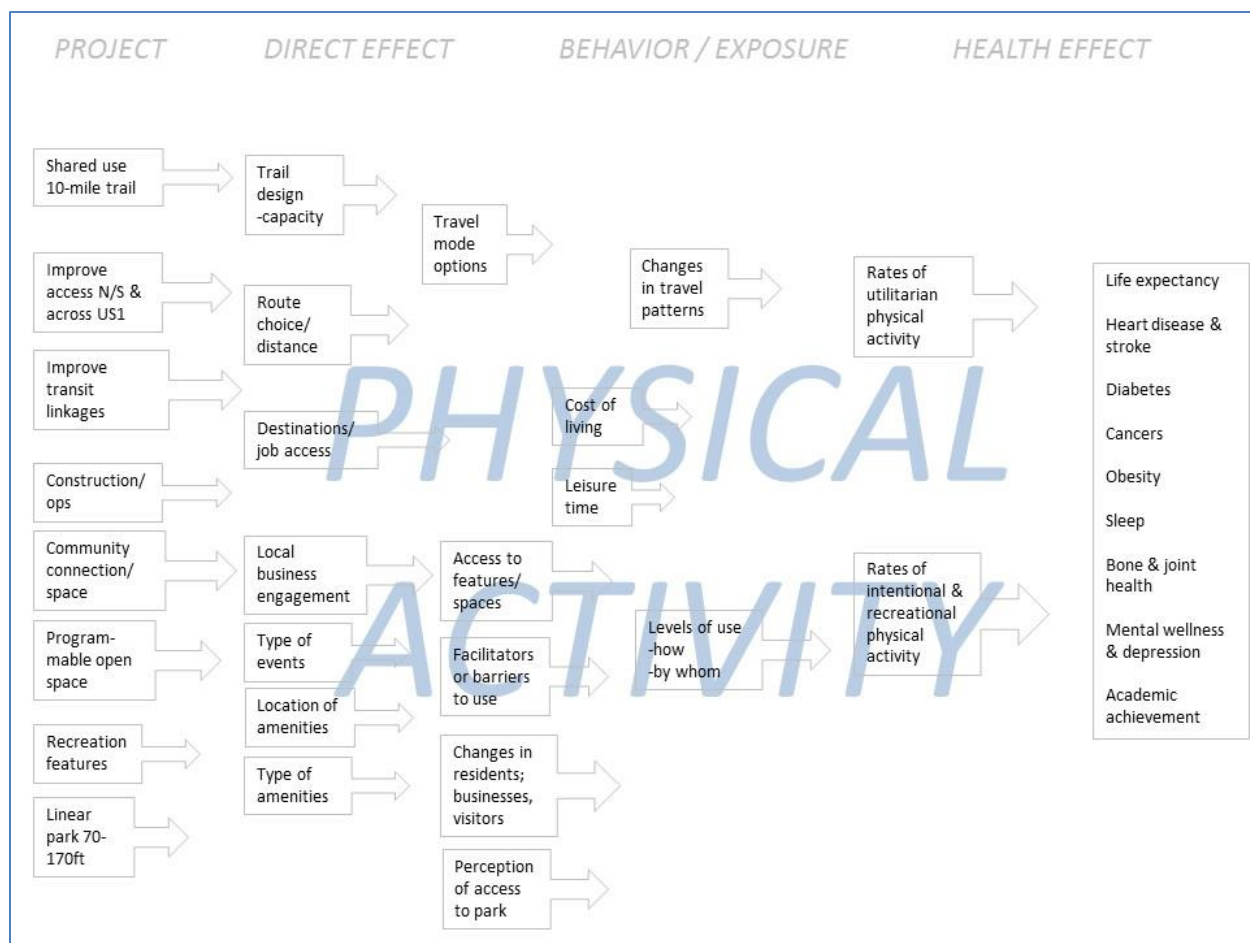


Figure 46: Physical Activity Theoretical Pathway

Evidence Review

The evidence for the impact of trails on physical activity is mixed. Some studies have been unable to find a consistent effect (Starnes, Troped, Klenosky, & Doebling, 2011). Other studies have identified key factors which influence whether a trail is used, and whether it increases activity (Shafer, Lee, & Turner, 2000). The main determinants are:

- Surface: paved
- Maintenance: good condition and clean
- Width: wider
- Separation of uses
- Hills: flat
- Litter/trash: clean
- For night usage: consistently lit

The most common way parks can contribute to health is through the provision of venues for physical activity, which is associated with many positive health outcomes, including reduced obesity, less risk for chronic diseases, and better mental health outcomes. (Haskell et al., 2007) A review of fifty quantitative research studies on greenspace and physical activity from the US and other countries in

2011 found that two-thirds reported positive associations; though some of these had ambiguous results, pointing to the complexity of the relationship being studied.(Lachowycz & Jones, 2011) In a 2010 review of qualitative studies, researchers found similar results and were able to add that perceptions of the social environment (how people interact with one another) are intertwined with perceptions of the physical environment, meaning that physical activity patterns are influenced by more than just the design of green spaces.(McCormack, Rock, Toohey, & Hignell, 2010). Parks are excellent venues for recreational activity, but when they are designed as part of a connected multimodal transportation system with access to destinations in mind, they can also serve utilitarian roles, creating more opportunity for increased physical activity and easier access to certain goods and services, which can improve various health outcomes.(Heath et al., 2006; Saelens, Sallis, & Frank, 2003).

All of these benefits are only achievable if parks and trails are used regularly, and use is often tempered by perceptions of safety.(Brownson, Baker, Housemann, Brennan, & Bacak, 2001; Dinnie, Brown, & Morris, 2013; Hoehner, Ramirez, Elliott, Handy, & Brownson, 2005) Additionally, use of parks and trails is sensitive to the social and physical context, which can vary according to neighborhood as well as the user's age, gender, racial or ethnic identity, socio-economic status, health status, or other factors.(C. M. Kelly, Baker, Brownson, & Schootman, 2007). The Physical Activity Guidelines for Americans <https://health.gov/paguidelines/guidelines/> recommend that adults obtain 150 minutes of moderate to vigorous physical activity per week, and that children are active for 60 minutes per day.

Effect Characterization

Table 5 describes the estimated potential for The Underline to affect utilitarian and intentional physical activity levels, and the health indicators that are influenced by physical activity. The table shows the baseline conditions (column A), stakeholder perspectives on baseline (B), the predicted direction of changes from baseline caused by The Underline (C) as well as the likelihood those changes will occur (D) and the magnitude of their potential impact (E). Column F indicates any particular populations who are expected to have a more significant impact. Also shown are major factors that could enhance or impede the predicted impact (G), and stakeholder perspectives on those factors (H).

Table 5: Effect Characterization for Physical Activity

	A.	B.	C.	D.	E.	F.	G.	H.
Impact on...	Data	Stakeholder	Direction	Likelihood	Magnitude	Population	Confounding factors	Stakeholder
Number of people walking	Low	Higher in Brickell, University	Increase	Likely	Large	Residents, workers	Access points, security	Access, security, sweat
Number of people riding bicycles	Low	Increasing	Increase	Likely	Large	Residents, workers	Separation of uses, access points	Access, efficiency, showers
Number of people exercising or playing sports	Moderate	Low	Increase	Possible	Moderate		Depends on programs, amenities	Fun!
Percent of people meeting physical activity recommendations	Moderate	Low	Increase	Possible	Slight	Kids/seniors/Hispanic; residents	Representation of Latino/Latina people, culture	Address existing obstacles (safety etc.)
Heart disease rates - hypertensive	High in areas	Important issue	Decrease	Possible	Slight – small decrease in symptoms, some averted major events	Trail users	Usage rate	--

Social Connections

Social connectedness, also described as social cohesion or social capital, refers to the many ways that people participate in social activities and obtain social and emotional support. Social connections are important for health in many ways. People who are lonely or socially isolated are more likely to die prematurely, suffer from depression and other detriments to mental health, and experience a greater decrease in their wellbeing than people in chronic physical pain or extreme poverty (J.-F. Kelly et al., 2012). Forms of social connectedness which are correlated with health outcomes include casual interactions, positive emotional support from family and friends, knowing and trusting one's neighbors, professional relationships, and community connections with civic and political leaders (Kawachi & Berkman, 2000). Participation in community groups, levels of trust in the community, and voter turnout are some of the ways to measure levels of social cohesion.

