PAD 4930 - Planning for Healthy Communities
University of South Florida – City of Palmetto, FL
Community Sustainability Partnership Program, Spring 2017

Health Impact Assessment of the City of Palmetto, Florida, Linear Park Trail

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Table of Contents

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Executive Summary

This report was prepared to assist the City of Palmetto in evaluation of the constructed and proposed Linear Park Trail (LPT). This report looks at the LPT through the lenses of a Health Impact Assessment (HIA), to identify potential health impacts and determine impacted populations.

Undergraduate students of the USF Health Sciences program conducted the evaluation in Spring of 2017 as part of their coursework for PAD 4930 - Planning for Healthy Communities under the direction of Professor Richard Hartman, AICP.

The evaluation began with a literature review of journals and articles relevant to the various health impacts of trails similar to Palmetto's LPT. Demographic data specific to Palmetto was then collected and analyzed. Each student then conducted a field visit to the LPT to perform a walkability audit, conduct interviews with Palmetto citizens and trail users, evaluate existing conditions, interview trail users, and collect relevant data.

From their research, the students identified seven key health indicators, and applied the HIA process to identify potential impacts from the LPT, with particular attention paid to populations that may be disproportionately impacted. Students selected one of the seven health indicators on which to report.

The information from these reports was synthesized into this final report as a partial HIA based on subject matter within the scope of the course. The report findings were that a comprehensive HIA of the trail be conducted to inform the City of Palmetto about the necessary steps needed to ensure that the LPT maximizes the health outcomes from the LPT for the citizens of Palmetto in the future.

Background

The Linear Park Trail

In December of 2015, the City of Palmetto finalized agreements with the Florida Department of Transportation (FDOT) to allow for the first of five phases, for the construction of a multi-modal Linear Park Trail (LPT) or walking and biking throughout the entire city (Young, 2015). The first phase of construction began in February of 2015 while the remaining four phases are set to receive funding in 2021. According to Young, the LPT in conjunction with the PCRA's Community Development Plan, was to connect every park in Palmetto. However, student research visits found that the LPT currently provides only limited-to-moderate connectivity between parks.

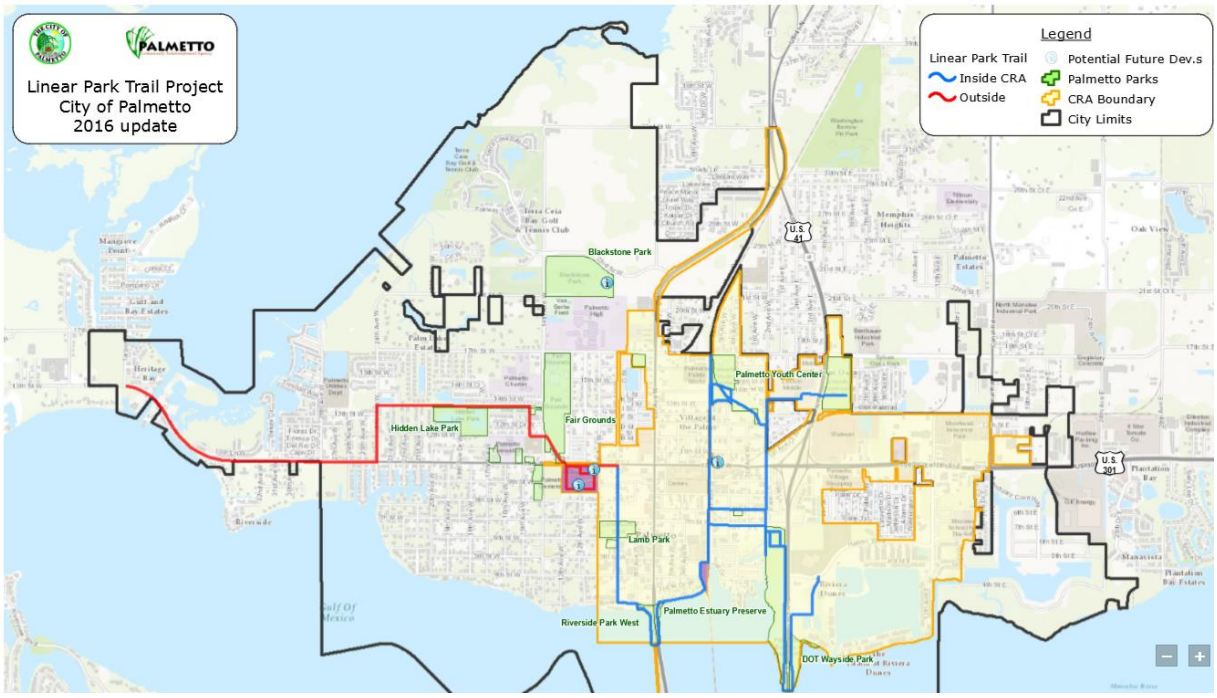

Figure 1: Palmetto Linear Park Trail Project 2016 Update

The City of Palmetto's LPT map depicts the trail's constructed and proposed areas. This allowed for Health Impact Assessment (HIA) report to identify health benefits from the existing trail and to recommend areas for improvement of health impacts for consideration as part of the future development of the LPT. Because future opportunities and phases of construction exist for the PCRA and FDOT to alter and expand the trail, the purpose of this report is to create a Health Impact Assessment that analyzes if the existing trail route and features provide active transportation options allowing for access to a variety of destinations that play important roles in the lives of residents and visitors, as well as provide recreational opportunities in the use of the trail itself that will decrease negative health impacts and/or increase positive health impacts for

the citizens of Palmetto. Students were required as part of the HIA analysis to conduct on-site individual Walkability Assessments of the LPT related to a specific health-related outcome, in addition to demographic statistics and research on the health benefits of greenways and trails, The class goal was to create a series of subject matter reports that would be compiled into a final HIA report and recommendation that a desktop or comprehensive HIA of the trail be conducted to inform the PCRA about the necessary steps needed to ensure that the LPT provides the best health outcomes for the citizens of Palmetto in the future.

What is a Health Impact Assessment?

A Health Impact Assessment is any combination of qualitative or quantitative methods used to measure the potential health consequences of a policy, project, or program that does not have health as its primary objective or a significant factor. It reviews how development impacts on a variety of health outcomes are spread across a community, what populations may be most impacted, and provides recommendations for increasing the benefits and reducing negative impacts, with an emphasis on equity or ensuring that the negative impacts do not inequitably fall on the most vulnerable populations and that the benefits accrue to these populations in equal or greater proportion than the overall population.

An HIA includes the following steps:

- Screening
- Scoping
- Assessment
- Recommendations
- Reporting
- Monitoring and Evaluation

This report addresses the first five steps. Monitoring and evaluation should be implemented and ongoing, in a manner similar to trail maintenance as an ongoing responsibility.

Figure 2: Health Impact Assessment Process

(Source: Charmeck)

Screening

Is an HIA Valuable?

Yes, many of the details of the constructed and proposed LPT offer options to address health impacts. Although partially constructed, other segments are years away from completion. In the meantime, the City of Palmetto is interested in exploring how the trail could be tailored to best benefit the community. An HIA helps to inform these decisions by investigating potential health benefits and detriments resulting from the trail.

Is an HIA Feasible?

Yes, the City of Palmetto and the University of South Florida (USF) in conjunction with the Community Sustainability Partnership Program agreed to conduct an HIA of the Palmetto Linear Park Trail as part of a service learning project for the PAD 4930 Planning for Healthy Communities course. The service learning project is part of the Communities Sustainability Partnership Program (CSPP) for the 2016-17 Fall and Spring semesters.

Scoping

Through coordination with the City of Palmetto and independent research conducted by the class, the following health indicators were chosen to investigate in this HIA.

- Physical Health
- Mental Health
- Access to Transit
- Access to Food
- Access to Schools
- Access to jobs and Economic Development
- Bicycle and Pedestrian Crashes

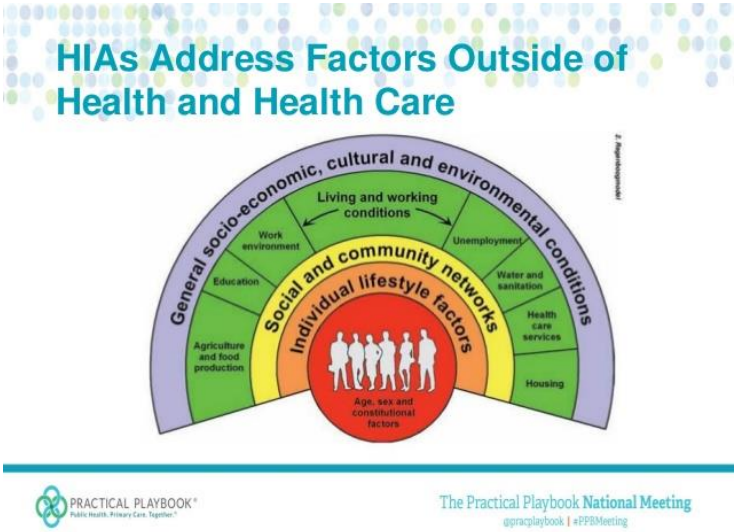

Figure 3: HIA Factors

(Source: Practical Playbook)

Assessment and Recommendations

Physical Health

Physical Health and Trails

One of the greatest community benefits that trails provide, is the promotion of physical activity. Exercise through active transportation provides a variety of health benefits including reductions in obesity and chronic illnesses.

Literature Review

A 2015 community health survey listed obesity and a lack of physical activity as areas of concern in regards to health in Manatee County. It also highlighted the lack of a trail system promoting active transportation as an area of concern (Manatee Health Care Alliance, 2015).

Projects such as urban trails are one of the most effective ways by which policymakers and planners can promote health in their communities.A 2013 survey of Urban Land Institute members, found that respondents ranked active transportation as the best way to link health and the built environment (Shreeve, 2014).

