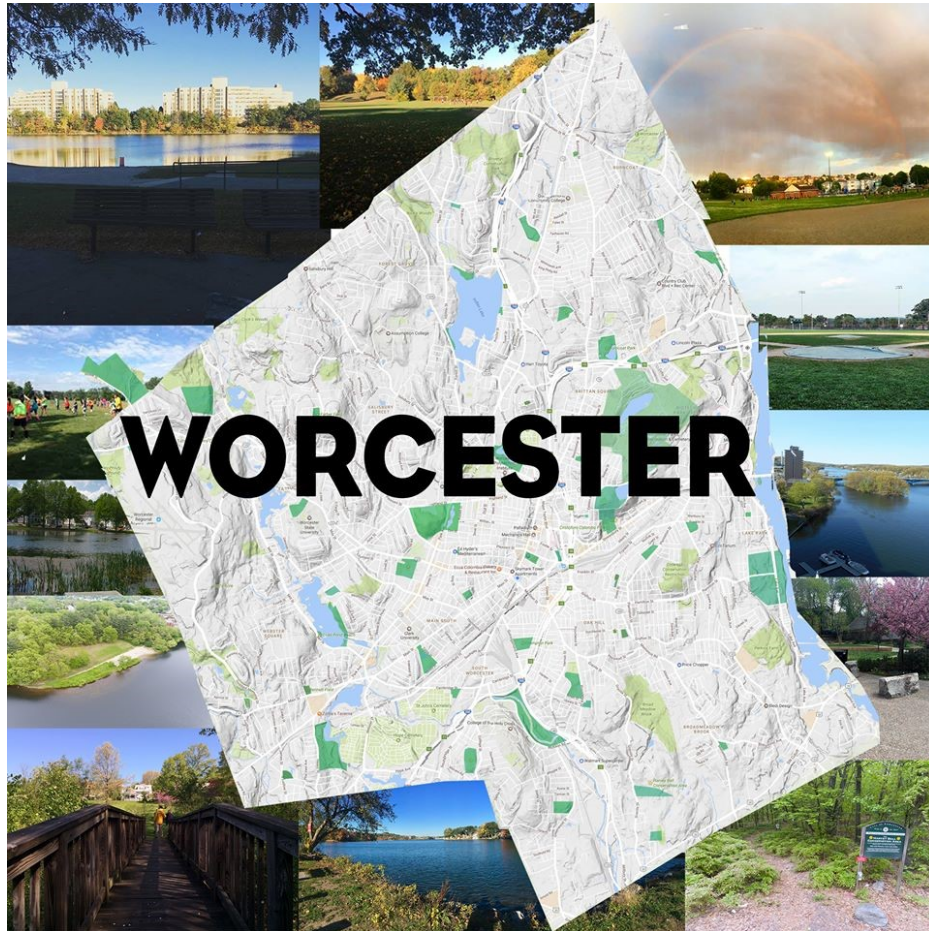


# Evaluating Environmental Justice and Organizational Partnerships for Green Space in Worcester, MA

## Abstract



This project sought to determine the role that green space organizations have when considering environmental justice and the partnerships and organizational resources that help benefit communities in shrinking cities. We defined environmental justice as a fair and equal distribution of resources and characterized green space as a place for people to enhance their well being and create community interaction. Our team identified nonprofit green space organizations as the main source of advocating for green space in declining urban cities help create positive use in neighboring communities. Despite having clear mission statements, nonprofit organizations lack necessary city resources therefore requiring additional help through collaboration and partnerships with business, corporate, and other nonprofit organizations. This example applies to our sponsor, Park Spirit of Worcester, Inc. Their mission statement and objectives are clear, but they lack the organizational resources and structure necessary to meet their objectives of promoting and advocating for Worcester's parks. Our team identified how resources are distributed to the parks in Worcester and effective ways to use partnerships to gain resources that can be used to benefit parks advocacy. First, we conducted spatial analysis to determine whether there is an environmental justice argument in Worcester that relates to the city's parks. Secondly, we evaluated partnerships and organizational resources that help them achieve their mission by conducting interviews with representatives of park organizations and city administrators. Our findings aim to help Park Spirit by giving them information on how to gain resources for all Worcester city parks and create an overall better quality of life in the city.

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January 14, 2019

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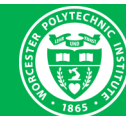
## Sponsor

Park Spirit of  
Worcester, Inc.



An Interactive Qualifying Project submitted to the faculty of Worcester Polytechnic Institute in partial fulfillment

of the requirements for the Degree of Bachelor of Science



# WPI

## The Importance of Resource Distribution and Advocacy for Urban Green Space

Environmental justice is a major socio-economic concern focusing on equity in the urban environment. Specifically, environmental justice refers to the disproportionate allocation of resources and funding to environmental amenities or hazards that are in areas of low income and strong racial and ethnic diversity. As such, it draws attention to “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”.<sup>1</sup>

Issues of environmental injustice should be especially considered in shrinking cities where resources are declining and are being relocated to other areas of the city such as public schools and municipality. Shrinking cities refer to cities that experience an acute population loss during a historical time period.<sup>2</sup> Shrinking cities across the United States are struggling to maintain economic stability and fund projects regarding parks and green space.<sup>3</sup> The development and implementation of environmental justice

projects will create examples of equitable urban infrastructure, and consequently, help drive ethical and justice urban change.