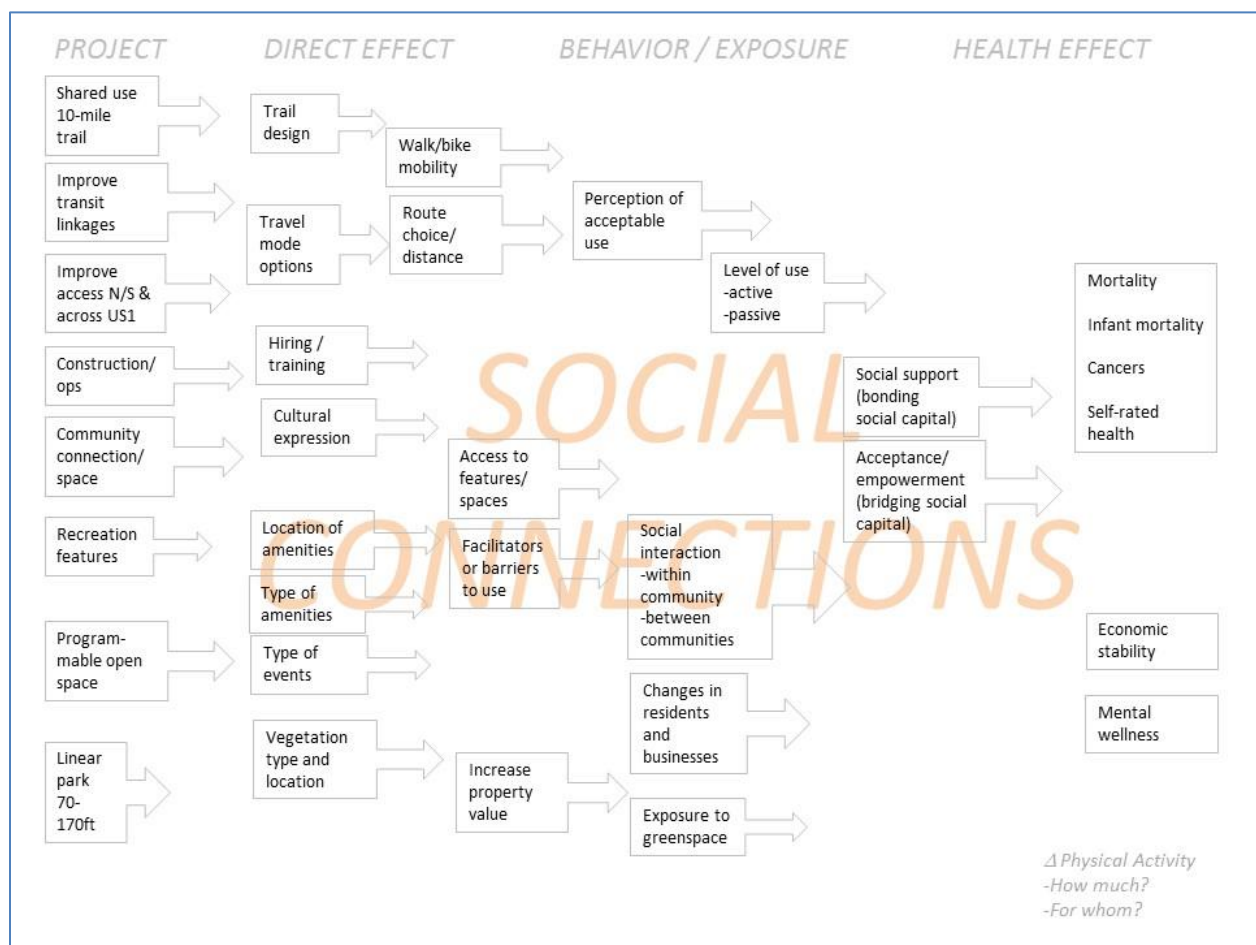


Figure 47: Social Connections Causal Pathway

Stakeholder input on social connections

In the South Miami Health Wellness Community Needs Assessment, 5% of participating households reported that they did not receive adequate social or emotional support, and 6% were dissatisfied or very dissatisfied with their lives (Acuña et al., 2013).

Participants in public meetings for The Underline rated “Art + Culture” highly along the southern portion of the corridor; Brickell area participants were interested in accessing restaurants and cafes. In the Coconut Grove and University areas, participants in planning meetings were most interested in boosting local arts and crafting, picnicking, pop-up retail, and environmental awareness.

Evidence Review

Parks and public spaces can stimulate social interaction, but the effect varies widely based on their characteristics that influence the amount and types of usage. Overall, increased levels of walking and bicycling are associated with increased social cohesion. Walkability, both objective and as perceived by users, increases levels of social interaction. High traffic volumes appear to decrease familiarity and trust between neighbors. However, studies of parks and other public spaces (plazas, sidewalks, etc.) suggests that the less vigorous the usage, the more positive social interaction occurs. That is, places where a higher share of people are strolling, standing, sitting, lingering, playing, watching, and engaging in other slow or stationary activities have a higher rate of informal interaction and stimulate increases in social cohesion for users and nearby residents. The factors which make a public space attractive for these leisurely uses are slightly different from those that make it most attractive for physical activity. These uses are higher in places that are perceived to be high quality, safe, and well maintained; close (less than five minutes) from a destination; lively and interesting; and built to a comfortable human scale (Francis, Giles-Corti, Wood, & Knuiman, 2012; Gehl, 2013). In addition to proper maintenance, parks that offer adequate seating, attractive landscaping, play areas, and focal points appear to have increased leisure use and social interaction, especially for retirees (Kaźmierczak, 2013).

A 2004-2009 study was conducted in Miami-Dade with 2,000 survey respondents, including elderly and disabled residents. It also measured housing density, land use, acres of greenspace, and motor vehicle commuter density. Census tracts with larger park acreage had lower rates of depression, as did those with higher housing density. Tracts with higher density of automobile commuters were correlated with higher levels of depression (Miles, Coutts, & Mohamadi, 2012). Figure 48 below is excerpted from their article.

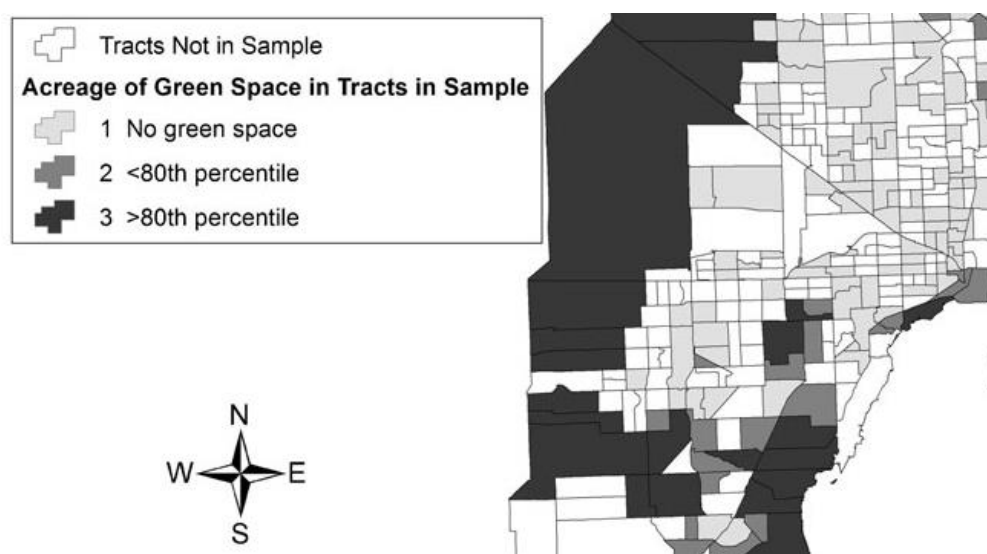


Figure 48: Census tracts with high, low, and no green space

One important element of social connectivity is ‘bridging social capital’. This refers specifically to the relationships that a particular community and its members have outside of their community, particularly with adjacent neighborhoods, with city and regional leadership, across demographic and economic identities, and with key businesses and institutions. These connections are important because they can enable people and communities to obtain resources and participate in decisions that affect them. Bridging social capital is also associated with health (Kim, Subramanian, & Kawachi, 2006). The Underline may affect bridging social capital by increasing awareness about the adjacent neighborhoods and by providing places for people from different neighborhoods and backgrounds to interact. However, these effects may be moderated by the degree to which The Underline reflects community identities, engages their residents, and creates inclusive spaces.

A review of arts and culture in urban planning found that “Citizens can be expected to participate in cultural planning initiatives in direct proportion to the extent that it feeds a personal or community passion, as in the case for arts aficionados or ethnic cultural groups, or may directly affect them, such as residents and business owners in close proximity to a proposed cultural investment initiative.” The same review found that large, elite arts institutions tended to have well-funded and vocal champions, while smaller, community-based arts and cultural initiatives faced funding challenges and low visibility. Additionally, municipal funding for these sectors tended to be poorly coordinated across different agencies (Markusen & Gadwa, 2010). To the extent that The Underline seeks to foster community awareness and engagement by “maximizing its potential to foster new types of programming and uses for additional user groups, such as residents, nature and park lovers, art enthusiasts, environmentalists, entrepreneurs, and families” and “providing distinctive places for programs relevant to each community,” the types of places and programs selected, the investment in them, and the level of community participation in selecting them, may impact their success in connecting communities and people. Another study describes the tension between flagship projects intended for tourists and international renown versus dispersed and diverse activities that promote local cultural identities, education, and public access (Grodach & Loukaitou-Sideris, 2007). The Underline, as a high profile corridor between communities, has the opportunity to achieve both. These choices are important, as arts and cultural activities have often served to foster social interaction and discourse, as well as stimulate community investment. Reviewing studies of cultural activities’ influence on redevelopment, Evans found that cultural elements were thought necessary to stimulating excitement and interest by current and future residents, and this approach sought the “twin benefits of social cohesion and economic competitiveness and their interrelationship” (Evans, 2005). In addition to providing venues and commissioning art for the corridor, The Underline may have opportunities to educate and empower community members and promote local artists.

