

Considering Environmental Justice in Building a Greenway: A Case Study

Key Words / Vocabulary

Key terms are underlined throughout the text and are defined in the Glossary.

Active Transportation	Demographic	Greenway	Preservation
Alternative Transportation	Disproportionate Impact	Habitat	Public Hearing
Biodiversity	Ecosystem Services	Health Outcomes	Redlining
Board of County Commissioners (BOCC)	Environmental Justice (EJ)	Impervious	Resolution
Buffering	Equitable development	Meaningful involvement	Restoration
Case Study	Executive Order 12898	Mitigation	Siting
Community Cohesion	Fair treatment	Neighborhood Connectivity	Social Capital
Conservation	Green Space	Patch (habitat)	Stakeholder

This case study makes students the decision-makers in a hypothetical planning scenario using real-world data from the Tampa area within Hillsborough County, Florida. It should be noted that although Tampa is a real city and the data in this case study are accurate, this greenway planning activity is hypothetical.

Overview and Synopsis

In this case study with a hypothetical planning activity, the Hillsborough County Board of County Commissioners (BOCC) has been granted funding to complete a pilot section of a greenway. The BOCC worked with a local non-governmental organization (NGO) to review local data, select a potential pilot section for the greenway, and draft a proposal. The draft proposal will be opened up for comment from the community at the next County public hearing. In drafting the proposal, the NGO used several maps from the US EPA EnviroAtlas and EJSCREEN tools to help choose a pilot section and meet the BOCC's goals. As a concerned citizen who is part of an important stakeholder group, you would like to weigh in on the selection of the pilot section for the greenway at the upcoming public hearing. For the hearing, you must be prepared to support **your stance** on whether the proposed pilot section is the best option. *Based on the information in the case study and your stance from your assigned stakeholder role, use EnviroAtlas and EJSCREEN data to inform and strengthen your position.*

Introduction: Data and Tools for Decision-making

Ecosystem Services & EnviroAtlas

Human health and well-being are closely tied to the environment, which provides benefits such as clean water, clean air, and protection from natural hazards, also known as ecosystem goods and services. EnviroAtlas is a collection of interactive tools and resources from the US EPA that allows people to explore these ecosystem services, or the many benefits humans receive from nature (e.g., clean water).

Though critically important to human well-being, ecosystem services are often overlooked. Using EnviroAtlas, many types of users can access, view, and analyze diverse information to better understand how various decisions can affect an array of ecological and human health outcomes. Understanding where natural or green amenities are, and who does or does not have access to them, can help decision-makers better ensure that everyone can receive these many benefits.

Environmental Justice & EJSCREEN

EPA defines environmental justice (EJ) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EJSCREEN is an environmental justice screening and mapping tool from the US EPA that utilizes national data to highlight places that may have higher environmental burdens and vulnerable populations. The tool provides both summary and detailed information at a high geographic resolution for both demographic and environmental indicators.

An important first step to ensuring environmental justice for all people in the U.S. is to identify the areas where people are most vulnerable or likely to be exposed to different types of pollution. EPA developed EJSCREEN to aid in efforts to ensure programs, policies, and resources are appropriately inclusive and consider the needs of communities most burdened by pollution. EPA shared EJSCREEN with the public in an effort to be more transparent about how we consider EJ in our work; to assist our stakeholders in making informed decisions about pursuing environmental justice; and to create a common starting point between the Agency and the public when looking at EJ.

In this case study, a local NGO used maps from EnviroAtlas and EJSCREEN to choose a greenway pilot section that would help meet the BOCC's broader community goals.

Greenway Case Study

The county recently received an EPA grant to implement the creation of the City Greenway, a network of trails connecting destinations in the city. With the City Greenway, the Board of County Commissioners hopes to meet the following goals:

- Improve equitable access to parks and green spaces for all, including low income and minority communities,
- Ensure that the voices of underserved communities are equitably represented in this process,
- Conserve open spaces, and
- Encourage physical activity and recreational opportunities, particularly for people with limited access to green spaces.