Nonprofit organizations play an important role in the upkeep of green spaces within the city. These nonprofit organizations possess different focus areas and organizational structures, but they are united in their common advocacy for the improvement of urban green space. With a large base of support and available funding options outside of local government, a well-organized nonprofit organization can be successful. However, their success depends on a number of different resources, including community outreach and involvement, government approval, funding, and resources.<sup>4</sup> Additionally, partnerships are vital to extending the resources needed to achieve their missions. Partnerships can be made with other nonprofit organizations, local and large businesses, the community, and the government. An example of Castle Park in Worcester, MA gives an example of how public civic partnerships can help improve a neighborhood (Figure 1). The National Recreation and Parks Association express that building a community partnership develops positive benefits, name recognition, and continued growth.<sup>5</sup>

Park Spirit is an urban parks organization that seeks to protect, to promote, and to advocate for city parks in Worcester, MA. It is an advocacy group consisting of a core group of volunteers working to improve all of Worcester’s parks. Despite their efforts to work in

*“Community is where you live but neighborhood is where people bond.”*

collaboration with neighboring park organizations, the scope of their mission far exceeds the resources currently available to support their promotion of Worcester’s sixty-one parks. Park Spirit needs to improve its organizational infrastructure and partnerships to improve its efforts to accomplish its mission.

This project sought to help Park Spirit evaluate their current and future partnerships to acquire the necessary resources that help them advocate for Worcester’s city parks. In order to do this, our team focused on the following objectives:

1. Determine Whether There is Environmental Injustice for Park Governance in Worcester
2. Types of Partnerships and Organizational Resources that Strengthen Parks Advocacy

Our findings aim to help Park Spirit by giving them information on how to gain resources for all Worcester city parks and create an overall better quality of life in the city.



Figure 1: Public civic partnerships are crucial to improving parks in environmental justice neighborhoods.<sup>5</sup>

# Green Space Organizations Address Environmental Justice Concerns

## Equity Drives Environmental Justice

Equity is a principle that ought to drive the human-environment relationship.<sup>1</sup> Equity refers to the equal sharing of resources and opportunity to people of all different demographics, and it is especially important in urban settings where an uneven distribution of resources drives the need for changing mentalities. As Jeremy Nowak writes, it is important to have “a top tier mindset while catering to lower and middle class needs.”<sup>6</sup> Equity is a major concern across many domains of urban life, but environmental injustice is a pressing issue that scrutinizes issues of equity in the realm of the environment. The U.S. Environmental Protection Agency defines environmental justice 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.”<sup>11</sup> This area of focus has developed in response to a common correlation between race, income, and environmental hazards. In particular, there exists increased exposure to environmental hazards in low-income communities of color.

Liam Downey and Brian Hawkins conducted a study on the connection race, income, and environmental inequality by examining pollution data and other environmental factors in the United States. Their findings show that the neighborhoods that are predominately black have a toxic level of 732.90, while white neighborhoods have a toxic level of 503.73 (Table 1). When combining neighborhoods with less than \$10,000 income and black residents the toxic level jumps to 916.33. There is an indirect relationship where toxic levels decrease with increasing incomes.<sup>7</sup>

Table 1: Average Neighborhood Toxic Concentration Values by Race and Hispanic Ethnicity, the Continental U.S. 2000.<sup>7</sup>

Neighborhood Demographic	Black Neighborhood	White Neighborhood	Hispanic Neighborhood
Average Toxicity Levels	732.90	503.73	430.36

**GREY  
(PROBLEMS)**



**RICH**

**GREEN  
(SOLUTIONS)**

**POOR**

*This quadrant was adapted from a TED Talk by Van Jones. He explains that there is a great focus on the top left quadrant that deals with rich problems such as conservation. He claims there needs to be a change in focus to the fourth quadrant where green solutions are a priority. This shift in mindset creates a more equitable approach to environmental issues. For more information, refer to the Final Presentation.*

## Environmental Justice is a Factor in Shrinking Cities

This increased exposure to environmental hazards by marginalized communities is of special concern in shrinking cities. Shrinking cities are regarded as areas that have historically experienced drastic population loss, generally related to deindustrialization that are also undergoing an economic revitalization.<sup>2</sup> The increased economic challenges of shrinking cities make issues of

equity particularly important and relevant. For example, Fernando Ortiz-Moya investigated environmental justice issues in Kitakyushu City, which is a shrinking city in Japan. Kitakyushu City once flourished as a thriving steel industry lead by the Yawata Steelworks Company, and its population grew from 6,652 to 100,235 beginning in 1920.<sup>8</sup> Following the Second World War occurred, “Yawata Steelworks took an active role in the development of urban areas to serve its workers.”<sup>8</sup> However, the prevalence of the steelworks in the city caused serious economic dependence, and its air pollution became known as “the smoke of seven colors.”<sup>8</sup> The male population was hesitant to complain in fear of losing work, so it was the women who pushed for change through a study in schoolyards relating pollution levels to the proximity of factories.<sup>8</sup> The group felt that there was a lack of awareness and care by the city officials

in terms of the pollution and that their main priorities lied within economic rejuvenation rather than the health of citizens. This case demonstrates that poor communities suffer unfair exposure to environmental pollution, environmental health is closely tied to economic health, and grassroots movements can be powerful vehicles for social and environmental change.