Effect Characterization

Table 6 describes the estimated potential for The Underline to affect social interaction within and between communities, and the health indicators that are influenced by social connectedness. The table shows the baseline conditions (column A), stakeholder perspectives on baseline (B), the predicted direction of changes from baseline caused by The Underline (C) as well as the likelihood those changes will occur (D) and the magnitude of their potential impact (E). Column F indicates any particular populations who are expected to have a more significant impact. Also shown are major factors that could enhance or impede the predicted impact (G), and stakeholder perspectives on

those factors (H). The Underline could measure its social benefits as well as economic benefits. Infant mortality was on an earlier version of this table, but did not resonate with Community Consultation participants as an important outcome, who were more interested in mental health.

Table 6: Effect Characterization for Social Connections

Impact on...	Data	Stakeholder	Direction	Likelihood	Magnitude	Population	Confounding factors	Stakeholder
Number of people using parks	High	Disparities in access, interest	Increase/mixed	Likely	Moderate	Underline proximity; underserved	Proximity, access, maintenance	Better or different?
Social participation	Low	High, but many obstacles	Increase	Possible	Moderate	Everyone	Retail, cultural orientation of events/amenities	Inclusive, culturally relevant, connect to retail
Trust in neighbors	Moderate	High	Increase	Likely	Slight	Future residents	--	Inclusive, culturally relevant
Community mixing	Low to moderate	Low – important issue	Mixed	Plausible	Unknown	Neighborhoods	Cost, inclusion, displacement	Inclusive, culturally relevant, awareness, arts & retail connections
Depression/self-harm	Moderate	Mental health issues often go unreported	Decrease	Likely	Moderate	Older and isolated	Ease of access	Who uses it

Exposure to Traffic Hazards

This health topic addresses the risks that users of The Underline potentially face, including perceived risks which could discourage use and thus inhibit the mobility, social interaction, and physical activity to be potentially gained from The Underline. The primary risks of concern include exposure to traffic injuries and exposure to vehicle emissions. Figure 49 again shows the pathway to health effects.

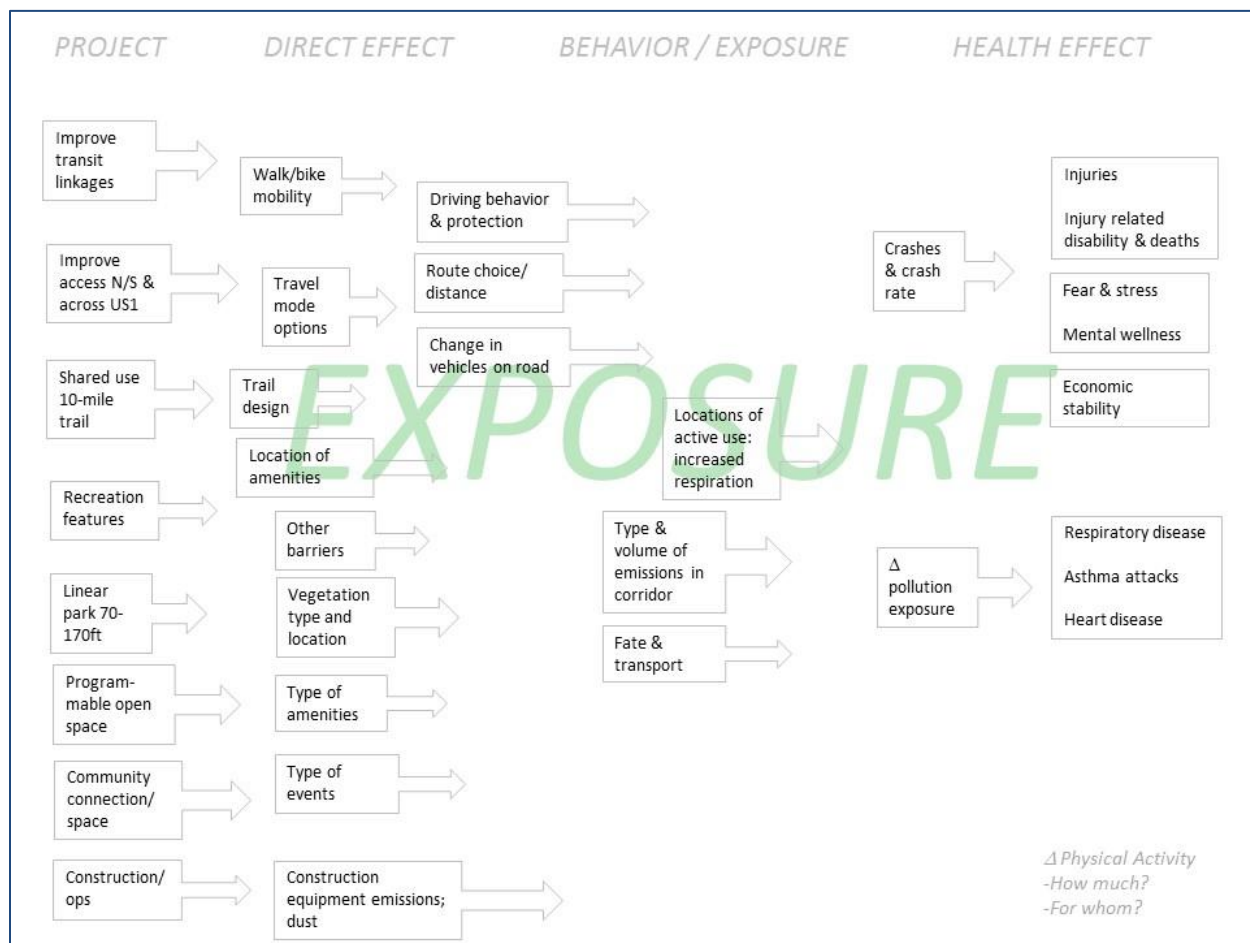


Figure 49: Traffic Exposure Theoretical Pathway

Evidence Review: Exposure to Traffic Hazards

Injuries

In the 2014 “Dangerous by Design”³ report, the Miami region ranked fourth in the US for danger to pedestrians. Pedestrian and bicyclist injuries are a concern not only for people using The Underline, but also as they travel from surrounding areas to the corridor. Within easy walking and bicycling distance of the corridor, prospective users may need to travel along and cross US Route 1, other major roads, and neighborhood streets. Potential pedestrian hazards include missing sidewalks, sidewalk obstructions, frequent driveways, and extensive missing or inadequate street crossing

³ Smart Growth American & National Complete Streets Coalition.

<https://www.smartgrowthamerica.org/app/legacy/documents/dangerous-by-design-2014/dangerous-by-design-2014.pdf>

accommodations. Potential hazards to bicycling include lack of bicycle facilities even on high-speed streets, improper bicycle facilities, frequent driveways, and lack of context sensitive street design. High motor traffic speeds, heavy motor vehicle traffic volumes, failure of people behind the wheel to comply with traffic laws, and heavy truck traffic, partly induced by the form of streets and cities, create a formidable risk. Accessible pedestrian bridges have been installed at stations, but these tend to have low utilization rates.

23% of traffic fatalities in the Miami MSA region were pedestrians. Nationally, pedestrian injuries disproportionately affect lower income residents, recent immigrants, and people of color. They are important not only as a cause of death (motor vehicle crashes are one of the top 10 causes of death in the US, and tend to be the leading cause of death between the ages of 1 and 34). They also contribute to many disabling injuries, medical expenses, time lost from school or work, and psychological trauma. Families which experience a traffic injury, especially while walking or bicycling, can experience long term complications such as job loss or mental health issues.

While it may not be possible to prevent 100% of traffic injuries, the 'Vision Zero' approach proposes that zero traffic deaths should be a target, and that the vast majority are preventable through modifications to environment, policy, and behavior.

Humans are conditioned to protect themselves and their families from risk, so the perception that it is unsafe to walk or ride a bicycle is likely to significantly decrease usage of The Underline. However, several studies have suggested that the rate of traffic injuries – especially pedestrian and cyclist injuries – decreases sharply as the number of people walking and bicycling increases. This is described as the 'safety in numbers' effect. One international study found that for each doubling of the number of people on foot or bicycle, injury rates decreased by one third (Jacobsen, 2003).