Urban trails encourage physical activity in surrounding areas. Physical activity helps prevent heart disease, helps control cholesterol levels, slows bone loss associated with aging, and helps to reduce the risk of certain types of cancer. In southeastern Missouri, 55% of trail users responded that they exercised more frequently now that they had access to a trail (Rails-to-Trails, n.d.). A study in Indiana found similar results, with over 70% of users across six different trails responding that they were getting more exercise as a direct result of trail access (Wolter, 2001).

Urban trails are particularly beneficial to the health of those in low income communities. Many of the physical conditions listed above, such as heart disease are over represented in low income and minority communities. Furthermore, studies have shown that recreational and exercise facilities are disproportionately found in more affluent communities, and that those in low-income neighborhoods are less likely to exercise outside due to fear of crime and traffic (Bennett et.all, 2007). Trails such as the LPT in Palmetto encourage exercise in low-income communities by proving a free and safe place to exercise near their neighborhoods.

Beyond encouraging exercise, trails help people to feel healthier. A study found that the percentage of green space in people's neighborhoods has a positive correlation with the perceived general health of residents (Mass et.all, 2006). This is particularly true in lower socioeconomic neighborhoods where access to parks and green space may be limited.

Urban trails are particularly effective at encouraging community health, as they are located close to large concentrations of population. Research shows that residents living within 500 meters of a trail system are more likely to use the facility (Crompton & Walker, 2012).

Health Impact Evaluation

The the Palmetto LPT will improve the health of nearby residents, as has been found in many studies of other similar trails.. The trail traverses several neighborhoods and other residential areas, making it accessible to many Palmetto residents.

The existing segments of the trail also include exercise stations along the route, encouraging trail users to engage in various forms additional of exercise. These reinforce the health benefits of the trail to users, while enhancing the trail's attractiveness and as a neighborhoods amenity, similar to a pool or community center.

Recommendations

Consider Crime Prevention Through Environmental Design (CPTED) Principles to Encourage Trail Use in Low-Income Neighborhoods

As mentioned above, people in low income neighborhoods suffer from the highest rates of chronic illnesses that result from a lack of physical activity, are more likely to live sedentary lifestyles, and often have less access to exercise facilities than their wealthier counterparts. Transportation options, such as car ownership, access to schools, retail and commercial needs, and to transit are often less available in poorer neighborhoods. Work hours and commute times often require commuting in the dark or periods of low light. It is therefore essential that Palmetto's low income neighborhoods can reasonably access the LPT.

Research shows that fear of crime serves as a large deterrent to outdoor exercise for people living in low-income neighborhoods, particularly at night (Cozens, 2005). To help mitigate these concerns, the City should consider expanding the principles of CPTED to the existing trail and in future expansions in or near low income neighborhoods. Principles include adequate pedestrian-scale lighting, proper upkeep and height of landscaping, proper access control, and other techniques.

Figure 4: Examples of CPTED Design Principles

(Source: Safe Cities)

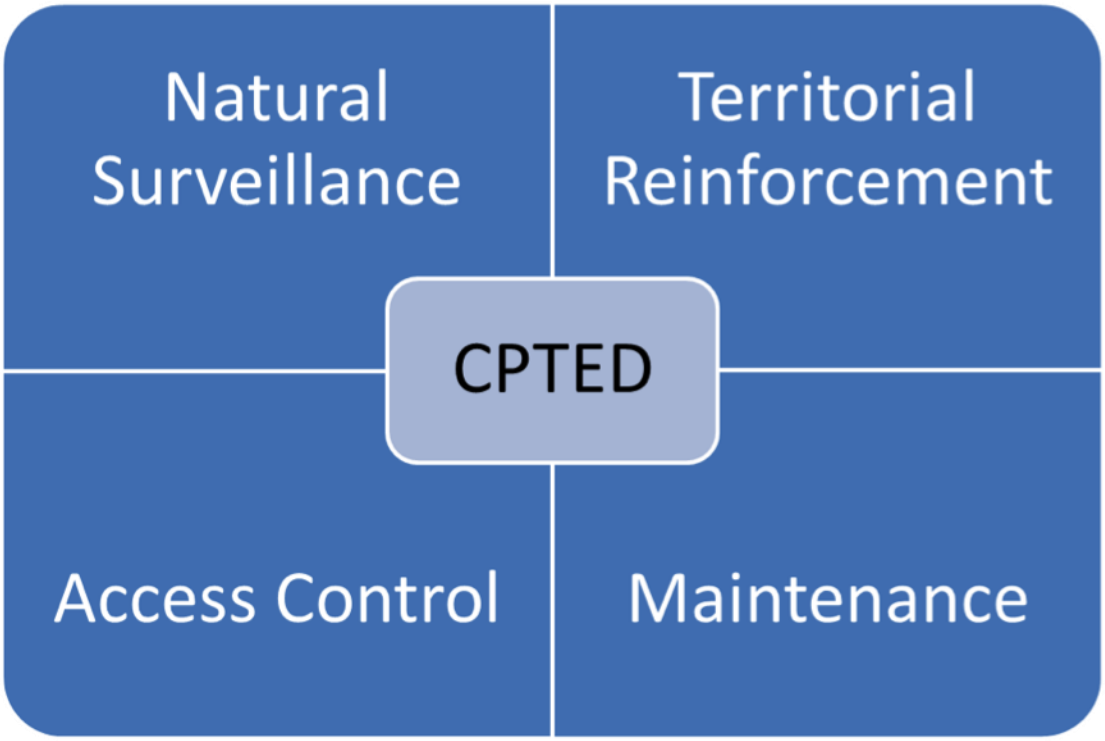

Figure 5: Tenants of CPTED

(Source: Safe Cities)

Leverage nearby water resources to encourage physical activity off of the trail

A significant segment of the Palmetto LPT runs alongside or near the scenic Manatee River and Terra Ceia Bay. These resources can be leveraged to further promote physical activity and attract more people to the trail and the city. Several sections of the trail are near water locations that could provide passive water access points, with branding and marketing opportunities, and provide and provide canoe or kayak rentals. These enhancements would provide another fun way for people to spend time outdoors exercising and would bring more attention to the trail. The LPT should also include branding and wayfinding signage directing trail users to popular attractions and nearby facilities, such as those at Regatta Pointe Marina and Emerson Point Park, and the parks linked by the trail. Visitor and attraction centers should provide maps, signage, and branding highlighting access to the trail as another city amenity. These attributes and materials would support not only increased use, but also tourism, economic development, and community pride.

Mental Health

Trails and Mental Health

Just as trails help to promote physical health, they also promote general mental health and community wellness. Mental health benefits devrived from trails include greater feelings of wellness from not only feeling healthier from physical activity, but also from being connected with nature, increased social interactions leading to less depression from social isolation, less anxiety from feeling insecure throgh idenfication with other members of the community. In particular, trails provide a wealth of mental health benefits to senior communities.

Literature Review

According to a 2015 community health survey, adults in Manatee County ranked their own mental health more positively than the statewide average; however, rates of suicide and depressive disorders were higher than state averages. These numbers were even higher among lower-income respondents (Manatee Health Care Alliance, 2015).

Studies showed that people with higher exposure to green spaces and nature have lower levels of stress than those who spend their time exclusively in urban environments (Roe et al., 2013). By connecting many of the cities parks, the LPT will enhance the accessibility of exiting green space, and provide an opportunity to create more.

Trails and green spaces also improve mental health by improving social cohesion and decreasing social isolation. Research indicated such shared pubic space can increase social interaction, which can help to reduce stress and improve mental health. These actions also strengthen community bonding and pride.

Senior citizens receive additional mental health benefits from trails and green ways, according to research of other trails, and should receive the same benefits from the LPT. One recent study exemplified one of the many mental health benefits seniors receive from using the LPT, which research shows will occur if they have safe, reasonable access to the trail.. The study compared 62 exercisers aged 55-91, to an equal number of sedentary seniors in the same age bracket. The study sought to determine whether regular physical activity benefited cognitive skills at an older age. The researchers assessed each participant's memory, reaction time, and reasoning, over an hour-long testing period. Exercisers scored significantly higher on all three series of tests than the sedentary seniors group. Louis Clarkson Smith, Ph.D., who conducted the research with Alan A. Hartley, Ph.D., stated that this research proves the fact that "…exercise is important in preserving our mental abilities as we grow older." (1989)

Aside from cognitive health benefits, seniors gain many other mental health benefits from multi-modal trails that allow for both walking and bicycling. Through the use of the LPT seniors in Palmetto will likely gain the health benefits of socialization, lowered risk of depression, anxiety, and isolation, as well as an improved sense of self worth/purpose, similar to the outcomes found in research on other trails (Smith, 2017). These many significant health outcomes would improve the quality of life for hundreds of seniors, perhaps thousands, living in Palmetto.

Depression affects more than 6.5 million of the 35 million Americans aged 65 or older in the U.S. However by providing seniors with a walking and bicycling trail that leads to more social activity, they will be more likely to partake in physical activity and continuously reap the LPT's associated benefits, which includes a lowered risk of depression (Smith, 2017). The LPT is also connected with over 30 churches in the City of Palmetto. Churches provide important resources for community activities throughout the week, as well as places of worship. Places of worship and congregation play an important role in the lives of many seniors, who have been found to be highly active in spiritual activities, which are beneficial to their mental health (Smith, 2017). Therefore this trail not only provides access to specific destinations, but also access and opportunities for a healthier lifestyles that improve mental health.