## Evenly Distributed Green Space Resources Create Physical Health Benefits

Environmental justice refers not only to the disproportionately large hazards born by low-income communities of color, but also the disproportionately small access that these communities have to environmental amenities as well. Green space offers many recreational, social, and health benefits for it's the nearby community. Green spaces have been linked to mental and physical health

benefits for citizens in numerous studies. The U.S. National Library of Medicine reported that individuals, in general, have less stress, anxiety, and depression, with overall greater well being when living in urban areas with more green space.<sup>9</sup> Additionally, physical health benefits are apparent. While positive green space is known to provide space for activity and exercise, it has also been concluded that the risk of Cardiovascular disease is reduced in all neighborhoods with green space availability greater than 15%.<sup>10</sup> However, a study on gentrification in cities mentioned that racial minorities and low-income people have less access to green spaces, parks, or recreational programs than those who are White or more affluent.<sup>11</sup> Another study on street trees and equity found that there is significantly less tree cover in neighborhoods containing a higher proportion of African-Americans, low-income residents, and renters in Tampa, Florida.<sup>12</sup> In addition, a study of funding for urban parks and recreation indicate that low-income communities of color have far less to spend on parks and recreation.<sup>13</sup>

## Nonprofits Help Drive Advocacy for Green Spaces

Nonprofit organizations are mission-driven entities that are essential to the well being of a community. Green space advocate groups fall under the public charity division of nonprofit organizations. According to the IRS, a public charity must represent the public interest by having a diverse board of members, be organized for public benefit and obtain 501(c)(3) or nonprofit status.<sup>14</sup> Nonprofit organizations assist in green space development by providing community support and being a center for pooling resources. The IRS acknowledges that a nonprofit organization must not be organized or operated for the benefit of private interests, and no part of its net earnings may inure to the benefit of any private shareholder or individual.<sup>15</sup> Their work towards promoting and restoring green space in urban environments is extremely beneficial and widespread across the United States. This is evident by organizations such as the City Parks Foundation and the Friends of Newton Hill at Elm Park. The City Parks Foundation, located in New York City, has the goal of transforming parks into dynamic, vibrant centers of urban life through sports, arts, community building, and education programs.<sup>16</sup> The foundation was recognized in The Bronx Chronicle, where a published article explains the benefits for

*“About ten years ago there was a big increase in park revitalization from the city.”*

two of their engaging programs, the free fall sports program and senior fitness program, both of which are described as using green space to promote physical activity within New York City.<sup>17</sup> The Friends of Newton Hill, located in Worcester, MA, is a community of volunteers that work to restore, maintain, and improve the recreational use of the Newton Hill section of Elm Park. Their accomplishments include the restoration of vandalized amenities and the successful completion of a seven-part summer concert series.

## Nonprofit Partnerships

Building partnerships is an essential strategy for non-profit organizations to expand their resources in pursuing their missions.<sup>4</sup> In particular, there are three basic types of organizational partnerships that support environmental governance among the public, private, and civic sectors: public-private partnerships, private-social partnerships, and public-civic partnerships (Figure 2). Public-private partnerships are between state agencies and market actors. Some examples of public-private partnerships in green space are mining and logging. As they are forms of civic organizations, green space nonprofit organizations rely mostly on co-management and private-social partnerships.

## Private-Social Partnerships

Nonprofit organizations can receive funds from individuals, governmental grants, and private families, but private-social partnerships are equally as important to nonprofit funding. Private partnerships are largely made with business organizations. Business organizations have monetary assets as well as personal relations within the community that help facilitate event planning quicker and allows the overall project to be more efficient.<sup>18</sup> Business partnerships are built around mutual benefits. Corporate sponsorships attract the attention of for-profit businesses because sponsorships offer public recognition of the

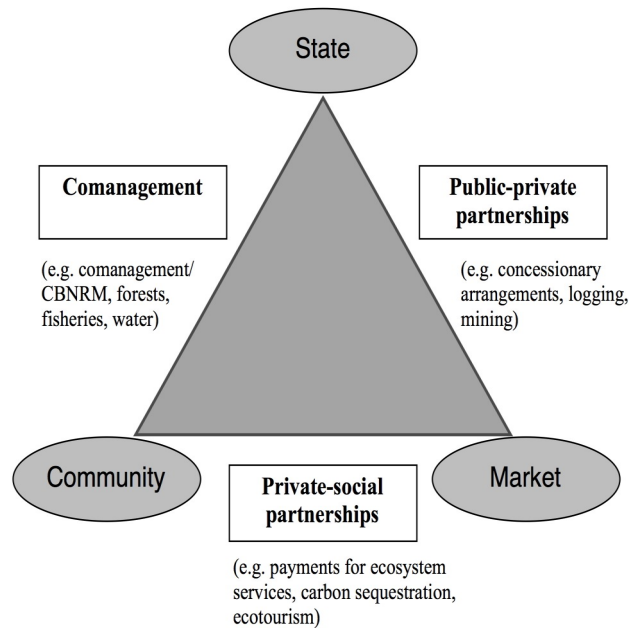


Figure 2: The partnerships involved in solving environmental problems.<sup>4</sup>