The Underline framework proposes intersection treatments at the locations where the trail crosses the roadway. Specific detail is given for the type and priority of treatment for each intersection in the corridor. There are no specifications in the framework for streets adjacent to the corridor.

Conventional wisdom has held that roads can be made safer for motor vehicles by moving fixed objects back from the roadside; widening travel lanes; and employing channelization, acceleration lanes, and grade separation at intersections. However, such designs are associated with increased driving speed and less driver attentiveness, and thus with increased crash severity, higher risk for pedestrians and cyclists, and a less suitable environment for local access (Dumbaugh & Li, 2010; Dumbaugh & Rae, 2009; Noland, 2003). Some studies have found a linear relationship between increased speeds and increased crash rates, as well as increased delay due to crash incidents, while other studies have only found an increase in severity (Ivan, Garrick, & Hanson, 2009) (Redelmeier & Bayoumi, 2010). Jacobson (2003) reviewed fourteen studies from locations in Europe and the U.S. in order to evaluate the rate collisions between motorists and pedestrians or motorists and bicyclists relative to pedestrian or cyclist traffic metrics. This crash rate decreased in places where more people were walking or bicycling. On average, a location that doubled its rate of walking could expect to see each pedestrian's risk of injury decrease by 66%. In theory, communities that see some driving trips replaced by walking or cycling trips could expect to see their overall traffic injury rates decline.

Exposure to Motor Vehicle Emissions

Air quality is linked to health in a variety of ways. The health effects of motor vehicle and industrial air pollutants include reduced lung function, asthma and other respiratory illnesses, cancer, irritation of breathing passages, premature death, with children and the elderly being at a higher risk than the general population (Hoek et al., 2013). Air pollution from roadways decreases with distance; exposure is most likely within 200 feet of a road carrying more than 50,000 vehicles per day, or within 100 feet of a road carrying 25,000-49,999 vehicles per day (significant amounts of truck traffic may change these criteria)(Venkatram, Isakov, Seila, & Baldauf, 2009). Changes in vehicle emissions, including carbon monoxide, nitrogen oxides, particulate matter, and hydrocarbons are linked to changes in motor vehicle trips, miles, or hours of operation (Brugge, Durant, & Rioux, 2007; Samet, 2007). Nitrogen oxides and hydrocarbons (also called volatile organic compounds) produced by car and truck exhaust combine in sunlight to form ground-level ozone. Diesel freight transport generates these pollutants as well as high levels of black carbon, sulfur dioxide, and some suspected carcinogens (You et al., 2010)

The causes of asthma are complex, and appear to be influenced by indoor and outdoor air quality as well as levels of exposure to potential allergens. Asthma attacks, however, are strongly associated with certain known exposures. Children living near high-volume motor vehicle emission sources (highways, major roads, and congested areas) have more frequent asthma attacks. (Corburn, 2007; McConnell et al., 2010). Pediatric asthma appears to be a significant concern in the project corridor. While ER visit rates for pediatric asthma are highest at the northernmost end of the corridor, rates of children with asthma have increased throughout the area in recent years overall.

Both short- and long-term exposure to particulate matter (PM) have been associated with increased rates of cardio-respiratory morbidity and mortality. This includes increased lung cancer risk, along with short- and long-term non-cancer health effects such as bronchitis, asthma, and reduced lung function. Additionally, PM 2.5 is seen to have an adverse effect on lung development in adolescents that can lead to lifelong lung deficiency (Gauderman et al., 2004). The elderly are also at increased risk for negative health effects stemming from exposure to PM. Research has shown that common emission sources for PM have significant associations with elderly cardiovascular hospital emissions (Barnett, Williams, Schwartz, Best, et al., 2006; Mar, Koenig, Jansen, Sullivan, et al., 2005).

There are mitigation strategies for transportation-related air pollutant emissions. Sound barriers and vegetation adjacent to high-volume roadways can be effective for reducing exposure to pollutants at homes and other sites near the roadway. Vegetation should be hardy, long-lived evergreen conifer trees with dense leaf structure, and they are more effective when planted densely and as close to the emissions source as possible(Fuller, Bai, Eisinger, & Niemeier, 2009; Tong, Baldauf, Isakov, Deshmukh, & Zhang, 2016). However, a wind tunnel study found that improper selection or spacing of trees could increase concentration of pollutants by reducing the rate at which wind helps to ventilate the area. This issue is most acute in building 'canyons' in which continuous, densely leaved trees surround the road and sidewalks. However, this study also found that hedges can reduce the pollution load by blocking and filtering contaminant particles, since they are generally thick and located closer to tailpipes.(Wania, Bruse, Blond, & Weber, 2012) A review of studies that address vegetation and air pollution found that vegetation can has positive, negative, or no effect on pollution depending on several key factors (Janhäll, 2015):

- Leaf density: sparse vegetation makes little difference, overly dense vegetation can behave like a wall and divert airflow which prevents the leaves from absorbing the pollutants. Optimal absorption occurs with dense but porous vegetation with maximum leaf surface. Pine needles have been found effective.
- Leaf drop: for winter usage, evergreen plantings and vegetation with overlapping leaf drop timing is essential.
- Ventilation: overly vegetated areas can trap pollutants, simulating a tunnel
- Height: in combination with the above factors, the height and placement of vegetation affects dispersion and absorption relative to the source of the pollution. Prairie grass and porous hedges have been found to reduce the spread of tailpipe emissions by about a third.
- Suitability: in all circumstances, efficacy is relative to the health and growth of the planting, so it must be able to thrive in the selected site and conditions.

Reducing overall congestion is likely to reduce emissions as well, however research suggests that congestion maintains a static level on unpriced roads (Cervero & Hansen, 2002). However, from a scan of five studies regarding travel patterns, it appears that the built environment (area-wide transportation and land use factors) could account for around two-thirds of travel decisions (e.g., the choice to walk or drive, or the total amount of miles driven). Factors that are associated with travel mode and distance choices include the cost and availability of parking, the cost of driving (gasoline prices, tolls), distances between destinations, and the perceived comfort, convenience, safety, and reliability of driving, walking, bicycling, taxi hailing/carpooling, or riding transit (Ewing & Cervero, 2010). Reducing road capacity generally reduces traffic volume without an increase in congestion (Duranton & Turner, 2011). Providing pedestrian, bicycle, and transit alternatives should at least improve mobility without increasing congestion. The addition (or subtraction) of an alternative travel option is not typically associated with changes in motor vehicle traffic volume and congestion levels, which appear to operate under self-regulating economic principles. It is not conclusive that traveling the corridor by foot or bicycle is necessarily worse than driving or train which are exposed to the same air pollutants (De Nazelle et al., 2011).

Effect Characterization

Table 7 describes the estimated potential for The Underline to affect exposure to motor vehicle emissions and crashes, and the health indicators that are influenced by them. The table shows the baseline conditions (column A), stakeholder perspectives on baseline (B), the predicted direction of changes from baseline caused by The Underline (C) as well as the likelihood those changes will occur (D) and the magnitude of their potential impact (E). Column F indicates any particular populations who are expected to have a more significant impact. Also shown are major factors that could enhance or impede the predicted impact (G), and stakeholder perspectives on those factors (H).

Table 7: Effect Characterization for exposure to traffic hazard

Impact on...	Data	Stakeholder	Direction	Likelihood	Magnitude	Population	Confounding factors	Stakeholder
Traffic volume	Very high	Very high – where from/to?	Mixed/neutral	Possible	Slight	Travelers	Lack of alternatives	Perception of transit, alternatives
Traffic crashes	High	Very high	Decrease	Likely	Moderate	All travelers	Speeds, presence of bike & walking	Better alternatives lead to decrease
Pedestrian injury rate	Moderate	Reckless driving major factor – kids, elderly, disabled most vulnerable	Rate decrease/mixed	Likely	Large	Vulnerable users, trail users	Access, usage rate, design, increase in walking	How much increased pedestrian presence to make drivers more attentive?
Bicyclist injury rate	Moderate	High as a rate	Rate decrease/mixed	Likely	Large	Corridor users	Access, usage rate, design, increase in bicycles	Same as above for bikes
Vegetation	Moderate	A lot in neighborhoods	Increase	Likely	Moderate	–	Development	Local ordinances; utility poles
Air contaminants in corridor	–	Very high	Mixed	Possible	Unknown	–	Enclosure vs absorption	Will be very high; traffic reduction; congestion management; vegetation
Number of people exposed to emissions	–	Users are exposed	Mixed	Likely	Slight	All travelers	Traffic volume, speed; vegetation	Congestion management; vegetation

Asthma ER visits	High in areas	Affects low income children	Mixed	Possible	Slight	Path users, neighborhood	Exercise vs inhalation	--
Heart disease rates - congestive	High in areas	High - important issue	Decrease/mixed	Possible	Small effect for many; some averted events	Path users, neighborhood	Exercise vs inhalation	--

Recommendations

The following is a summary of all recommendations, and the health pathways for which they are predicted to enhance positive impacts or mitigate negative ones. In the first section are the first and second tier priority recommendations, which are presented in order of priority. Following that list is a more detailed description of recommendations, including overarching opportunities that address all domains, recommendations specific to certain focus areas, and recommendations specific to certain areas of the corridor. Where available, references and resources are provided.