The major access points to the greenway have been predefined and the network of trails will connect these points (Figure 1). While the grant money received is not enough to complete the greenway in its entirety, it is enough to complete a pilot section between two trailheads. A local NGO has used available data to develop a draft proposal for the location of a pilot section of the greenway that will meet the BOCC's goals. The NGO has provided the draft proposal for public comment at an upcoming public hearing.



***Your Task:** As an active member of the community, you need to review the proposal, use data from EnviroAtlas and EJSCREEN on the proposed greenway area and community demographics, and decide whether you support or oppose the proposed pilot section from your stakeholder viewpoint. If you oppose the proposed pilot section, please select two other trailheads to recommend connecting by a greenway. Be prepared to justify your response using data from the maps.*

Greenway Benefits

Greenways first came into use in the U.S. in the 1800's in the form of linear parks and open space in urban areas. Providing routes for movement is the defining feature of a greenway (Image 1). While the original implementation of greenways focused on aesthetics and beautification, the greenway approach has evolved to be more multi-purpose to meet infrastructure needs for alternative transportation and water management, provide resources for outdoor education, address habitat needs for wildlife, provide hazard mitigation and buffering services, and sometimes even connect to local businesses so as to boost the local economy. Greenways provide many benefits including health promotion, economic incentives, and landscape preservation. Greenways are more than just parks; they represent an opportunity to provide balance in the provision of ecosystem services and the public demands for the use of such services.

Notably, research has also demonstrated uneven, unjust, or inequitable distribution of green spaces across some urban areas. In fact, a study in Tampa, Florida used data from the census and remote sensing techniques to demonstrate that neighborhoods with a higher proportion of renters, low-income residents, and Black residents had drastically fewer trees on public right of ways.

Green areas provide many benefits including positive health outcomes stemming from the provision of ecosystem services. These green areas can provide places for recreation and engagement with nature, as well as filter air and water pollution, while minimizing impacts from natural hazards such as floods and heat waves. Through services like these, greenways have the potential to positively impact many health outcomes including obesity, birth outcomes, mental health and longevity. However, disproportionate access to the health benefits of green spaces may promote environmental health disparities. Therefore, it is critical to ensure equity in distribution of and access to these green areas.



Image 1: Greenway in Atlanta, GA. Photo credit: Riley Perszyk.

Increasing neighborhood connectivity and access to destinations can have a positive impact on active transportation, such as bike commuting, increasing access to economic opportunity, and aiding people in achieving recommended physical activity targets. A recent study on the potential benefits of a greenway development in Ireland demonstrated that increasing physical activity rates by 10% could have a significant impact on preventing incidence of diseases like heart disease and type 2 diabetes in populations near a greenway.

Implementing greenway systems also aids in the preservation and restoration of natural ecosystems. Greenways allow for the conservation of both urban and rural lands, which promotes habitat connectivity and biodiversity. The fragmentation of habitats has become a significant issue for many species. Greenways can serve not only as habitat themselves, but also as corridors that can link habitat patches of various sizes and improve species mobility across areas.

Despite the many benefits, the costs associated with the construction and maintenance of greenways can be significant. Land costs, infrastructure, and safety features all contribute to total project costs. However, as an amenity,

park systems have the potential to positively impact communities through property values, tourism, direct use, health, community cohesion, clean water, and clean air. Multiple studies have shown that greenways can have a positive or neutral impact on property values, with most of the positive value being captured within 500 - 2,000 ft of the greenway. Property values and associated tax revenue serve as a motivator for commercial, residential, and recreational siting within a community. While not considered income like property or sales tax revenue, factors such as social capital, health promotion, and environmental buffering can result in benefits for both communities and individuals.

Environmental Justice (EJ)

Environmental justice emerged as a concept in the United States in the early 1980s. This social movement addresses issues related to the distribution of environmental benefits and burdens by race/ethnicity and income. The environmental justice movement uses the term “disproportionate impact” to describe situations of concern where there exists significantly higher and more adverse health and environmental effects on minority populations, low-income populations or Indigenous peoples.