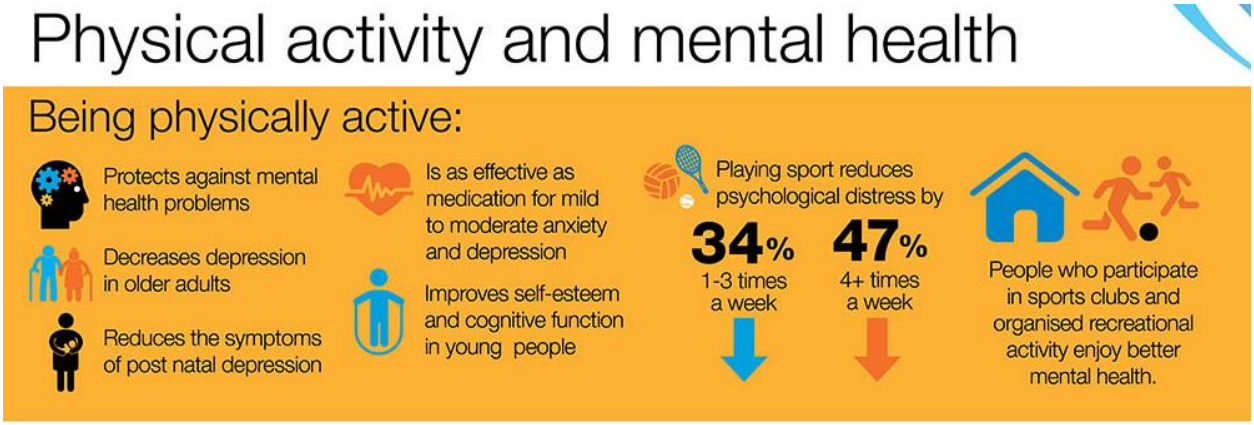

Figure 6: Mental Health Benefits of Physical Activity

(Source: Government of Western Australia)

Health Impact Evaluation

Given the reasons discussed above, including the benefits specific to Palmetto's large elder population (22% of total population is, or older) it is likely that the LPT will bring about mental health benefits for Palmetto's population. It is important though, that the populations most at risk for mental health issues, those from lower-income neighborhoods and the elderly, are given special consideration during the design and location of the trail as to improve their health outcomes.

Recommendations

Promote green space and landscaping along the trail

Many of the mental health benefits discussed above are derived from people's interactions with green spaces and nature. The LPT connects of Palmetto's green spaces and parks, increasing access to these amenities as well as providing green space on which to enjoy the journey. The city should consider incorporating additional green space concepts along the trail, ensuring plenty of landscaping and vegetation to help trail users feel more in touch with nature.

Community gardens also serve as a form of attractive landscaping and the right-of-way and other easements should be considered for their incorporation.

Figure 7: Example of Landscaping Along Multi-Use Trail

(Source: Underline)

Consider access for elderly and persons with disabilities when designing park amenities and features

As discussed above, the elderly are a key demographic in regards to the LPT's potential to improve the mental health of Palmetto's residents. With regards to this, the City should pay close attention to design of the trail's amenities and features to ensure that the trail is accessible to seniors.

This can be done by ensuring that all of the trail is compliant with the Americans with Disabilities Act (ADA) , and provide adequate lighting, water, shade, frequent benches providing seniors and people with disabilities resting spots, and exercise station activities that allow for senior and those with disabilities participation.

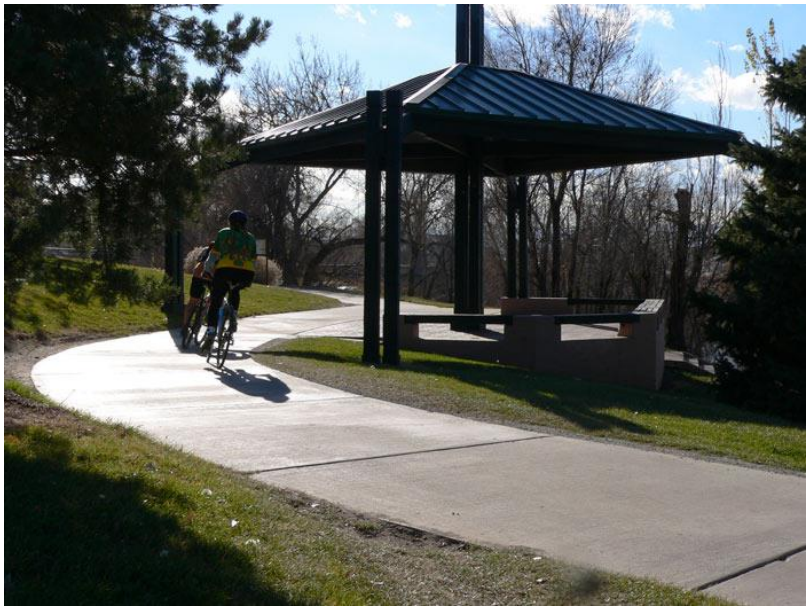

Figure 8: Example of Shade and Rest Area

(Source: American Trails)

Access to Transit

Trails and Transit

The relationship between walking, biking, and transit use are closely connected. Walking and biking serve as first-mile, last-mile connectors for transit users. In a ridership survey, MCAT found that 82.4% of riders surveyed accessed transit by walking, and 5.6% by bicycling. The same survey found that 20% of respondents would be more likely to use MCAT more if their walk was shorter, and 11% responded they would use transit if their walk was safer (MCAT, 2013). By aligning future trail expansion with the needs of transit riders, bus stops, and the MCAT transit hub, the trail would help to create safer and more direct walking routes. In turn, promoting transit ridership not only expands the health benefits of transit, but also decreases the negative health impacts from air and water pollution resulting from vehicle use.

Increased transit use would also to promote trail trip generation A study conducted on the Shenzhen greenway network showed that when combined with public transportation, physical activity increased along greenways and trails (Liu, Siu, Gong, Gao, & Lu, 2016).

Literature Review

Public transit plays a major role in economic opportunities and quality of life (Murray, et al., 1998). Without it, there can be negative effects for densely populated regions of cities (Murray, Davis, et al., 1998). Public transportation also provides an important service to populations vulnerable to and disadvantaged by inequality (Litman, 2017). With a median household income of $37,976, a higher percentage of people live in poverty in Palmetto than the average resident in

Florida (Profile of General Population and Housing Characteristics: City of Palmetto, Florida, 2010).

Public transit also provides other health benefits. A major study of the bus transit system in Bogota, Colombia, found that the bus rapid transit system dramatically reduced air pollution and fatalities from traffic accidents (Dannenberg, et al., 2011). Public transit tends to lower the number of vehicles on the road, which reduces the amount of air pollution (Litman, 2017). Without access to public transit, 56% of transit users would drive a car, increasing air pollution in the community (19). The health implications would only risk an increase in allergies, birth outcomes, cancer, asthma, and cardiorespiratory mortality (Dannenberg, et al., 2011). Furthermore, studies showed that the majority of transit users access their stops by non-motorized means. According to Litman, "[Only] 6.2% of bus riders and 27% of rail riders drive to their transit stop" (Litman, 2017).

Other beneficial health outcomes linked to transit use include increased fitness and improved health from walking, cycling back-and-forth between stops and destinations, and safer traffic conditions on the road (Litman, 2017). Maintaining and increasing public transit also leads to indirect advantages. Security increases, which imply less criminal activity, reduction in parking areas allows for preservation on more green space and habitats, the pressure for highway and road expansion decreases, it promotes equitable work opportunities and services to vulnerable populations who may otherwise not work as often or not be able to accept certain jobs and public transit allows many students to commute to school or college without the use of personal vehicles (Litman, 2017). All these factors impact the health of riders and relate to their socioeconomic status. Socio-economic status is shown to be related to long-term health outcomes (Adler, 1999).

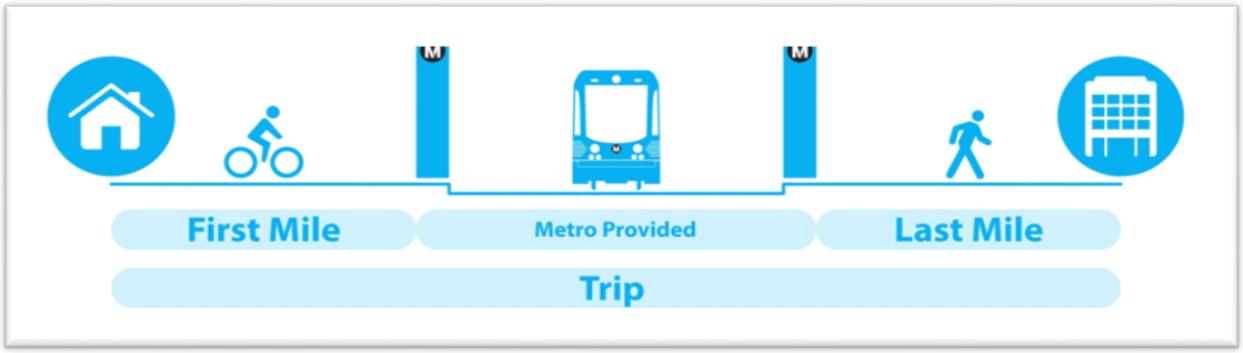

Figure 9: First Mile Last Mile Transit Connection

(Source: Transportist)