Top Priority Recommendations: Increasing Use		Low to Moderate Impact		High Impact	
		U		U	
Element	1. Access				
Statement	Providing access to the corridor is the most important element for promoting use of The Underline by nearby residents, workers, and visitors, to capitalize on the potential for benefits to health. If users drive to the corridor, traffic exposure could worsen.				
Areas of Impact	Physical Activity		Social Connections		Traffic Exposure
	U		U		U
Key Recommendations	<ul style="list-style-type: none">• Provide safe and convenient trail crossings along the corridor using the most suitable design for road and land use context, using designs from the Framework Plan.• Plan for access to the corridor across US Route 1 and other adjacent roads, which is not currently in the Framework Plan.• Connect the rest of the trail network• Develop a comprehensive and inclusive traffic plan for the Route 1 corridor, which provides safe bicycle and pedestrian access at each cross street without increasing traffic delay. This could include synchronized traffic signal timing, restrictions on traffic turns under certain conditions, design and operations reduce travel speeds (which reduces congestion, emissions, and crashes, and increases road capacity), and more.				
	Element	2. Link to Transit			

Statement	Linking to transit is a critical aspect of ensuring health benefits. Public perception of Metrorail can affect perception of The Underline. Transit riders who travel through the corridor represent a high opportunity population.		
	Physical Activity	Social Connections	Traffic Exposure
Areas of Impact	U	U	U
	<ul style="list-style-type: none"> Integrate design for bus bays at stations Coordinate with bus and trolley service Develop station area design that encourages rail travelers to stop and explore Provide suitable amenities for rail travelers in the corridor design (bike share stations and secure bathrooms were specifically mentioned by stakeholders) Utilize equitable Transit Oriented Design (TOD) best practices to create places which promote shopping, business, housing, and other uses within walking distance of Metrorail stations Address negative perceptions of Metrorail station maintenance and safety that could suppress usage of The Underline. This includes design and operation focused on low maintenance equipment, operational efficiencies, community stewardship, partnerships to upgrade existing stations, and programming that increases the vibrancy and natural surveillance at stations-especially during non-peak hours. 		
Key Recommendations			
Element	3. Programs & Operations		
Statement	Programming and operations – events, maintenance, etc. - influence who uses The Underline and how they use it. Final designs should be based around intended future uses and operations.		
Areas of Impact	Physical Activity	Social Connections	Traffic Exposure
	U	U	U
Key Recommendations	<ul style="list-style-type: none"> Partner with trusted community organizations and activity providers can provide a foundation for programming that is most responsive to local demand Initiate partnerships before and during the project implementation process to increase understanding about the type, size, location, and specific needs of future programming Include flexibility for some spaces to allow for future adaptations to changes in or unexpected types of use 		

More Priority Recommendations:		Low to Moderate Impact	High Impact
Attention to Detail		U	U
Element	4. Trail Design		
Statement	Trail design can have an enormous influence over usage rates and thus on potential health impacts. Trails that are too congested, improperly engineered for running or bicycling, poorly marked, inadequately lit, or otherwise unpleasant, tend to operate far below capacity.		

Areas of Impact	Physical Activity	Social Connections	Traffic Exposure
	U		U
Key Recommendations	<ul style="list-style-type: none"> • Separate pedestrian and bicycle traffic along the entire corridor • Use smooth asphalt surfaces • Maintain wide passageways with minimal curves • Include wayfinding signage with travel times included • Select lighting options that provide the most consistent levels of illumination • Position frequent and generously sized rest areas to reduce obstruction of the trail passageway • Build on the Framework Plan's designs for pedestrian crossings of the bicycle trail by adding more detail for comfortable trail patterns and access points that bicycles can use at speed 		
Element	5. Recreational Features		
Statement	Recreational features proposed in the Framework Plan can increase physical activity and facilitate group events. As noted above, these elements must be responsive to anticipated types of programs and events.		
Areas of Impact	Physical Activity	Social Connections	Traffic Exposure
	U	U	
Key Recommendations	<ul style="list-style-type: none"> • Incorporate assets such as secure showers and cooling stations • Promote stewardship and appropriate security measures to alleviate pervasive concerns about misuse, especially by people who are homeless • Locate recreational spaces at least 600 feet away from the most highly polluted locations, such as congested intersections or bus layover areas 		
Element	6. Park Design		
Statement	Park spaces can increase physical activity and socialization, and vegetation contributes to pollutant reduction and traffic calming.		
Areas of Impact	Physical Activity	Social Connections	Traffic Exposure
		U	U
Key Recommendations	<ul style="list-style-type: none"> • Avoid the creation of isolated areas that could be perceived as unsafe • Planting a low dense barrier of vegetation along the edge of the roadway, up to about 3 feet high, will help keep pollutants out of the corridor, while trees should be spaced to allow windflow from east to west 		
Element	7 Community Spaces		
Statement	Community spaces are important to social connections. The are places to interact with neighbors, and with people from other areas, cultures, and demographics. Social and cultural events can occur in public spaces, and cultural and historical artifacts can be observed.		
Areas of Impact	Physical Activity	Social Connections	Traffic Exposure

Key Recommendations			U	U
	<ul style="list-style-type: none"> • Include community participation in the planning and design of community spaces • Emphasize that community spaces should be human scaled and human oriented, with many places designed for sitting, watching, and talking • Ensure that art and cultural features are relevant to the community by featuring local history, artists, and performers 			
	Element	8. Open Spaces		
	Statement	Open event spaces can provide formal and informal opportunities to be active or socialize.		
	Areas of Impact	Physical Activity	Social Connections	Traffic Exposure
Key Recommendations		U	U	
		<ul style="list-style-type: none"> • Design flexible spaces which can be used for different types of activities • Partner with communities to select event locations that are better suited to high volumes of users 		

Overarching recommendations

Some recommendations are general to all of the potential health effects, due to their potential to encourage higher levels of usage, higher capacity, easier access, and higher satisfaction:

- 1) Separate bicycle and pedestrian facilities
- 2) Engage communities and organizations. Conduct focused community outreach to specific project areas, neighborhoods, or populations; get input on plans, design, and programming; and cultivate champions and liaisons.
- 3) A sense of security will increase use (which will increase security). This includes
 - a) call on the cities and county to solve homelessness
 - b) planning for 'natural surveillance' through lighting and viewsheds;
 - c) creating liveliness through direct connections with homes and businesses (e.g. outdoor dining, patios);
 - d) and in some cases supporting community patrols
- 4) Success of The Underline is linked to Metrorail.
- 5) Good maintenance will increase use (but don't divert maintenance funds from other parks – in fact, this project could be used to call for more funding for all amenities), including working amenities and clean bathrooms
- 6) There are many unanswered questions about development and access to the corridor, both neighborhood and retail along the corridor. In the long run, development codes along the corridor need to be suited to walkable, transit oriented development, and private parking facilities should be minimized along with strategic distribution of public parking.
- 7) All in all, there are many people traveling the corridor each day, on Metrorail, US Route 1, and other streets, bus, walking, and bicycle trips. Information about destinations, amenities (including public parking), and distances can begin to capture some of these potential users.

Focus area specific recommendations

Physical activity

- 1) The overarching concerns about access, safety, and security must be addressed in order to facilitate enough usage to move the needle on physical activity.
- 2) Many residents enjoy being physically active in ways that also meet needs for social or creative stimulation. This includes running and cycling clubs, martial arts, dancing, walking with friends, challenge or ropes courses, sports, games, and much more. These are also occasions when it is socially acceptable to be sweaty. For The Underline, this suggests certain types of infrastructure – flexible sports fields, nontraditional playgrounds for children and adults, and outdoor classrooms. It also touches on the overarching recommendation to engage local partners – in this case, organizations which organize clubs, classes, and other events.



Figure 50: This wood and rope climbing structure is exciting for children and adults.



Figure 51: Public dance classes or dance parties can combine music, fun, and exercise.

- 3) Consider the different functions that The Underline serves throughout the day. Morning commuters and exercisers are usually interested in avoiding delays, and may need to find a shower afterwards. Lunchtime users will be seeking shade and other cooling amenities. Evening users may be looking for casual, sociable activities that burn off stress. At night, security will be a higher concern.
- 4) Partnerships with local health and wellness organizations could provide opportunities for health promotion and education, such as health fairs, kiosks, or 'walk with a doc'.