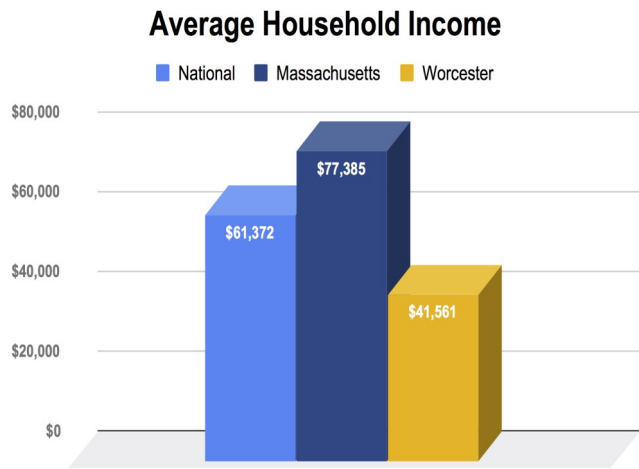


Figure 4: Comparison of the Average Household Incomes for Worcester, Massachusetts, and the United States.<sup>22</sup>

business, which may help businesses attract new customers or escalate the company’s reputation. Nonprofits, in turn, receive financial support and may also experience increased attention from the media and the public.<sup>19</sup> When interviewing Friends of Newton Hill member Rick Miller, he expressed the importance of Elm Park’s sponsor, Blue Jeans Pizza. Over the last decade, Blue Jeans Pizza has donated hundreds of thousands of dollars to the Worcester, MA’s Elm Park in return for advertising and space at events.<sup>20</sup>

### Co-Management

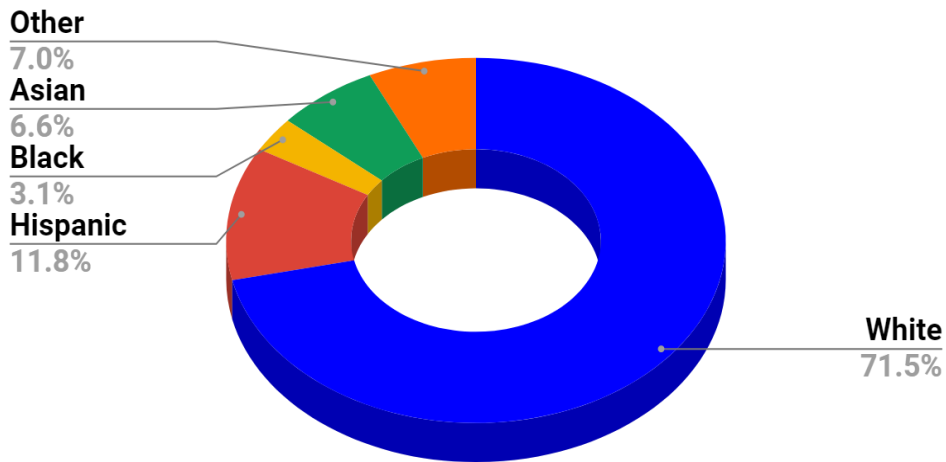
In terms of promoting and using green space, co-management partnerships are vital to the success of a nonprofit organization. Partnerships between a nonprofit and the city government are extremely important because they involve legal rights. When interviewing Robert Antonelli, the Assistant Commissioner of Worcester Parks and Recreation, he stated that their partnerships with park-related nonprofits in Worcester are not only helpful but also

mandatory when dealing with city-owned green space. The Parks and Recreation department can provide permits for events, maintenance, or resources such as concert stages, while the NPOs help Mr. Antonelli advocate for the parks of Worcester and reach the community through their local support.<sup>21</sup>

### Outlining Demographics: Worcester, MA

Worcester, Massachusetts is home to a very diverse demographic in terms of both race and income. In looking at race relative to the rest of Massachusetts, there is a distinct difference in the percentage of the Black and Hispanic population (Figure 3). In terms of income, Worcester’s average household income is \$41,561 while the Massachusetts average is \$77,385 (Figure 4).<sup>22</sup> In Worcester, 57% of household incomes were under \$50,000, which is much higher with respect to the state average of 34%. As a whole, Worcester’s economy has continued to decrease