Heath Impact Evaluation

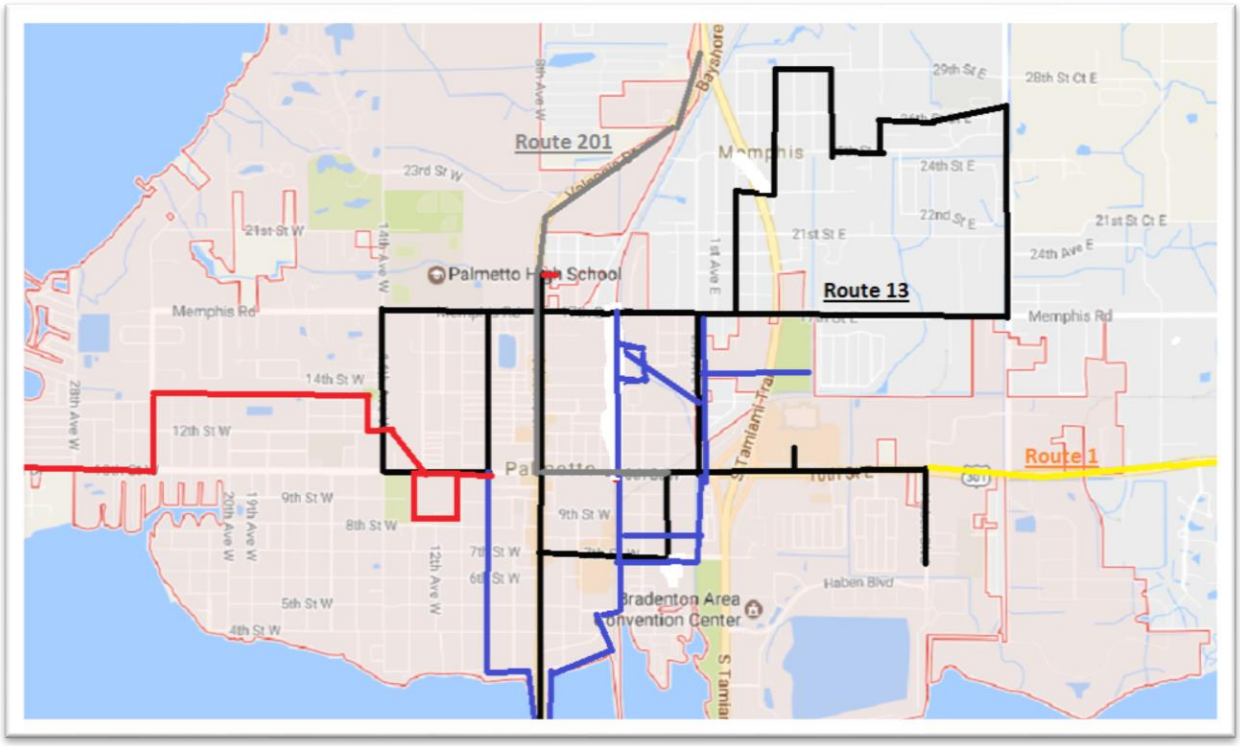

Figure 10: MCAT Route Map Relative to LPT

(Source: MCAT)

As demonstrated by the map above, there is strong synchronicity between the trail and public transportation routes, including Route 1, Route 13, and Route 201. This connectivity will benefit community access to the trail (MCAT Schedules and Maps, 2015). Route 13 appears to be the most significantly benefited route by the trail because of its nearness to the trail and its connection to major commercial and recreational areas (MACAT Schedules and Maps, 2015).

By making it easier and safer to walk or bike to and from transit locations, the trail will promote transit use throughout the City, improve air quality and promote physical activity through increase active transportation to and from stops and destinations.

Recommendations

Increase connectivity to Route 201 Along 8th Avenue

Although the current proposed trail route provides connectivity to many transit routes, it circumvents most of 8th Avenue, the city's primary commercial corridor. The 8th Avenue corridor was identified by the Manatee-Sarasota MPO as a priority transit corridor. Although right-of-way restraints make extending the trail along 8th Avenue difficult, multi-modal improvements should be made along routes that connect the trail to 8th Avenue, such as 4th Street,7th Street, and 10th Street. Potential improvements include widening and installation of sidewalks, reduction of vehicle lane widths to facilitate bicycle facilities, traffic calming measures, and increased lighting. Roundabouts along 8th Avenue at the north end and congested intersections would also promote walking and bicycling safety and decrease vehicle speeds, especially near the essential transit node of the MCAT transit hub.

Leverage Trail/Transit Synergy By Cross-Promotion

As discussed above, transit use can encourage trail use and trail use can likewise encourage transit use. In order to maximize this synergy, the city should look for ways to cross-promote trail and transit use.

A proven method to accomplish this goal would be to partner with MCAT to implement a wayfinding program that would place signs at transit stops directing transit users to nearby trails and providing information about how the trail connects to various routes and destinations. Similar signage placed along the trail would direct trail users to nearby transit stops and routes.

Trail information could also be displayed aboard the buses to educate transit riders and promote community awareness of the trail. The trail should be considered as part of the transportation network for the city and county, as well as be included in long-range transportation plans and elements, open space and recreation elements, and bicycle and pedestrian master plans.

Figure 11: Wayfinding Linking Trails to Transit

(Source: Design Shack)

Access to Food and Nutritious Food

Trails and Food Access

Poor access to food and to fresh, nutritious food plagues many low income neighborhoods around the country. Studies found that low-income neighborhoods, predominantly African-American or Latino neighborhoods have fewer supermarkets, but more convenience stores than more affluent neighborhoods, suggesting a higher daily dependence on empty, non-nutritional calories (Treuhaft & Karpyn, 2010). These neighborhoods not only lack nutritious food vendors, but also often lack the appropriate infrastructure to allow low-income families without automobiles to safely walk or bike to food sources, while increasing reliance on transit to obtain daily necessities. Studies showed that sidewalks are present in 49% of low-income neighborhoods, compared to 89% in high income neighborhoods (Safe Routes to School National Partnership, 2016). Urban trails similar to the one in Palmetto provide safe routes for people in low income neighborhoods to access food and nutritious food stores, while also providing opportunities for new food sources or retail outlets.

Literature Review

Food security refers to steadfast access to an sufficient sum of nutrients for an active, healthy life for all household members. According to Feed Florida, a 2014 report revealed that 2,585,200 individuals receives food assistance each year through the Florida Food Association of Food Banks. This means each week 484,000 individuals in Florida receive assistance through the Florida Association of Food Banks network.

This issue of food insecurity is primarily concentrated in low income neighborhoods, where a lack of access to healthy and affordable food can lead to an environment that is detrimental to health, and that can promote obesity (Treuhaft & Karpyn, 2010). Unhealthy outcomes in such neighborhoods are hunger and reliance on empty calories to meet daily needs, such as potato chips and sodas. Figure 12 shows how poverty rates in Palmetto are considerably higher than statewide averages, suggesting that low-income residents in Palmetto may be predisposed to issues of food access and food insecurity.

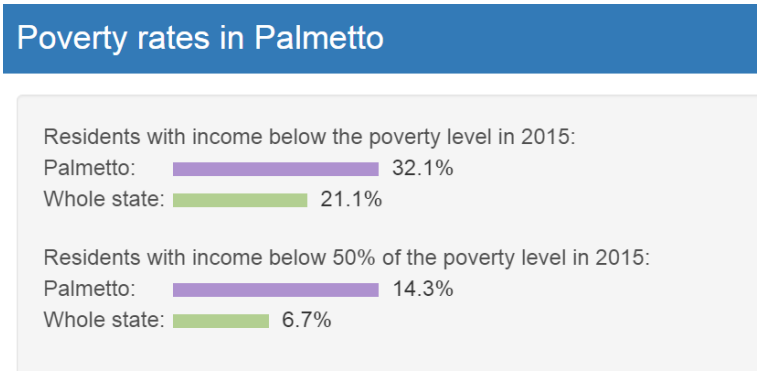

Figure 12: Poverty Rates in Palmetto

(Source: City Data)

Data from USDA supports the above supposition. Only 24.9% of residents in Manatee County live within a half mile of a healthy food source, and almost 30% of Manatee County residents have low access to healthy food. Furthermore, 61.9% of the adult population in Manatee County is overweight or obese (Florida Health CHARTS, n.d.). Figure 13 shows that much of Palmetto's east-side consists of neighborhoods that are considered to have low access to food.

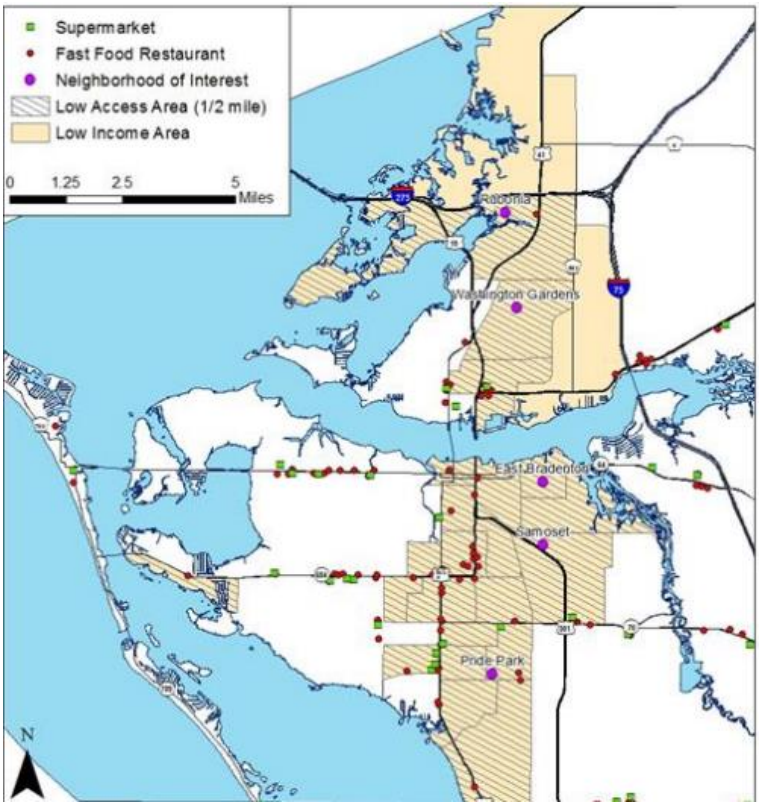

Figure 13: Manatee County Food Resources and Low Access Neighborhoods

(Source: USDA)

Health Impact Evaluation

The proposed trail alignment provides good accessibility to Palmetto's available healthy food resources. The trail runs 1,300 feet from the Publix Supermarket on 8th Street, 250 feet from the Winn-Dixie Supermarket on 7th St, and 600 feet from the Tony's Produce of Palmetto produce store.