Social connections

- 1) There are not enough public spaces to meet. Be sure to create places and events, including for professionals, elderly, children, teens, and other interest groups, and make sure they are accessible to people with disabilities.
- 2) Make the corridor a 'patio' for adjacent properties. Restaurants, stores, condos should open directly onto it and their outdoor spaces should connect. Make sure that adjacent properties don't 'turn their backs' or put parking/loading/driveway directly on it. Acting on this recommendation is a combination of outreach to businesses and property owners, and thoughtfully orienting design elements of The Underline in relation to adjacent properties.



Figure 52: Centennial Park Cafe, Sydney

- a) For instance, parts of the corridor that abut restaurants, shopping, offices, or institutional uses should be more open with seating and amenities to facilitate usage by customers and workers – for example, how would you draw out staff and visitors to South Miami Hospital's Clarke Center to The Underline during lunch.

- b) On the other hand, spaces near homes should be tranquil with few places to congregate, so that residents will feel that a connection to the corridor will not be noisy or intrusive. Clearly delineate public, semi-private, and private spaces.
- c) It may be helpful to have the consulting team design several types of property connection or 'gateway' typologies.
- 3) Designs and art should feature local culture, area history, and stories about local people. This can be done by engaging local communities in the designs which will also create awareness and trust in the project.
- 4) Make the corridor unique – add attractions that will bring people who usually don't use parks or always go to the park in their neighborhood.
- 5) Place signs in neighborhoods and shopping areas within walking/cycling distance, pointing the way to The Underline.
- 6) Encourage performances. Music, drama, dance, live art creation in which local students and artists could perform. Allow busking (performing for tips) which is programmatic but could also call for intentional construction of large and small performance spaces. It is imperative to keep performances away from residential properties to avoid nuisance.
- 7) Facilitate positive social and cultural interaction. Provide activities and spaces that promote emotional healing and connection, such as meditation classes or community charrettes. Use the "Cities for People" design guidelines to create spaces with the right dimensions for social interaction.

Traffic hazards

- 1) Safety is one of the main barriers to access and use.
 - a) Many crossings are only receiving 'minor' improvements. Review against user experiences (through local engagement) and crash data to ensure it will be enough. Start with some pilot sites and evaluate them to see whether driver compliance is good and whether users feel safe. At the time of the HIA, the selection of Medium or Major level intersection improvements for SW 88th Street (Kendall Drive), SW 57th Avenue (Red Road), the South Miami Hospital exit driveway, Merrick Circle, SW 42nd Avenue/Grand Avenue, SW 37th Avenue (Douglas Road), SW 31st Avenue, SW 13th Street (Coral Way), and SW 8th Street (Calle Ocho) were well justified based on recent pedestrian and/or bicycle injuries. However, the following intersections have also had recent pedestrian and/or bicycle injuries and should receive the Medium level of improvements:
 - i) SW 70th Avenue
 - ii) Snapper Creek Expressway (eastbound ramp terminus)
 - iii) SW 67th Avenue (Ludlam Road)
 - iv) SW 80th Street (Davis Road)
 - v) SW 62nd Avenue
 - vi) SW 72nd Street (Sunset Drive)
 - vii) Alhambra Circle
 - viii) Stanford Drive
 - ix) Granada Boulevard
 - x) SW 32nd Avenue
 - xi) SW 27th Avenue

xii) SW 16th Avenue

The Pedestrian and Bicycle Information Center has additional resources regarding crossing treatment selection. <http://www.pedbikeinfo.org/planning/index.cfm>

- b) The Framework Plan does not address designs for access to the corridor. US Route 1 is considered a major barrier, and many people do not feel safe walking or bicycling on neighborhood streets. Partner with county and state transportation departments to develop a traffic plan for the entire corridor that features more frequent controlled pedestrian crossings, and vehicle movement along the corridor which is lower speed but more predictable and constant. Refer to best practices such as the “Designing Walkable Urban Thoroughfares” guide (ITE, 2010), multi-modal level of service, traffic signal timing, and or controls such as restricting right on red. This could reduce all crashes and the resulting traffic delays, in addition to improving access. Additionally, traffic that flows at slower speeds but moves more smoothly (30-35 MPH with less braking and stopping) tends to achieve better engine efficiency and thus produce lower levels of emissions. Ideally, there should be a controlled crossing at every intersecting street, not just major roads. However, this should be done in conjunction with signal timing, to prevent additional congestion.
- c) Additionally, support for The Underline should be leveraged to encourage adjacent communities to create and implement plans for safe and convenient travel by foot or bicycle in surrounding areas.



Figure 53: Complete Street Example (8 80 Cities)

- 2) Protect existing and future trees. This may involve collaborating with property owners, developers, and jurisdictions to ensure planting and preservation. Collaborate with utility companies to plan around powerlines and other work. Avoid massing trees – this can create security problems when they are young as they may block visibility and natural surveillance. When mature, it creates a tunnel effect which can trap emissions and create unhealthy levels of air pollution. Tree arrangements should facilitate airflow from east to west.

- 3) Install low vegetative barriers at exhaust pipe level without blocking views and sense of security. Hedges composed of small, leafy shrubs or tall grasses, as depicted in Figure 43, should help to reduce respiration of motor vehicle emissions. It could reduce glare from headlights, too.

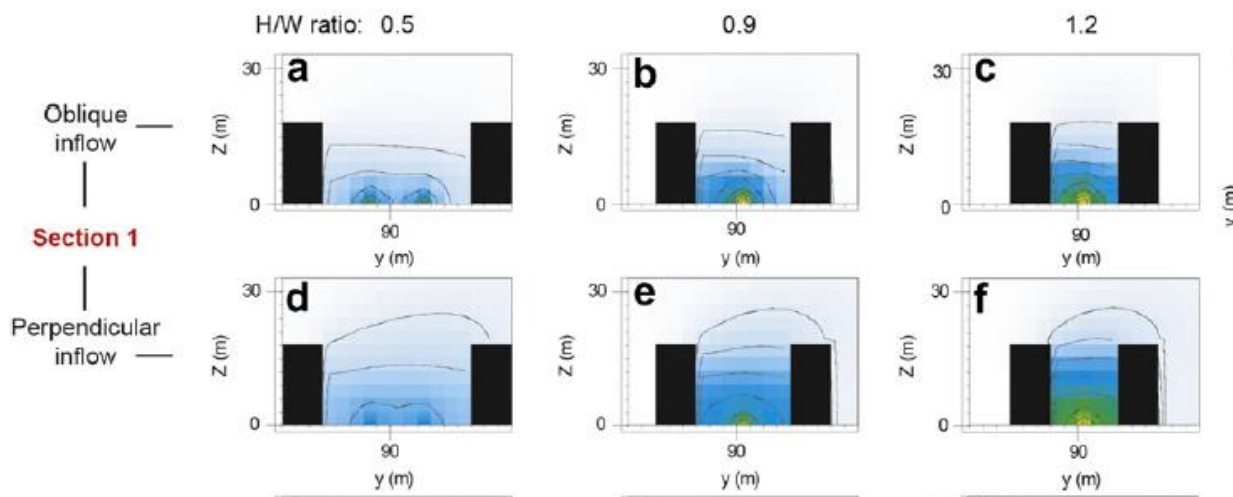


Figure 54: Particle Concentration Simulation Results

Source: (Wania et al., 2012)

Station area or neighborhood specific recommendations

There were some notable differences by area. These resulted from community meetings as well as some of the spatial information provided by maps of health conditions and risk factors, and locations of current amenities and uses.

In the Brickell area, residents and professionals need public gathering places. Designs for this area should include more plazas, event spaces, and outdoor dining and amenities. For instance, the rendering of the Brickell Backyard emphasizes an actively-used path surrounded by plantings, small seating areas, and some climbing amenities. However, the final design could benefit from larger seating areas adjacent to the paths, which will accommodate socializing and reduce the chance that the path will become obstructed by stationary users. The primary exposure concern in this area was dust and contaminants from construction sites rather than roadways, so in this case forms of temporary vegetative barriers may be more valuable – for instance, using the space next to construction sites as ‘tree farms’ for specimens which will be planted elsewhere in the corridor in the future.

In Coral Way and Douglas Road, traffic safety was the leading concern for accessing the corridor, with some secondary questions about what will make The Underline distinctive and a better asset than the existing parks to the degree that it will attract new usage. While the rendering for Douglas Bird Triangle primarily represents adults using a bicycle kiosk, the local community might be more interested in event space and amenities for children. It is critical to address pedestrian and bicycle crossings across US Route 1 here. Every intersecting street should have appropriate infrastructure for these travelers. Over the longer term, The Underline could help stimulate greater investment in Complete Streets by the local jurisdictions.