### Massachusetts Demographic



### Massachusetts Demographic

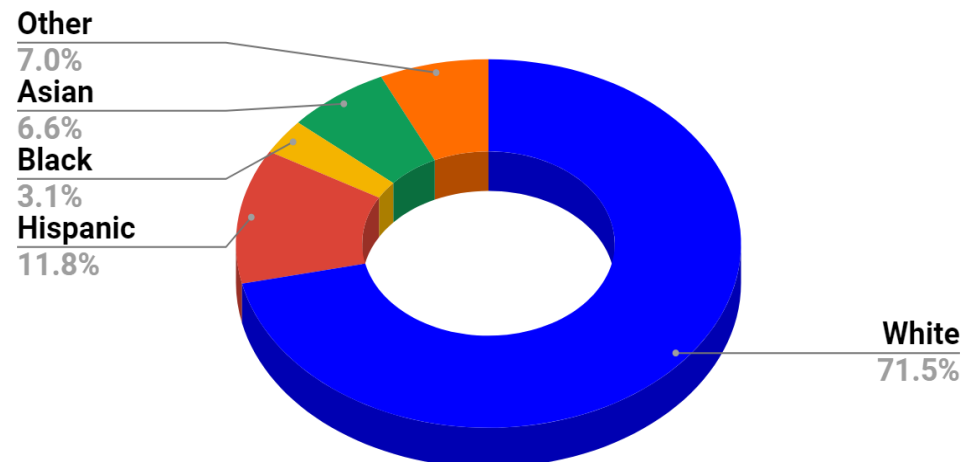


Figure 3: Comparison of Demographic Information for Worcester and Massachusetts by Percentage.<sup>22</sup>

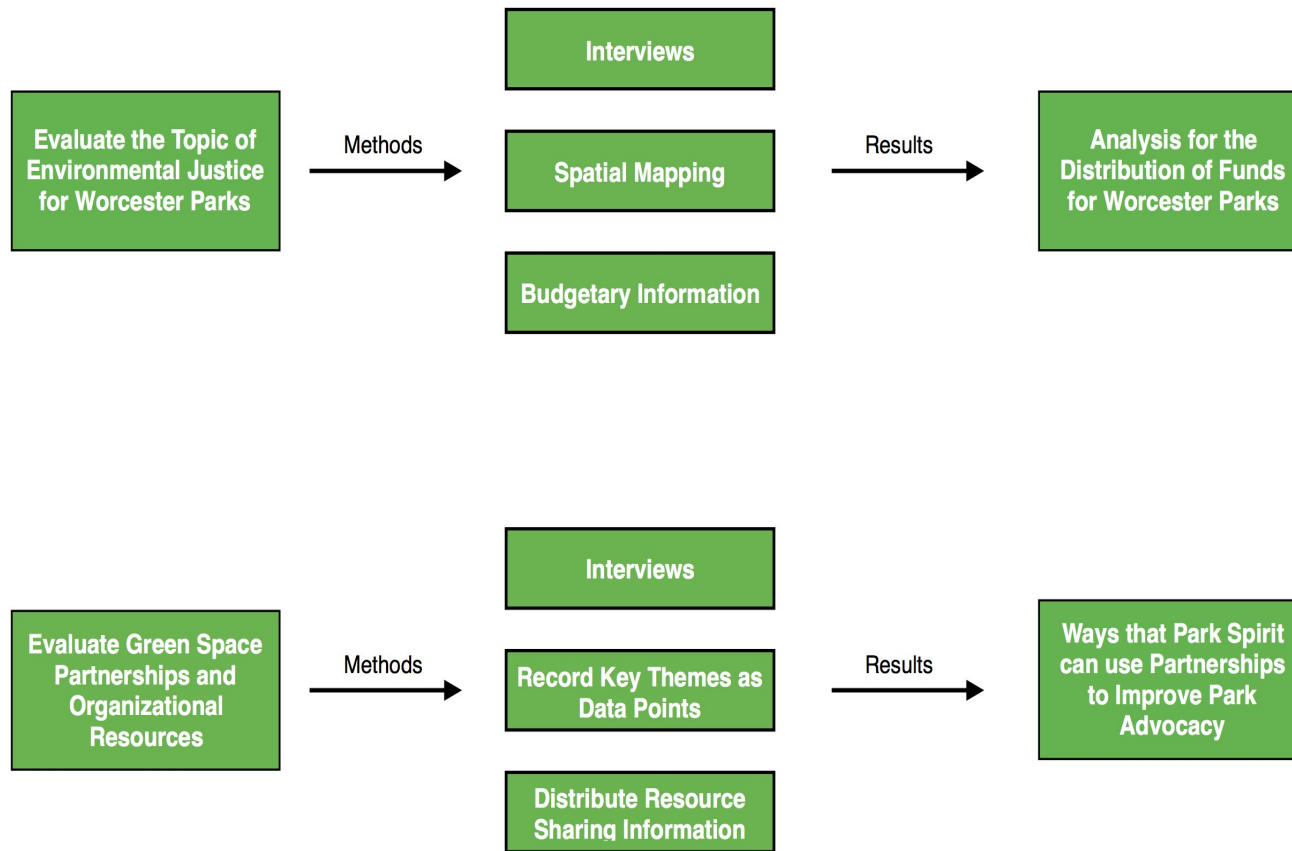


Figure 5: Overview of our group's methods.

since 2012. In 2012, the Census reports that in Worcester, the average household income was \$45,599 with a poverty rate of 22.1%,<sup>22</sup> whereas, in 2016, this rate was 22.4%.<sup>22</sup> This significant decline, combined with a significant population decrease over the last 70 years, creates a label for Worcester as a shrinking city.