Image 2: PCB landfill protest in Warren County NC, 1982. Photo credit: Jerome Friar/UNC Libraries.

When environmentalism first became popular during the early 20th century, the focus was wilderness protection and wildlife preservation. These goals reflected the interests of the movement's initial, primarily white middle- and upper-class supporters. However, they often failed to consider the needs of low income and minority communities, including Indigenous communities who had worked for centuries to protect and preserve nature.

One of the earliest and most important examples of environmental justice issues occurred in Warren County, North Carolina in 1982. There, a small, predominately Black community was designated to host a hazardous waste landfill. This landfill would accept PCB-contaminated soil that resulted from illegal dumping of toxic waste along roadways. After removing the contaminated soil from roadways, the state of North Carolina considered a number of potential sites to host the landfill, but ultimately settled on this small, low-income, Black community. As a result of this decision, a large-scale protest ensued to object to the historical and continued targeting of Black communities for hosting hazardous waste sites (Image 2). More than 500 protesters

were arrested. In the end, the Warren County protest was unable to prevent the siting of the disposal facility, but it provided a start to the environmental justice movement that spread nationally.

Following the Warren County protest, people in other communities with environmental justice concerns created groups to defend their rights to live in clean environments. Many people in these communities recognized that their communities were targeted because of their income and/or their race and ethnicity. They were concerned that their communities were being forced to host hazardous waste disposal facilities and other dangerous polluting facilities while wealthier and/or predominantly white communities were not. These communities did not want to be constant repositories for waste treatment, storage, and disposal facilities.

In 1994, President Clinton issued [Executive Order 12898](#), Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The executive order directed the federal government to make environmental justice a part of the federal decision-making process. In

Table 1: Comparison of metrics between the case study area in Tampa, FL versus Hillsborough County, FL. All data are from the 2014-2018 American Community Survey data from EJSCREEN. Highlighted rows indicate metrics where the case study area has a higher statistic compared to the county.

Metric	Case Study Area Statistic	Hillsborough County Statistic	Case Study Area Difference
% White	58%	70%	-12%
% Black	30%	17%	+13%
% Hispanic	33%	28%	+5%
% Asian	3%	4%	-1%
% 65 and older	11%	14%	-3%
% Under 18	22%	23%	-1%
% Under 5	7%	6%	+1%
% Pop with income <\$50,000	61%	45%	+16%
% owner-occupied housing units	39%	58%	-19%
% renter-occupied housing units	61%	42%	+19%
% college graduates	24%	33%	-9%
% high school graduates	33%	27%	+6%
Demographic Index	82%	67%	+15%
% Speak English at home	66%	71%	-5%
% Speak English "less than well"	9%	6%	+3%

addition, it focused attention on the health and environmental conditions in minority, tribal, and low-income communities with the goal of achieving environmental justice and fostering nondiscrimination in programs that substantially affect human health or the environment. Under this Order, federal agencies were directed to make environmental justice an integral part of their missions and to establish an environmental justice strategy.

Another important EJ-related concept that needs to be considered when planning for projects that impact multiple stakeholders is the possibility of gentrification. Gentrification is the process by which new development projects create neighborhood change as places of lower real estate value are transformed into places of higher real estate value. Residents of a neighborhood may be displaced from their homes due to the increased cost of living, and consequently suffer negative health outcomes. One EJ solution to the problem of gentrification is to empower neighborhood residents via equitable development. Equitable development is an approach for meeting the needs of underserved communities through policies and programs that reduce disparities while fostering places that are healthy and vibrant. In addition to using innovative design strategies and sustainable policies, equitable development is driven by priorities and values as well as clear expectations that the outcomes from development need to be responsive to underserved populations and vulnerable groups. Acknowledging and understanding both gentrification and equitable development are necessary for sustaining environmental justice.