The proposed alignment of the trail traverses neighborhoods considered to have poor access to food, and would provide a safe means of walking or biking to nearby food resources. The alignment offers good connectivity to the neighborhoods east of 8th Avenue and south of 17th Avenue, which are tabled as having low food access in the USDA map in Figure 13. The trail is not however, accessible to residents further north of 17th Avenue. Although these neighborhoods fall outside of city limits, Palmetto is their primary and only reasonable source for access to food and nutritious food, yet are the furthest away from tabled food sources.

Recommendations

Consider feasibility of extending trail further north past 17th St W

The current trail alignment shows the trail ending south of 17th Street West, just west of 5th Avenue West. Although this coincides with city boundaries, it also limits accessibility for neighborhoods north of 17th Street, such as Washington Gardens that feature some of the highest concentrations of low food access. The city should coordinate with the County to extend the trail north to enhance access for these low food access neighborhoods. The trail could potentially follow the rail line right-of-way or travel along side of the small stream that runs north behind several low-income residential neighborhoods.

Explore opportunities to incorporate community gardening

Although the trail helps increase access to food sources for some neighborhoods, it does not solve the underlying issue of supply. Vendors selling healthy food in many areas of Palmetto are few and far between, even though large agricultural areas lie in eastern Manatee County and many workers live within Palmetto city limits and nearby unincorporated areas. To address this issue, the city should allow and promote community gardening along and nearby the trail, especially in low income neighborhoods. Community gardens strengthen community identity and social cohesion, as well as providing valuable educational possibilities for children.

A countywide survey of those in low food access neighborhoods found that over half of respondents were interested in growing their own food. Nearly a third of respondents indicated their interest in growing food in a community garden (Jourdan, Laird, & Mills, 2016).

Similar “edible trail” projects have been completed around the country in an effort to combat food insecurity. They have been successful in a variety of locations and climates including in Missouri City, Texas and in Palmer, Alaska (Jones, 2016). Gardens could also be set up in the open space of many of the parks connected by the trail around the city, providing non-vehicular active access enhancing the health outcomes of the community gardens’ nutritious food.

By promoting the growth of healthy food along the LPT, the city would be increasing both increasing the supply of, and improving access to healthy food around Palmetto.

Figure 14: Edible Abor Trail in Missouri City, Texas

(Source: Missouri City)

Access to Schools

Trails and Access to Schools

Over the last several decades, the percentage of children walking or biking to school declined steadily (McDonald & Aalborg, 2009). Statewide, only one in six children walks to school each day (Florida Traffic and Bicycle Safety Education Program, 2011). Lack of active access to schools results in many health ramifications for children, such as increased childhood obesity, and increased traffic congestion from commuting to and from school by automobile, which also results in increased impervious surface for parking lots and other areas required to serve automobile arrivals. Parents do not allow their children to walk to school for a variety of reasons, but many students live in neighborhoods without the necessary pedestrian or bicycle facilities required to make walking and biking to school safe or comfortable for students (McDonald & Aalborg, 2009). These issues are magnified in low-income areas, where adequate pedestrian facilities are less likely to exist or be maintained, and where parents are less likely to have access to automobiles. Trails provide facilities for students to walk and bike in safe and controlled environments, separated from risk exposure to traffic conflicts.

Literature Review

Walking and biking to school provides several physical health benefits for school aged children. Although it is recommended that children receive one hour of exercise per day, studies show that the majority of children do not meet this target (Kohl & Cook, 2013). Recent cuts to recess and physical education programs have made it even more difficult for children to get exercise. Walking or biking to school can provide routine physical activity for school aged children. Physical activity in youth can help to regulate wait and blood pressure, while ensuring proper bone, muscle, and joint health and maintenance. Physical activity also provides a reduction in

risk for juvenile diabetes, a growing concern as rates of juvenile diabetes have grown in recent decades (National Center for Safe Routes to School, n.d.).

Beyond physical health, walking and biking to school provides cognitive benefits for school aged children. Studies found that children who walk or bike to school have a higher capacity to concentrate than peers who are driven to school, and these cognitive benefits last throughout the school day (Goodyear, 2013). A survey of teachers in the United Kingdom reported that teachers overwhelmingly rated children who walked or biked to school as being more prepared to learn than other children. Studies also found that children who walked to school had significantly better comprehension of the geography of the places they lived compared to children who were driven to school. Walking or biking to school also helps improve social development. A study found that children who walk or bike to school have more opportunities to interact with other children and people in their neighborhood (Goodyear, 2013) .

Palmetto is home to five elementary schools, two middle schools, one high school, and three charter schools. Figure 15 shows the locations of these schools in Palmetto.

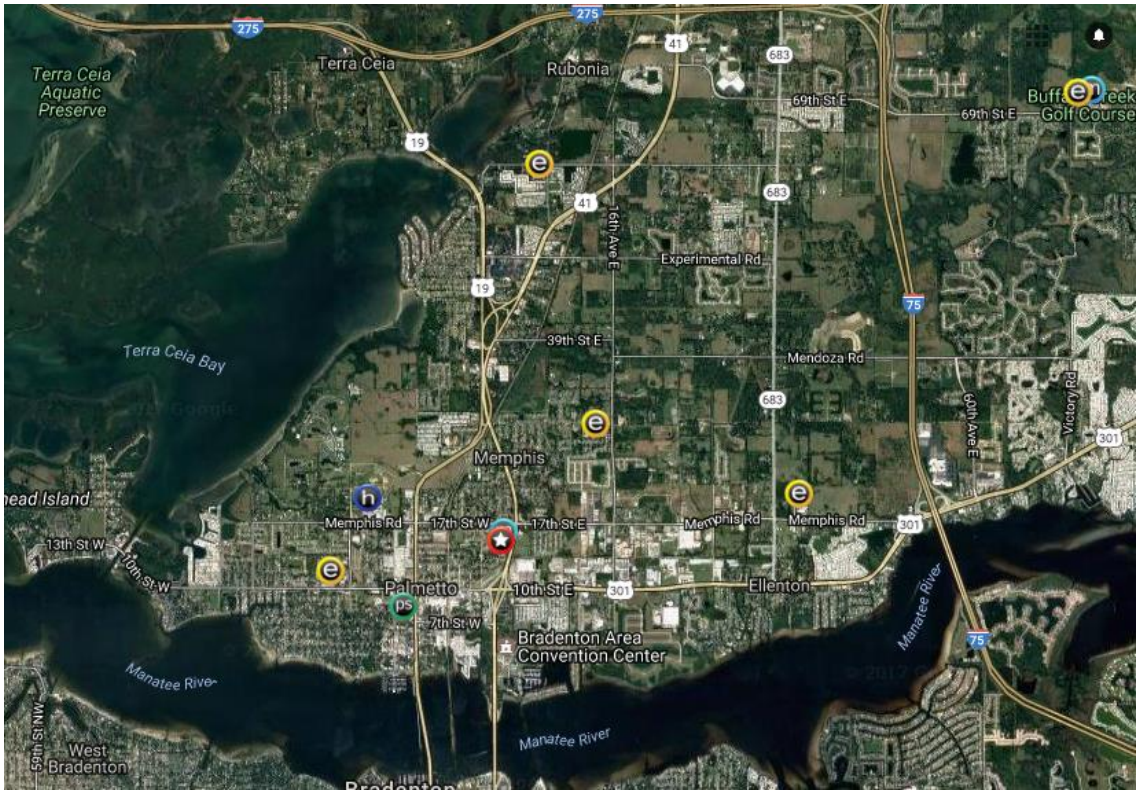

Figure 15: Schools and School Related Facilities In Palmetto

Health Impact Evaluation

Given the proximity of the LPT to nearby neighborhood schools, the LPT will likely provide health benefits to Palmetto's children and their families, and indirectly to the city as a whole. The

LPT provides a safe place for students to walk or bike to school, bringing about both physical and mental health benefits.

Recommendations

Invest in multi-modal improvements on routes connecting schools to LPT

Although the LPT may provide a safe place for students to walk or bike for most of their trip, students still need to leave the trail to reach their schools. Student field reviews observed inconsistent or non-existing pedestrian and bicycle facilities on the streets surrounding schools and near the LPT. To enhance safety and to further encourage parents to allow their children to walk or bike to school, the city should invest in multi-modal improvements along routes that connect schools to the LPT. These improvements include sidewalk installation and widening, trail installation, crosswalks, and traffic calming. To help finance these improvements, the city could apply for Federal Safe Routes to School funding, which provides infrastructure funds to improve walking and biking facilities near schools.

Create and Support Programs that Promote Walking and Biking to School

Even with appropriate infrastructure in place, many parents may still have reservations about allowing their children to walk or bike to school. The city should partner with the school board to create and promote programs that encourage walking and biking to school and provide resources to interested parents. Many schools around the country have been successful in establishing weekly or monthly walk to school days that help to increase awareness. Programs such as Walking School Busses help to increase community interest and build partnerships among parents. Safe Routes to School also provides funding and resources for education and outreach to encourage walking and biking to school.

Economic Development and Job Access

Economic Development, Job Access, and Trails

Trails have been shown to create jobs and promote economic growth in areas, when properly planned and marketed. Economic growth and job creation in turn can create both direct and indirect positive health impacts for communities, including increased job and housing security.

Literature Review

Mounting research shows that trails across the country are helping to spur urban development and boost tourism, enhancing local economies and creating jobs. A survey of 38 businesses along the Cap Cod Rail Trail in Massachusetts found that 24% of business owners cited the trail as a reason they opened or acquired their business. Of the businesses surveyed, 60% had expanded, and 50% of those businesses considered the trail as a prominent factor in their decision to expand (Rails-to-Trails Conservancy, 2007).

Trails can also help to improve property and community values. Several studies have observed increases in residential property values as a result of trail construction. Homebuyers consistently

rate access to trails as one of their most desirable traits that they would like to see in a new community (Rails-to-Trails Conservancy, 2007).