## Creating Green Space Partnerships in Shrinking Cities

Since Worcester is declining, there is great potential for the development and positive influence of green

space. There are currently sixty-one parks in Worcester that are recognized by the city. With a large number of these parks poorly maintained and located in low income and ethnically diverse areas, there is a possible case for environmental injustice. The presence of park advocate nonprofits in Worcester is substantial. Worcester's park advocacy groups, such as Park Spirit of Worcester Inc., work to promote, protect, restore, and advocate for the parks of Worcester so that each neighborhood has equal availability to positive green space. Park Spirit of Worcester Inc. does this with a strong connection to the Worcester City Government, great community support, and by building partnerships with local organizations and businesses.

## Analyzing Park Resource Distribution and Green Space Partnerships

Park Spirit wanted our team to evaluate the distribution of funds and other resources to Worcester's city parks, as well as obtain information on the partnerships and organizational resources that would benefit green space organizations in Worcester. In the following section, we outline the methods that we used to collect this information and determine whether there is an environmental justice argument for current park governance and the types of partnerships and organizational resources that would benefit parks advocacy in Worcester. Figure 5 summarizes the process that we followed to complete the methods.

### Objective 1: Determine Whether There is Environmental Injustice for Park Governance in Worcester

In order to assess the environmental justice argument, we conducted a spatial analysis for the areas surrounding Worcester's parks. To accomplish this analysis, we created online maps through the ArcGIS interactive mapping tools that identify specific neighborhoods that surround each of Worcester's city parks. These maps outlined the diversity and income of the specific park neighborhoods that we visited on a scale of limited diversity to very high diversity and low household income to high household income, respectively.

Next we evaluated financial statements for the city's Worcester park budget. The budgetary information

*"[The city has] very methodically chosen... the neighborhoods that have been forgotten."*

included spending for city parks compared to other departments throughout Worcester, as well as a breakdown of spending for each park (Figure 6). This budgetary information gave us an understanding of which parks get the most financial support, and whether it is affected by certain demographics. We made a link between the amount of money that neighborhoods are receiving and the diversity of these neighborhoods.

To bolster this budgetary analysis of park spending by neighborhood, we conducted a series of interviews. Through these interviews, we sought to understand the viewpoints of park advocates and city officials on the city's distribution of capital improvements, maintenance, and programming in their specific park or district. Also, we asked interviewees questions about the perceived diversity and income of the surrounding neighborhood, with the purpose of comparing these perceptions with the city's data in the spatial analysis. These interviews were held at twelve city parks across all five districts with park organization representatives as well as high-ranking city officials. These insights showed us the ways that Park Spirit can address environmental justice argument and incorporate the city's parks in a fair and impartial manner to truly achieve their mission for promoting and advocating for all of Worcester's sixty-one parks.

## Objective 2: Types of Partnerships and Organizational Resources that Strengthen Parks Advocacy

In order to evaluate the types of partnerships and organizational resources that bolster parks advocacy, we conducted interviews with [in/formal] parks representatives and high-ranking city officials. The eleven parks representatives were each associated with a specific neighborhood park (as described above). We organized our interviews by creating a spreadsheet of the Worcester parks and finding contact information for each of their representative organizations. Our team then emailed and called each organization's representative to schedule a time for an interview to ask our questions and get a park tour. We were able to successfully schedule interviews for twelve of the Worcester parks spanning all five districts. In terms of interview protocol, two of our team members attended each interview; one team member conducted the interview using

the initial written questions to guide the conversation and ask any additional questions if necessary. The other group member recorded the answers and took pictures or voice recorded the interviewee when necessary. We then sent a follow-up email after our meeting to thank the interviewee for their time and possibly ask any additional questions we had regarding the information that we discussed. We created data points based on the information that we collected from the responses in these interviews and added the information to a Google Sheet file.

We also conducted interviews with five high ranking city officials. The process of scheduling these interviews, group member roles, and data collection were the same as with the nonprofit parks organizations. The questions that we asked were regarding a specific district or the city as a whole, depending on the jurisdiction of the different officials. We sought to understand the connection

that the City of Worcester has with specific park organizations and specifically with Park Spirit. We wanted to understand what specific types of partnerships are beneficial to parks advocacy and the characteristics that make these relationships successful. Also, we wanted to get information on the way that the budget is divided throughout Worcester and whether there has been an increase of total funding for park improvement and maintenance and distribution of resources to different parks in recent years.

Our team continued the use of interviews to evaluate the organizational resources that park organizations seek for the capital improvements and maintenance that they want to see in their park. These organizational resources were also added to our list of data points to provide Park Spirit with some information on ways that they can potentially help other park organizations with their advocacy and programming.