Although the environmental justice movement emerged over 40 years ago, it has only been in recent years that community organizers, city and regional planners, environmental advocates and local citizens have explored the connections between greenway planning and EJ. In planning their future greenway, the BOCC wants to consider EJ concepts such as equitable distribution of and access to environmental assets.

Background of the Greenway Area and Surrounding County

Understanding the demographic make-up of a community can provide helpful context for understanding community needs and concerns. *Real data are provided here for Hillsborough County and Tampa, Florida, pulled from the 2014-2018 American Community Survey data in EJSCREEN.*

According to the 2014-2018 American Community Survey (ACS), Florida’s Hillsborough County has nearly 1.4 million residents. The case study area of interest straddles part of the city of Tampa, spanning several neighborhoods, with a cumulative population of more than 220,000 residents, or about 1/6th of the county population. Relative to the county, the case study area supports a higher percentage of Black and Hispanic residents (Table 1, above) and has a marginally higher percentage of children under the age of 5. The population is predominantly comprised of renter-occupied housing and residents tend to make less than \$50,000 annually; the county population is generally wealthier property owners. While college graduates are present in the case study area, a larger percentage of the population has a high school degree alone. Compared to the county, there

is a larger percentage of people in the case study area who speak English “less than well.” Finally, the EJSCREEN Demographic Index, which allows for combining variables for low-income populations and people of color, places the case study area at the 82nd percentile nationally, whereas the county ranks at the 67th percentile nationally. This means that only 18% of block groups in the nation have a higher combined percentage of people of color and low-income populations compared to the case study area of interest. It is important to note that the EPA EJSCREEN Demographic Index is sourced from the EJSCREEN 2020 report generator and not directly from the 2014-2018 ACS data.

In general, the city has an extensive existing greenway network, but many areas in the surrounding county have fewer greenways. Parts of the case study area could benefit from potential greenway additions.

Concepts in Action: Houston's Bayou Greenways 2020

Houston, Texas has long been known for its music, restaurants, ports, space exploration, and ties to the energy sector. Houston is notably a majority-minority city and one of the most ethnically diverse cities in the United States; Black and Hispanic/Latino communities account for 23% and 44% of the total population, respectively. More recently, the city is being noticed for its investment in greenspace. Bayou Greenways 2020 is a Houston Parks Board initiative to create a linear park system with a series of interconnected public parks along Houston's bayous, an idea envisioned by architect Arthur Comey back in 1912.

Historically, Houston's parks have been isolated and not easily accessible to many neighborhoods, particularly those with lower incomes. This disparity is partly due to a history of “redlining,” resulting from policy implemented by the Home Owners' Loan Corporation in the 1930's that discouraged financial investment in neighborhoods containing predominately non-white, low-income populations. Because redlined neighborhoods lacked funding and resources, parks in these areas were not maintained and green space dwindled, along with intergenerational wealth and home ownership. Even after redlining policies were formally discarded, the presence of these policies created lasting cumulative impacts within affected communities. Lack of community access to investment capital and associated lack of access to green space magnified health and income inequalities across generations, making green space access and quality one of several critical environmental justice issues for Houston's population.


In 2012, citizens voted in city-wide elections to use 166 million dollars of public and private money to fund parks, with 100 million going to Bayou Greenways 2020. The funding for Bayou Greenways 2020 was supplemented with an additional 120 million dollars of private funding. One of the Parks and Recreation Department's original goals for Bayou Greenways 2020 was to expand their isolated parks with an ambitious series of connecting trails, fulfilling the vision that architects had for the parks a century prior. The Department sent out an online survey in 2014 to gather input from the Houston community to ensure that their own park goals aligned with citizen's needs.



Pause Here: Why would it be important for the online survey to include a fully representative range of Houston community voices in the planning process?

The survey results seemed clear: citizens wanted greater park connectivity in the form of bike trails and walking paths to connect the existing park spaces. These views aligned with similar goals expressed by many private donors. Connecting parks and building more entrances would increase residents' access to greenspace, with a projected 60% of Houston residents living within 1.5 miles of a park by the project's end.