The South Miami section also had major concerns about traffic safety and access especially for vulnerable users, as well as managing emissions from traffic, desires to bringing together neighborhoods which currently do not feel welcome in other parts of town, and having culturally compatible activities. At that meeting there was also specific mention of properly providing gathering places and events for young professionals in the Dadeland area, without disturbing existing residences. The amenities rendered for South Miami Gardens and Dadeland Trail Connect represent some of the needs and interests there, especially for connectivity. They might be enhanced with cultural art and amenities for South Miami and a farmer's market site at Dadeland.

Further data needs or monitoring

1. Monitor air quality on the corridor – this could become a joint project with a local university, hospital, or advocacy organization, or with RER-DERM.
2. Install trail counters
3. Conduct regular outreach with community members to determine their perception of the project
4. Collaborate with local hospitals and health systems through the community benefits/ community health needs assessment process to collect quantitative and qualitative health data

Evaluation

Every health impact assessment should meet certain minimum practice standards. This section summarizes the performance of the HIA and notes key challenges. In conducting a rapid HIA, the project primarily focuses on achieving the minimum elements, as there are many sections of the practice standards which only apply to more comprehensive projects.

- Screening. The screening was initially conducted by the sponsor. During the scoping phase, it was affirmed that The Underline was a good target for health impact assessment. The rapid timeline was appropriate to the decision point, although the preferred 10-week period was slightly restrictive in terms of allowing stakeholder engagement.
- Scoping. The project identified effective decision point, with a slight change (the implementation stage rather than the planning stage). There are more limited opportunities to address inequities in rapid HIA, although this element was prioritized. The remote workgroup structure added some time to finalize the scope, due to revisited goals and topics.
- Assessment. The assessment phase started later than originally planned, resulting in an accelerated schedule to prepare for meetings. There were some continued limitations to engaging the workgroup due to the need for frequent calls, and need for rapid review and feedback before meetings. There were successful community meetings with great input on assessment, but would have valued more time to process.
- Recommendations. Additional input on recommendations would be desirable. It is anticipated that additional comments will be received after presentation of the report.
- Reporting and evaluation. These phases are ongoing.

Appendix A: Sources:

Overall

<http://www.healthmiamidade.org/resources/community-health-improvement-plan>

<http://www.healthmiamidade.org/resources/reports-publications>

Bureau of Labor Statistics - <http://www.bls.gov/lau/>

American FactFinder - <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

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Appendix B: Health Topic Supporting Evidence

Consortium for a Healthy Miami-Dade Community Health Improvement Plan MAPP Priorities

Top 20 Mobilizing for Action through Planning and Partnerships (MAPP) Community Health Priorities
(MAPP Priority ranking in parenthesis)

- ❖ **Access to Care (1)**
 - Primary Care & Medical Homes (4)
 - Increased Interagency coordination (8)
 - Special Needs populations (12)
 - Undocumented population (15)
 - Cultural competencies (16)
 - Workforce (17)
 - Oral Health (18)
- ❖ **HIV, STD and Infectious Diseases (10)**
 - Increased Interagency Coordination (8)
- ❖ **Chronic Disease Prevention (2)**
 - Heart Disease & Stroke (9)
 - Cancer (11)
 - Tobacco use (20)
 - Nutrition & Physical activity (5)
 - Increased Interagency Coordination (8)
- ❖ **Healthcare Disparities (3)**
 - Socioeconomic factors (7)
 - Injury & Violence Prevention (19)
 - Maternal and Child Health (14)
 - Increased Interagency Coordination (8)

Community Health Needs Assessment Findings

Consortium for a Healthy Miami-Dade Community Health Needs Assessment

“The 2013 Miami-Dade Community Health Needs Assessment Household Survey Report provides valuable information about the existing burden of chronic diseases, health behaviors, risk factors and disparities observed in the county. The survey indicates that an overwhelming 82.2% of respondents exhibit one or more of the following cardiovascular risk factors: overweight/obese (62.4%), no leisure-time physical activity in the past month (29.9%), high blood pressure (32.6%), high blood cholesterol (32.2%), and cigarette smoking (10.1%) (Professional Research Consultants Inc., 2013). The data is aligned with the results from the 2010 Behavioral Risk Factor Surveillance System (BRFSS) which indicated that 66.5% of MDC adults were either obese or overweight (Centers for Disease Control and Prevention, 2012).

Prevention Quality Indicators (PQIs) data further reveals disparities in health observed across the county. PQIs help identify avoidable hospital admissions indicate gaps in service, lack of access, lack of insurance, and poverty. Analysis of the 2012 Agency for Healthcare Research and Quality, Department of Health and Human Services, shows higher burdens for a number of these PQIs (e.g. diabetes, hypertension, congestive heart failure) in zip codes such as 33150, 33136, 33054, 33147, 33128, 33010 and 33127 which fall under communities such as Opa-Locka, Hialeah, Little Haiti, Overtown, Liberty City, North Miami and City of Miami. Many of these communities have high minority populations as well as a high number of low income individuals and families (Professional Research Consultants Inc., 2013).”

South Miami Hospital Community Health Needs Assessment

Consumer focus groups: transportation to and parking at the hospital are challenges. Lack of health care coverage is an issue. Substance abuse and mental wellness are widely acknowledged but unmet community health needs. Leadership groups: need to partner in health promotion

South Miami Health Wellness Community Needs Assessment

Greatest disparities in income. Areas of greatest need identified (mostly not in corridor). Major disparities between apartment and single-family house (SFH) dwellers. Apartment dwellers were aware of assets in their community but generally less likely to participate in community and civic activities. They lived less healthy lives in rates of smoking, fruit and vegetable consumption, and consumption of unhealthy foods. Physical activity rates however were similar. Although hypertension was by far the greatest health issue, apartment dwellers had elevated rates of asthma and heart attacks.

Consortium for a Healthy Miami-Dade Community Health Improvement Plan Strategic Issues Related to Underline

Strategic Issue Area: Integrate planning and assessment processes to maximize partnerships and expertise of a community in accomplishing its goals

- **HP2020 Goal: Promote health for all through a healthy environment.**
 - SHIP Strategy: CR1.1 Include a public health component in community planning processes to increase awareness and opportunity for the built environment to impact healthy behaviors.
 - SHIP Objective: CR1.1.2 By Dec. 31, 2014, all county health departments will have public health attendance in their community planning processes with each of the 67 county planning boards.
 - Local Strategy: Increase collaboration with partners in order to assure that the built environment incorporates opportunity for healthy behaviors to be incorporated into planning documents.
 - Local Objective: By December 30, 2014 a plan will be devised with action steps by the Consortium's Health and the Built Environment that will increase awareness and opportunity for the built environment to impact behavior.
- **HP2020 Goal: Promote health for all through a healthy environment.**
 - SHIP Strategy: CR1.1 Include a public health component in community planning processes to increase awareness and opportunity for the built environment to impact healthy behaviors.
 - SHIP Objective: CR1.2.2 By Dec. 31, 2013, DOH and the Florida Association of Health Planning Agencies and other organizations will develop resources and training materials that promote health-related conversations about health benefits to communities resulting from the built environment.
 - Local Strategy: Develop resources and training materials on the topic of Health and the Built Environment in addition to identifying speakers who can provide education and community awareness.
 - Local Objective: By July 31, 2015 The Health and the Built Environment Committee of the Consortium will promote health-related conversations about health benefits within the various communities of Miami-Dade.
- **HP2020 Goal: Promote health for all through a healthy environment.**
 - SHIP Strategy: CR1.2 Share effective strategies and messages that support the connection between the built environment and healthy behaviors.
 - SHIP Objective: CR1.2.4 By Dec. 31, 2015, DOH will work with the Department of Transportation and the Department of Environmental Protection to increase the number of

municipalities, counties and regions that have complete streets policies for implementing Section 335.065, Florida Statutes, from 13 in 2011 to 26.

- Local Strategy: A plan will be developed to allow for the adoption of Complete Streets Policy in Miami- Dade.

Build and revitalize communities so people can live healthy lives

- **HP2020 Goal: Improve the health, function, and quality of life of older adults.**
 - SHIP Strategy: CR2.1 Make it safer for people to live active, healthy lives by increasing community policing, addressing substandard housing and increasing aging-in-place opportunities.
 - SHIP Objective: CR2.1.6 By Oct. 31, 2014, DOH will work with the Department of Elder Affairs and other state agencies to disseminate model “Communities for a Lifetime” policies focused on improving health by “aging in place” (e.g., enabling seniors to remain at home for as long as possible).
 - Local Strategy: Support partners in creating opportunities for older adults to be more active in Miami-Dade.
 - Local Objective: By December 31, 2014 a strategy will be written in partnership with the Alliance for Aging that will support older adults being able to age in place with the best quality of life.
- **HP2020 Goal: EH-2.1/2.2 Increase trips to work made by bicycling and/or walking.**
 - SHIP Strategy: CR2.2 Increase access to and participation in physical activity for all members of a community.
 - SHIP Objective: CR2.2.3 By Dec. 31, 2015, increase the percentage of trips to work by walking from 1.6% to 3.2%.
 - Local Strategy: Partner with various agencies to promote walking programs and develop strategies to implement these programs within the various communities in the county.
 - Local Objective: By December 31, 2017 the percentage of commuters who walk to work will increase from 2.1% (2010) to 3.2%.