In turn, economic development can lead to public health improvements. Studies have shown that mortality rates are positively correlated with income, and that low-income individuals are at a higher risk for metal illness, chronic stress, and other medical conditions. Research also indicates that increased employment has positive health benefits, as job access increases the income, benefits, and security needed for good physical and mental health (Woolf, et al., 2015).

The most recent figures put Palmetto's unemployment percentage at 4.5%, below the state and national levels. Jobs in Palmetto are focused along several commercial corridors including 8th Ave, 10th St, and Riverside Drive. Much of Palmetto's economy is related to the service industry, with the most common jobs titles being sales, administrative, cleaning, and food and serving jobs, according to the 2010 US Census . Figure 15 shows a breakdown of income by neighborhood in Palmetto (Census Bureau, n.d.).

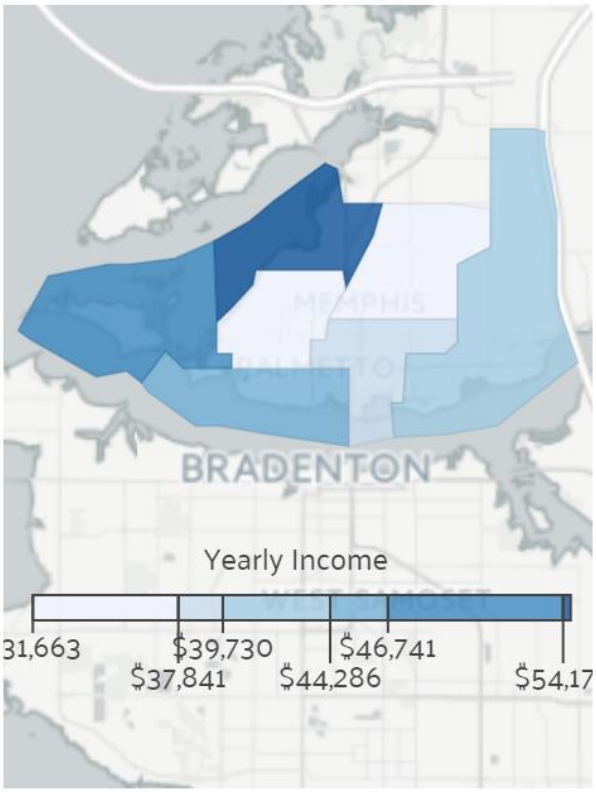

Figure 16: Palmetto Neighborhoods by Average Yearly Income

(Source: Census Bureau)

Health Impact Evaluation

The LPT has the potential to increase the economic vitality of the community and help bring about the resulting beneficial health effects. However, to maximize these health impacts, the city must continue to expand, market and promote the trail.

Recommendations

Brand and Market the LPT both on and off the trail

In order to make the trail a true tourist destination, the city needs to increase efforts to market and brand the trail. A quick Google search of "Palmetto trail," uncovered few results and very little relevant information. Out of town visitors looking for reasons to visit Palmetto may be completely unaware of its existence, or if aware, unable to find enough information on which to justify a visit. This issue is not exclusive to visitors. During field site reviews, several trail users were interviewed and none were aware that they were walking on part of a larger trail project. The city should include information about the trail on its website and along the trail to help educate both visitors and the public.

There is also very little information on the trail for trail users to determine their location and where they are headed. Several students experienced difficulty locating and identifying the trail during their walkability assessment of the trail. Comments included an inability to determine location from the downloadable trail map, lack of identification and directional signage, and change in trail context leaving them unsure of whether they were still on the trail, a sidewalk, or at times in the street.

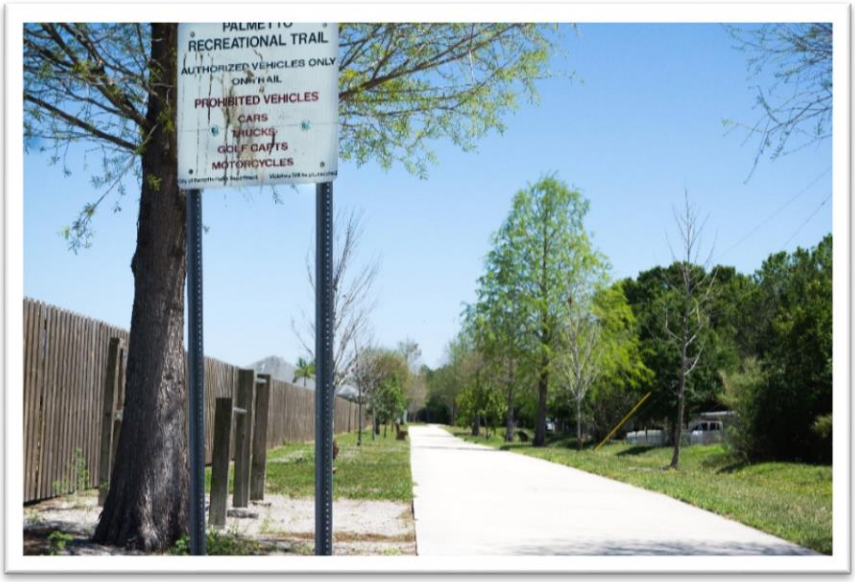

Figure 17: Current trail signage is unclear, unattractive, or not provided

The city should create a unique brand for the trail and put the logo on signs along the trail to help spread awareness. An example of this practice can be found across the river, where Bradenton has successfully marketed the Riverwalk and provided signage on the trail (shown in Figure 18), and near the trail to guide potential users.

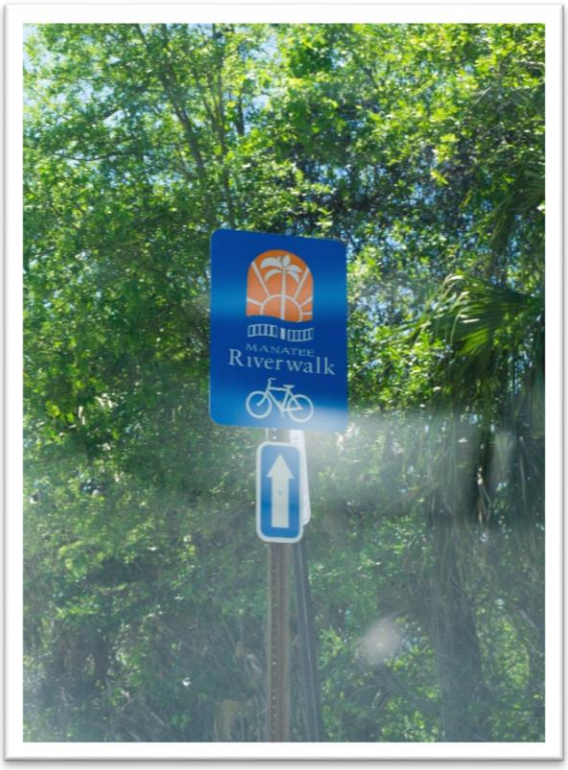

Figure 18: Wayfinding for Bradenton Riverwalk

Increase Wayfinding Along the LPT

In order to increase trail-use and promote synergy between the trail and nearby attractions, the city should install wayfinding signs along the trail.

Wayfinding signs let trail users know their location on the trail and in the city, nearby destinations, and directions and instructions to and from the trail and other destinations (e.g. Riverfront, Emerson Point). These enhancements are especially important for tourists and visitors not familiar with the area or the extent of attractions available in Palmetto. Wayfinding signs should include information about both the time and distance to arrive at attractions and destinations as shown in Figure 19.

Figure 19: Wayfinding Sign Displaying Time and Distance

(Source: City of Gresham)

Figure 20: Example of Wayfinding System

(Source: Studio L'Image)

Bicycle and Pedestrian Crashes

Trails and Bicycle and Pedestrian Crashes

Bicycle and pedestrian crashes, injuries, and fatalities are an ongoing nationwide major health epidemic, especially in Florida and the Tampa Bay area,. The Federal Highway Administration (FHWA) lists bicycle and pedestrian related crashes as one of its three primary focus areas for reducing fatal and severe injury crashes (FHWA, n.d.). The State of Florida consistently ranks as the worst, or one of the worst states for bicycle and pedestrian safety. The Florida Department of Transportation (FDOT) lists Manatee County as one of the state's Top 20 priority counties for reducing bicycle and pedestrian crashes (FDOT, n.d.). Many of these crashes result from non-existent or unsafe transportation facilities that force bicyclists and pedestrians into conflict with motorized traffic. Off road or multi-modal trails provide safe facilities that are separated from from motorized traffic. Such trails provide bicycling and walking alternative routes from busy and dangerous highways, where bicycle and pedestrian crashes overwhelmingly occur.

Literature Review

The 2016 "Dangerous by Design" report by Smart Growth America highlights features that make roads unsafe for bicyclists and pedestrians, and ranks the 120 most populous metropolitan areas in the United States based on a pedestrian danger index that compares crashes, exposure data, and other factors. The report ranked the North Port-Manatee-Sarasota Metro Area (in which Palmetto is included), as the **10th most dangerous in the country** for bicyclists and pedestrians. The report also found that people of color, the elderly, and people from low income neighborhoods were the most likely groups to be involved in pedestrian or bicycle related crashes (Smart Growth America, 2017).

FDOT's "Comprehensive Study to Reduce Pedestrian Crashes in Florida" found that during the observed period the majority of pedestrian crashes occurred at night suggesting that lighting and visibility are two significant contributing issues. The study also found that an approximately equal amount of crashes occurred at signalized intersections versus uncontrolled or mid-block locations, and that the highest concentration of crashes occurred on roadways that were classified as urban principal arterials. Such roads are most often high-speed, multi-lane facilities with few opportunities for pedestrians to safely cross (Alluri,2013).

Speed also plays a significant role. The study found that a large majority of crashes occurred when vehicles were traveling in excess of 40 miles per hour. This is significant because a pedestrian's chance of survival from a crash involving a vehicle sharply drops as vehicle speed increases. A pedestrian hit by a car going 40 miles per hour is estimated to have only a 10% chance of surviving the crash, while a pedestrian hit by a car traveling 20 miles per hour has a 90% chance of survival. (Alluri, 2013).