There was one major problem with this apparent win-win situation: two-thirds of survey respondents were white, high-income citizens. Given that Houston was only 26% white and the median household income was \$52,000, the people who filled out the survey represented only a small part of the city's population. If Houston's park managers went ahead with their plan based on this survey response, they would have excluded a wide range of stakeholder groups and continued the legacy of prioritizing white, high-income voices over others.



Pause Here: *If you were a manager in The Parks and Recreation Department, what would you do in response to learning that most of the people who responded to your survey were from only one subset of Houston's population?*

To avoid perpetuating the historical equity gap between citizens, the Parks and Recreation Department funded a second, face-to-face survey from Rice University that specifically asked Black and Hispanic/Latino communities about their park improvement preferences. The survey's results, published in 2016, showed that connectivity was a low priority for these communities. Instead, they wanted improved infrastructure because many of the parks near their neighborhoods lacked clean, well-maintained public bathrooms or adequate lighting for safe night walking. The Department integrated the feedback from this survey into the Bayou Greenways 2020 plan, allocating resources for both park infrastructure improvements and connectivity.

Through this example, we see that city planners and large-scale decision makers can have the best intentions, but they cannot meet the needs of the full population unless they ensure they are hearing the voices at each stage of the planning process. Today, Houston's parks are better connected by the greenway system and adjoining trails provide residents with more equal access to nature, improved park infrastructure, and connections between the places where they live, work, learn, and play. There is still much work to be done, however, and the Bayou Greenways 2020 follow-up effort, Beyond the Bayous, will continue to bring more parks and trails to Houston with a focus on equity and access for all.



Reflect: *What did you learn from this scenario? Could any of the lessons learned here be applied to situations you've experienced in your life?*

Dig Deeper: Explore the resources below to learn more:

1. Bayou Greenways 2020. Houston Parks Board.
2. Mock, B. (2016). Why Race Matters in Planning Public Parks. Bloomberg CityLab.
3. Smiley, K. T., Sharma, T., Steinberg, A., Hodges-Copple, S., Jacobson, E., & Matveeva, L. (2016). More Inclusive Parks Planning: Park Quality and Preferences for Park Access and Amenities. *Environmental Justice*, 9(1), 1-7. doi:10.1089/env.2015.0030

The Proposal - Greenway Pilot Section

The county has predefined five major access points to the greenway. The completed network of trails will connect these points and the pilot section of the greenway could run between any of these points. However, because of their interests, available data, and available funds, the BOCC has chosen a trail route that runs between points 1 and 4 to be the pilot section (Image 3).

When selecting the pilot route from trail heads 1 to 4, the BOCC was most concerned with improving equitable access to parks and green spaces for all and improving overall walkability between neighborhoods. With help from a local NGO, they used maps from EnviroAtlas and EJSCREEN to develop a proposal for the pilot section that addressed their concerns.



Image 3: The proposed trail network area with numbered trail heads. The pilot route proposed by the BOCC runs from trail head 1 to 4.

Student Task

The public hearing to discuss the proposed pilot section of the Greenway is rapidly approaching.

When considering the case study and the pilot section proposal, keep the following questions in mind:

- Who is benefiting from this project? Who is not benefiting from this project?
- What criteria should you use when selecting a route that is equally accessible?
- What alternatives are available? What are the pros and cons of each alternative?



Think critically: *Has the decision-making process itself been equitable and just? Have those who may be affected by the decision been able to participate in the process?*



Your Primary Objective: Ensure that the pilot section of the greenway is completed in the best location; your decision should be driven by the goals of your specific stakeholder role. In preparation for the public hearing, you identify the most important issue(s) in selecting the pilot route, review the proposal materials, formulate an opinion on whether you support the proposed route, and use data to drive your argument and defend your decision. The ideal would be to ensure equity in access to and the distribution of benefits from the proposed pilot. This means that the benefits of the pilot should aim to meet the most needs and reduce negative impacts for all.