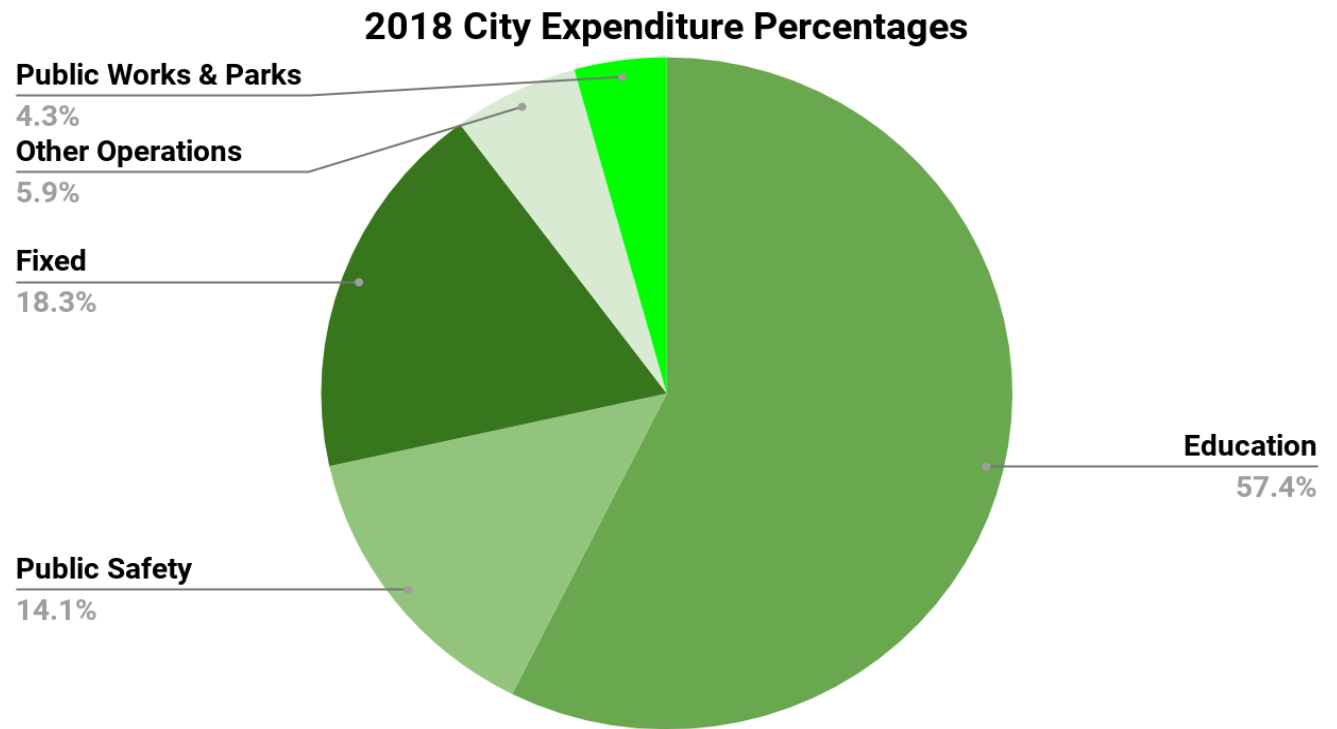
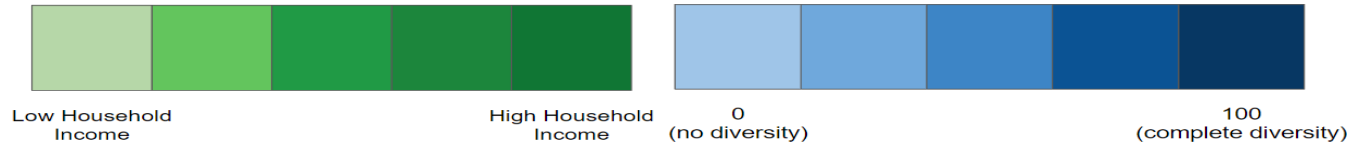


Figure 6: City Expenditure Percentages for the 2018 Fiscal Year.<sup>23</sup>

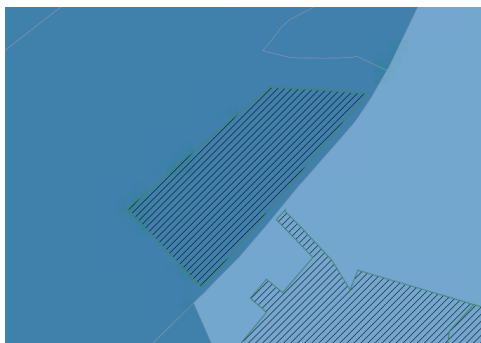
## Spatial Analysis Mapping



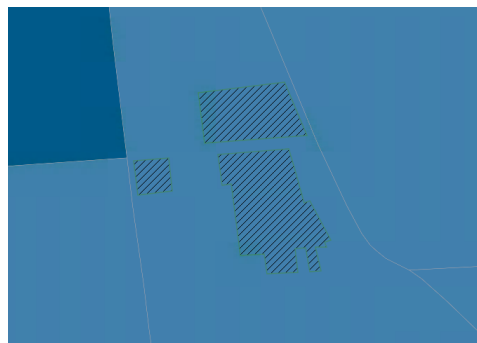
*Income and Diversity Maps for Shore Park*