Prevent and reduce illness, injury and death related to environmental factors

- **HP2020 Goal: Use health communication strategy and health information technology (IT) to improve population health outcomes and health care quality, and to achieve health equity.**
 - SHIP Strategy: HP2.4 Provide consultation to community planners to ensure healthy re-use of land.
 - SHIP Objective: HP2.4.1 By Jan. 31, 2013, Department of Health will offer comprehensive support and technical assistance to County Health Departments to perform Health Impact Assessments that will inform the decision making process about health consequences of plans, projects and policies.
 - Local Strategy: Continue to be part of the local and state Health and the Built Environment workgroup and develop a plan to coordinate with the State Health Office staff on issues related to public health impact assessments.
 - Local Objective: By Jan. 31, 2017, DOH-Miami-Dade will support Health Impact Assessments that will inform the decision making process about health consequences of plans, projects and policies in Miami Dade.

Priorities from Prior Public Engagement in The Underline Master Plan

Uses/Amenities

- Art & culture
- Ecology
- Commuting/job access
- Recreation

- Fitness
- Green tech

- Access to nature
- Access to retail

Vision/Design

- Shade and trees
- Flowers
- Art
- History

- Rocks
- Amenities & services
- Business connections
- Recreation/sports

Appendix C: Stakeholders

Key decision makers

1. Meg Daly

President/CEO

Friends of The Underline

2. Maria Nardi

Chief of Planning & Design Excellence

Miami-Dade Parks, Recreation & Open Spaces Department

3. Carlos Cruz-Casas

Assistant Director

Miami-Dade County Department of Transportation & Public Works

Division of Transportation Strategic Planning

4. David Henderson

Bicycle Pedestrian Administrator

Miami-Dade Metropolitan Planning Organization

5. Collin Worth

Bicycle Coordinator/Transportation Analyst

Capital Improvements & Transportation Program, City of Miami

Other Stakeholders

- Residents (see Population)
 - Elderly
 - Children
 - Low income
 - Immigrant
- Workers
- Other jurisdictions (incl. zoning/codes):
 - Miami
 - Coral Gables
 - South Miami
 - Pinecrest
 - [Unincorporated Miami-Dade]
- Businesses
- Commuters “a ribbon” (around 70,000 per day?)
- Consultant team
- Health department
- Consortium for a Healthier Miami-Dade
- Hospitals near corridor/service area
 - South Miami
 - Jackson Health Trust
- Community orgs/HOAs/developers
 - Grass River
- Other departments?

Organization	Name	Title	Reviewer	Approver
Arquitectonica	Ray Fort	Designer		
Banyan Street Capital	Karin Dunne	Associate	x	
Banyan Street Capital	Rudy Touzet	Founder, Chief Executive Officer		
Building.co	Jennifer Lannon	Business Development		
City of Miami	Collin Worth	Bicycle Ped Coordinator		

City of Miami	David Snow	Planner 11		
City of Miami	Jeovanny Rodriguez	Director, Capital Improvements and Transportation Program		X
City of Miami	Joe Eisenberg	Planner 1		
City of Miami	Juvenal Santana	Interim Director Public Works		
City of Miami	Kevin Kirwin	Director		
City of Miami	Luciana Gonzalez	Assistant Director		
City of Miami	Sandra Harris	Director Transportation		
County ISD, ADA	Heidi Johnson-Wright	ADA Coordinator		X (Need to Check)
County RER, DERM	Wilbur Mayorga			X (Ph 1 Env.)
County RER, Regulatory & Economic Resources	Gianni Lodi	Supervisor, Planning Legislation		
County RER, Regulatory & Economic Resources	Jeff Ransom	Archaeologist		X (CRAS ?)
County RER, Regulatory & Economic Resources	Jerry Bell	Assistant Director		
County RER, Regulatory & Economic Resources	Kathleen Kauffman	Historic Preservation Planner		X (CRAS ?)
County RER, Regulatory & Economic Resources	Mark Woerner	Planning Department		
County RER, Regulatory & Economic Resources	Noel Stillings	Senior Planner. Planning Division		
Florida Department of Transportation District 6	Aiah Yassin	District Local Program Administrator		X
Florida Department of Transportation District 6	Bill Arata	District Surveyor and Mapper		
Florida Department of	Evelin Legcevic	Traffic Operations		

Transportation District 6				
Florida Department of Transportation District 6	Harold Desdunes	Director of Transportation Development		
Florida Department of Transportation District 6	Linda Glass Johnsson	District Program Management Administrator		
Florida Department of Transportation District 6	Manuel Vega	Drainage Engineer 1		
Florida Department of Transportation District 6	Tyler Peter	Planning		
Florida Department of Transportation District 6	Xiomara Nunez	Local Program Coordinator		
Florida Department of Transportation District 6	Alejandro Casals	Right-of-Way Administration		
Florida Department of Transportation District 6	Alfredo Reyna	D 6 Consultant		
Florida Department of Transportation District 6	Barbara Culhane	Environmental Supervisor 11		X(CRAS ?)
Florida Department of Transportation District 6	Barbara Espino-Perez	District Construction Manager and LAP Coordinator		
Florida Department of Transportation District 6	Craig James	District Landscape Architect		
Florida Department of Transportation District 6	Ken Jeffries	Consultant Project Engineer		
Florida Department of Transportation District 6	Lisa Colmenares	Transportation Planning Manager		
FPL	Armando Fernandez	Area Manager, External Affairs		
FPL	Charles Knight	Area Manager, External Affairs		
FPL	David Bates	Program Manager		

FPL	David Weda	Engineering Manager		
FPL	Irene White	Director of Operations Support		
FPL	Alicia Ares	Leader, Engineering, Support Distribution		
FPL	Javier Prado	Engineer II - Power Systems		
Knight Foundation	Matt Haggman	Program Director Miami		
MDX	Javier Rodriguez	Executive Director		
MDX	Juan Toledo	Deputy Executive Director / Director of Engineering		
Miami Dade County Parks, Rec and Open Spaces	Alex Zibold	Master Plan Manager		
Miami Dade County Parks, Rec and Open Spaces	Enrique Gaston	Construction Maintenance 111, PROS Capital Improvements		
Miami Dade County Parks, Rec and Open Spaces	George Navarette	Deputy Director		
Miami Dade County Parks, Rec and Open Spaces	Jack Kardys	Director		X
Miami Dade County Parks, Rec and Open Spaces	Maria Nardi	Chief of Planning and Design Excellence		
Miami Dade County Parks, Rec and Open Spaces	Mark Heinicke	Senior Park Planner		
Miami Dade Transportation & Public Works	Albert Hernandez	Assistant Director		
Miami Dade Transportation & Public Works	Alice Bravo	Director		X
Miami Dade Transportation & Public Works	Barry Smerling	System Safety Supervisor		
Miami Dade Transportation	Carlos Cruz Casas	Chief Transportation		

& Public Works		Manager at City of Miami		
Miami Dade Transportation & Public Works	Carol Wilson	Manager, Right-of-Way Engineering		
Miami Dade Transportation & Public Works	David Hays	Professional Engineer		X
Miami Dade Transportation & Public Works	Froilan Baez	Chief Right of Way, Utilities & Joint Development Division, Engineering, Planning and Development		
Miami Dade Transportation & Public Works	German Arenes	Chief of Construction		
Miami Dade Transportation & Public Works	Irene Hegedus	Assistant Director		
Miami Dade Transportation & Public Works	Isabel Padron	Chief of Design & Engineering		
Miami Dade Transportation & Public Works	Jose Burgos	Engineer		
Miami Dade Transportation & Public Works	Monica Cejas	Planning and Transportation Engineering		
Miami Dade Transportation & Public Works	Robert McClellan	Chief Infrastructure, Engineering and Maintenance		
Miami Dade Transportation & Public Works	Yanek Fernandez	Traffic Engineer III		X
Miami River Commission	Brett Bibeau	Managing Director		
Miami River Commission	Jim Murley	Chairman		
MPO	Aileen Boucle	Executive Director		
MPO	David Henderson	Bicycle Pedestrian Administrator	X	
NPI	Brent Reynolds	President & Managing Partner		

Parc Brickell & Hotel Atton	Henry Pino	President at G.A.P. Realty Services, LLC		
Pinnacle Housing Group	Louis Wolfson	Partner	x	
Publix	Nicole Krauss	Media & Community Relations Manager	x	
SOUTH MIAMI HOSPITAL	Jessi Berrin	Director, Government & Community Relations at Baptist Health South Florida		
Swire Properties	Kieran Bowers	Executive Vice President - January 2017 President		
Swire Properties	Steve Owens	President		