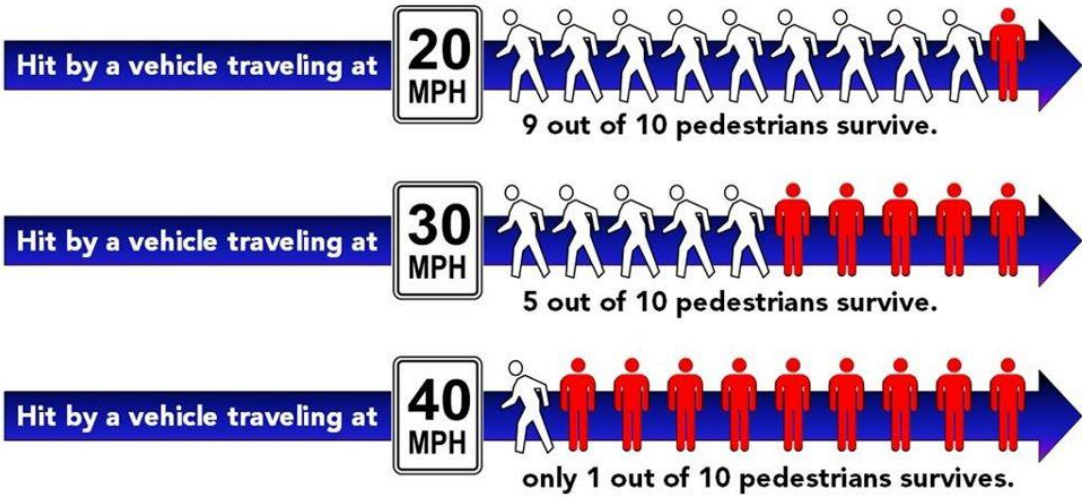

Figure 21: Speed and Pedestrian Crash Severity

(Source: The Urbanist)

Chart 1 provides a breakdown of bicycle and pedestrian related crashes within the City of Palmetto from 2005-2015.

	Total Crashes	Injuries	Fatalities
2006	23	18	0
2007	18	14	0
2008	19	20	0
2009	22	17	2
2010	20	20	0
2011	35	31	1
2012	35	28	2
2013	31	27	4
2014	45	36	3
2015	36	26	3
Total	284	237	15

Chart 1: Pedestrian and Bicycle Crashes in the City of Palmetto 2006-2015

(Source: FIRES Database)

As shown, the total number of pedestrian and bicycle crashes in the City of Palmetto, as well as the number of resulting injuries and fatalities steadily increased since 2006.

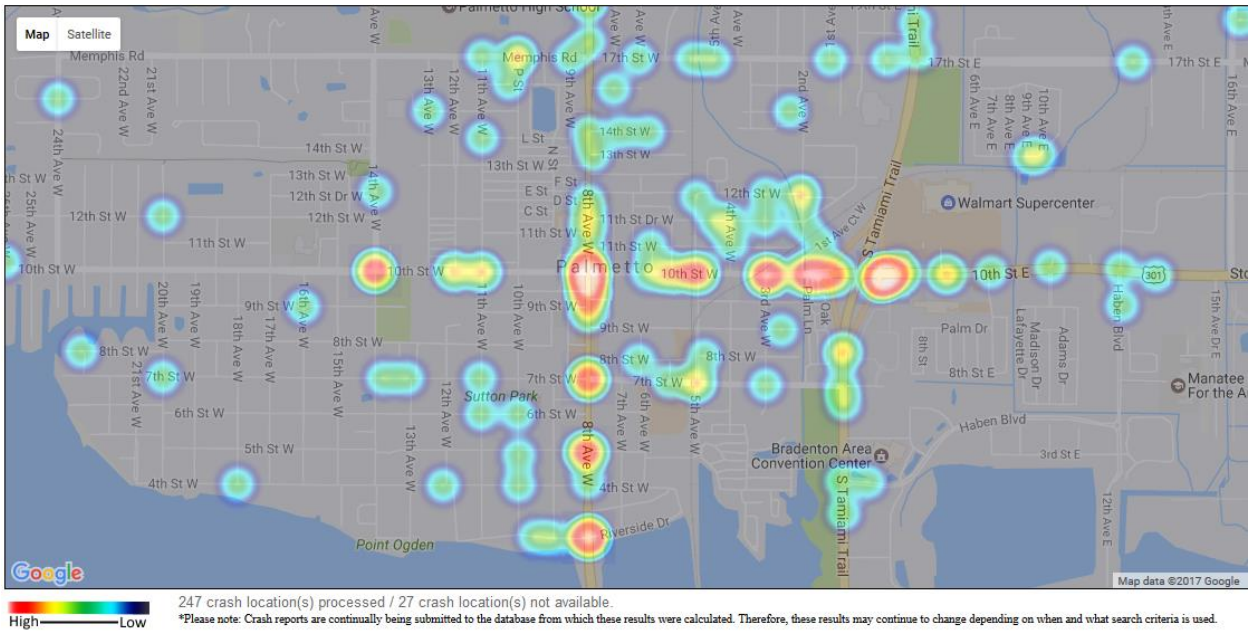

Figure 21: City of Palmetto Pedestrian and Bicycle Crash Heat Map 2006-2015
(Source: FIRES Database)

As seen in the heat map in Figure 21, the majority of pedestrian and bicycle crashes in Palmetto are associated with busy, high speed roads such as 8th Avenue, Tamiami Trail, and 10th Street East.

Health Impact Evaluation

It is unclear whether the LPT as currently designed, will significantly impact the number of bicycle and pedestrian crashes, injuries, and fatalities. As seen in the heat map in Figure 21**,** the majority of crashes in Palmetto have occurred on the corridors of 8th Avenue and 10th Street. The current trail does not run alongside, or provide access to these corridors. Additional options to cross these corridors safely and conveniently would probably entice additional use and users. Part of the route runs parallel to 8th Avenue, but is several blocks away.The majority of bicycle and pedestrian crashes involve utilitarian pedestrians and cyclists, people who walk or bike as their primary means of transportation to access work, stores, transit, schools, healthcare, and other necessary destinations and not solely for recreation or exercise. Utilitarian bicyclists, and especially pedestrians generally take the shortest route possible, so they may not be willing to go out of their way to use the trail as an alternative route in its current configuration.

Recommendations

Prioritize multi-modal improvements on corridors that connect high crash corridors to the trail

In order to encourage pedestrians and cyclists to use the trail, especially utilitarian users, the city should strive to make multi-modal improvements on roads that link with the trail, understanding that typical pedestrians and bicyclists are likely to take the quickest route possible, even if it means departing from the safety of the trail to gain a perceived travel time advantage. The city should also explore the development of parallel routes alongside high crash corridors, to help divert bicyclists and pedestrians from dangerous routes.

Increase crossing opportunities along high crash corridors

One of the most common types of fatal and severe injury pedestrian and bicycle crashes involves a pedestrian or bicyclist crossing the street at a mid-block point, away from a marked crosswalk. Many times, designated crossings are spaced too far apart for most people to reasonably walk or bike away from their most direct route to use the designated crossing and then return to their previous position to continue their journey. Although the trail crosses 8th Avenue and Tamiami Trail, these crossings are located at the foot of each bridge, the southern land boundaries of the city and far from the commercial uses that generate pedestrian use. a pedestrian or bicyclist, especially a utilitarian user for whom walking or biking is a time-consuming necessity, would be unlikely to lengthen their trip distance and time to a safer crossing area at the bridges in order to continue to follow the trail. To increase the safety of trail users, and non-trail pedestrians and bicyclists, the city should work to increase the number of safe marked crosswalks and other countermeasures along high-crash corridors and other high-speed roads.

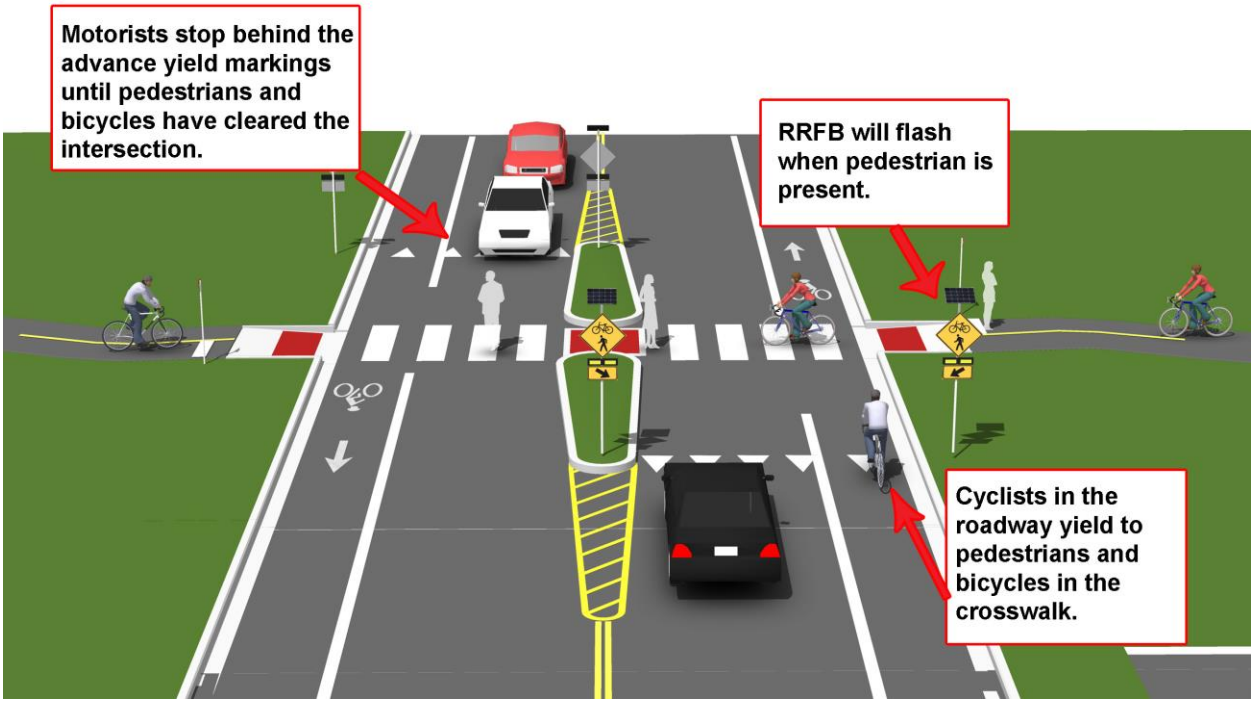

Figure 22: Trail Crossing with Rectangular Rapid Flashing Beacons

(City of Hillard)

Conclusions

This report identifies and evaluates a number of health impacts of the Palmetto Linear Park Trail (LPT) as part of a partial Health Impact Assessment (HIA). The report found that of the seven health indicators assessed, six were likely to be positively impacted by the LPT, and that none of the indicators are likely to be negatively impacted. The report also found that low-income and elderly communities are most likely to be impacted by the trail, and made recommendations to ensure that they are included in and accommodated by future expansions of the trail. The report recommends that a full HIA of the trail be conducted further looking at the indicators assessed above and additional health indicators,, at least at a desktop level, and that a process be developed to ensure that health impacts be considered as part of all transportation project reviews, including a robust community involvement component.

References

Adler, N. E., & Ostrove, J. M. (1999). Socioeconomic Status and Health: What We Know and What We Don't. Annals of the New York Academy of Sciences,896(1), 3-15. doi:10.1111/j.1749-6632.1999.tb08101.x

Alluri, P. (2013). Comprehensive study to reduce pedestrian crashes in Florida (Florida Department of Transportation).

Applying CPTED principles in the design and maintenance of public spaces. (2016, June 01). Retrieved from https://safecities.net.au/applying-cpted-principles-design-maintenance-public-space/

Bennett, G. G., McNeil, L. H., Wolin, K. Y., Duncan, D. T., Puleo, E., & Emmons, K. M. (2007). Safe To Walk? Neighborhood Safety and Physical Activity Among Public Housing Residents. PLoS Medicine,4(10). doi:10.1371/journal.pmed.0040306

Bicycle Map and Wayfinding Signs. (n.d.). Retrieved from https://greshamoregon.gov/Bicycle-Map-and-Wayfinding-Signs/

Census Bureau, (n.d.). Census.gov. Retrieved from https://www.census.gov/

Cousins, C. (2015, February 16). 6 Tips for Designing Signs and Billboards. Retrieved from https://designshack.net/articles/graphics/6-tips-for-designing-signs-and-billboards/

Cozens, P.M., Saville, G., & Hillier, D., (2005),"Crime prevention through environmental design (CPTED): A review and modern bibliography", Property Management, 23(5), 328–356. http://dx.doi.org/10.1108/02637470510631483

Dannenberg, A. L., Frumkin, H., & Jackson, R. (2011). Making healthy places designing and building for health, well-being, and sustainability. Washington, D.C.: Island Press.

Federal Highway Administration, (n.d.). Focused Approach to Safety. Retrieved from https://safety.fhwa.dot.gov/fas/

Fesler, S. (2015, November 30). New York City Implements 'Vision Zero' » The Urbanist. Retrieved from https://www.theurbanist.org/2014/11/11/icymi-new-york-city-implements-vision-zero/

FL Health CHARTS. (n.d.). Retrieved from http://www.floridacharts.com/

Florida Department of Transportation. (n.d.). Alert Today Alive Tomorrow. Retrieved from http://alerttodayflorida.com/

Florida's Safe Routes to School Elementary Education Guide. (2011). Florida Traffic and Bicycle Safety Education Program.

Goodyear, S. (2013, February 08). The Link Between Kids Who Walk or Bike to School and Concentration. Retrieved from https://www.citylab.com/transportation/2013/02/kids-who- walk-or-bike-school-concentrate-better-study-shows/4585/

Health Impact Assessment (HIA). (n.d.). Retrieved from

http://charmeck.org/mecklenburg/county/HealthDepartment/CommunityHealthServices/Pages/Health-Impact-Assessment-(HIA).aspx

Heritage Road Rail Trail Crossing at Cosgray Road. (n.d.). Retrieved from http://hilliardohio.gov/government/departments/public-service/engineering-division/transportation/pedestrian-and-bicycle-projects/heritage-rail-trail-crossing-at-cosgray-road

Jones, M. (2016, August 11). The Edible Rail Trail: Palmer, Alaska's Homegrown Solution for Walkable Food Access. Retrieved from http://www.saferoutespartnership.org/blog/edible-rail-trail-palmer-alaska%E2%80%99s-homegrown-solution-walkable-food-access

Jourdan, M., Laird, E., & Mills, A. (2016). A Regional Approach to Community Engagement and Healthy Food Access in Underserved Communities (Florida Department of Health in Manatee County).

King, D. (2016, October 05). What Do We Know About the First Mile Last Mile Problem for Transit? Retrieved from https://transportist.org/2016/10/06/what-do-we-know-about-the-first-milelast-mile-problem-for-transit/

Kohl, H. W., & Cook, H. D. (2013). Educating the student body: taking physical activity and physical education to school. Washington, D.C.: National Academies Press.

Litman, T. (2017). Evaluating Transportation Equity Guidance for Incorporating Distributional Impacts in Transportation Planning. Victoria Transport Policy Institute. Retrieved from http://www.vtpi.org/equity.pdf

Liu, K., Siu, K. W., Gong, X. Y., Gao, Y., & Lu, D. (2016). Where do networks really work? The effects of the Shenzhen greenway network on supporting physical activities. Landscape and Urban Planning,152, 49-58. doi:10.1016/j.landurbplan.2016.04.001

Manatee Health Care Alliance, Prevention and Wellness Committee. (2015). 2015 Community Health Assessment.

Maas, J., Vereij, R., de Vries, S., Spreeuwenberg, P., Schellevis, F. & Groenewegen, P. (2009). Morbidity is related to a green living environment. Journal of Epidemiology & Community Health, 63, 967-973.

Manatee County Area Transit. (2013). Transit Development Plan Major Update.

McDonald, N. C., & Aalborg, A. E. (2009). Why Parents Drive Children to School: Implications for Safe Routes to School Programs. Journal of the American Planning Association,75(3). Retrieved from http://www.ncwrpc.org/srts/JAPA_SRTS_WalkSchoolBus.pdf

Miami's 10-mile linear park and urban trail — The Underline. (n.d.). Retrieved from https://www.theunderline.org/

Murray, A. T., Davis, R., Stimson, R. J., & Ferreira, L. (1998). Public Transportation Access. Transportation Research Part D: Transport and Environment,3(5), 319-328. doi:10.1016/s1361-9209(98)00010-8

Ongoing Projects. (n.d.). Retrieved from http://www.missouricitytx.gov/index.aspx?NID=285

Open Spaces and Active Transportation. (2014, April 25). Retrieved from https://urbanland.uli.org/planning-design/open-spaces-and-active-transportation/

Palmetto, Florida (FL) Poverty Rate Data Information about poor and low income residents. (n.d.). Retrieved from http://www.city-data.com/poverty/poverty-Palmetto-Florida.html Practical Playbook. (n.d.). Retrieved from http://www.practicalplaybook.org/

Rails-to-Trails Conservancy. (n.d.). Health and Wellness Benefits. Retrieved from https://www.railstotrails.org/resourcehandler.ashx?id=3070

Rails-to-Trails Conservancy. (2007, August). From Trail Towns to TrOD: Trails and Economic Development.

Roe, J., Thompson, C., Aspinall, P., Brewer, M., Duff, E., Miller, D., & Clow, A. (2013). Green space and stress: Evidence from cortisol measures in deprived urban communities. International Journal of Environmental Research and Public Health, 10, 4086-4103.

Safe Routes to School National Partnership. (2016). Safe Routes to Healthy Food. Retrieved from http://www.saferoutespartnership.org/sites/default/files/resource_files/safe_routes_to_healthy_food.pdf

Schedules and Maps. (n.d.). Retrieved from http://www.ridemcat.org/schedules-and-maps/

Smart Growth America. (2017). Dangerous by Design. Retrieved from https://smartgrowthamerica.org/resources/dangerous-by-design-2016/.

Smith, L., & Hartley, A. A. (1989). Relationships between physical exercise and cognitive abilities in older adults. Psychology and Aging,4(2), 183-189. doi:10.1037//0882-7974.4.2.183

Studio L'Image. (n.d.). Retrieved from http://www.studiolimage.com/wf06-brg.html

The relationship between organized recreational activity and mental health. (n.d.). Retrieved from https://www.dsr.wa.gov.au/support-and-advice/research-and-policies/organised-recreational-activity-and-mental-health

Trailside benches and seating facilities. (n.d.). Retrieved from http://www.americantrails.org/photoGalleries/cool/53-trail-side-bench-seating.html

Treuhaft, S., & Karpyn, A. (2010). The Grocery Gap: Who has Access to Healthy Food and Why it Matters. Policy Link. Retrieved from http://thefoodtrust.org/uploads/media_items/grocerygap.original.pdf

What are the health benefits for children who walk or bicycle to school? (n.d.). Retrieved from http://www.saferoutesinfo.org/program-tools/what-are-health-benefits-children-who-walk-or-bicycle-school

Wolter, S. (2001, November 30). Indiana Department of Transportation. Retrieved from https://secure.in.gov/indot/2830.htm

Woolf, S., Aron, L., Dubay, L., Simon, S., Zimmerman, E., & Lux, K. (2015). How Are Income and Wealth Linked to Health and Longevity? Urban Institute.