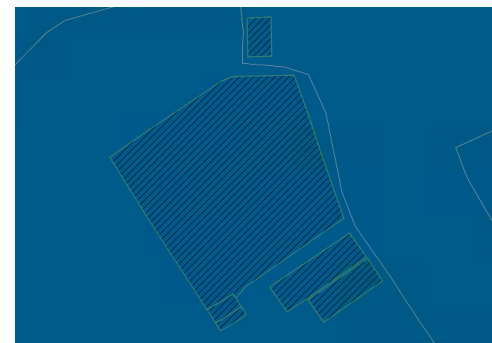
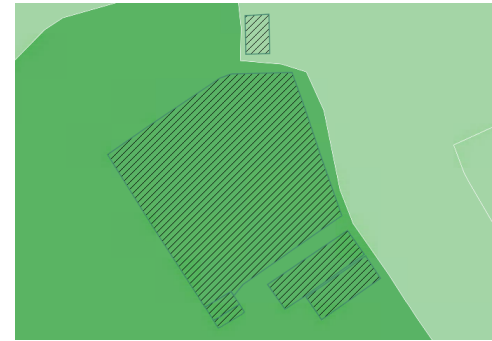
*Income and Diversity Maps for Holmes Field*



*Income and Diversity Maps for Mulcahy Field*



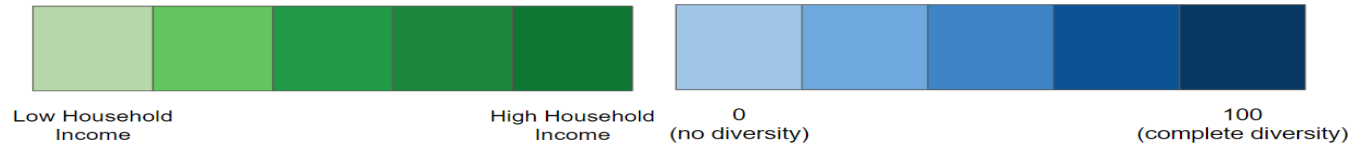
*Income and Diversity Maps for Castle Park*



*For an in-depth understanding of how these maps were produced, refer to the Supplemental Materials.*



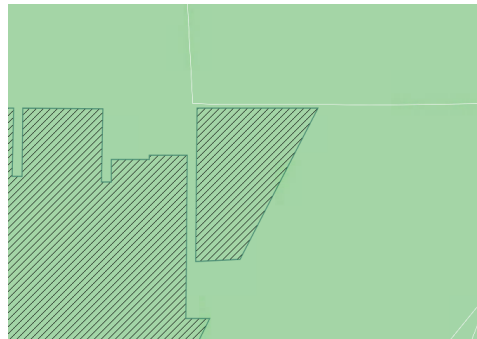
## Spatial Analysis Mapping



*Income and Diversity Maps for Elm Park*



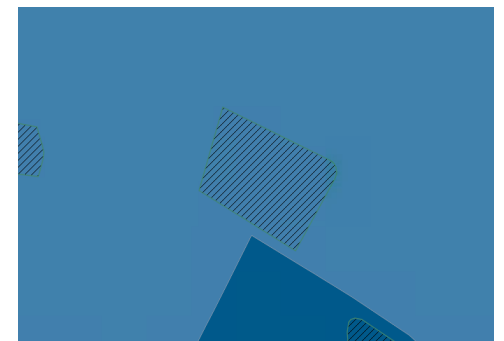
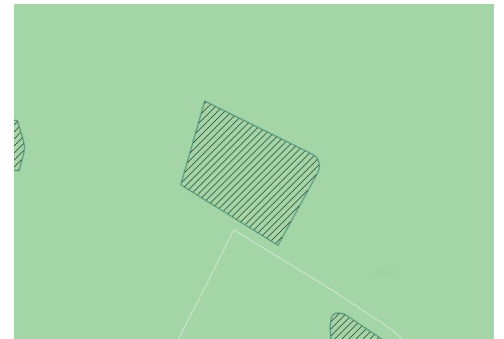
*Income and Diversity Maps for South Worcester Playground*



*Income and Diversity Maps for Coes Knife Park, Columbus Park, Knights of Columbus Field*



*Income and Diversity Maps for The Worcester Common*



*For an in-depth understanding of how these maps were produced, refer to the Supplemental Materials.*

## Analyzing Environmental Justice and Green Space Partnerships in Worcester

Our team gathered information on the possibility of an environmental justice claim for Worcester’s park governance. Through comparing spatial mapping, interview answers, and park funding, we determined that resources are distributed amongst parks with no regard to environmental justice concerns. Additionally, through the analysis of interviews, our team determined the types of partnerships that can directly increase the quality of a green space. We concluded that safety partnerships with the local police department or city government can improve the perception of a park, financial partnerships with local businesses or financially stable organizations can increase infrastructure improvements, and programming partnerships with nonprofit organizations, such as our sponsor Park Spirit of Worcester, can increase park usage. We used our findings to suggest possible courses of action for Park Spirit of Worcester to further their mission of protecting, promoting, and restoring each of Worcester’s sixty-one parks.

### Income and Diversity Trends in Worcester’s Urban Parks

Our team analyzed thirteen parks, representing each of Worcester’s five districts, to determine if there is a correlation between demographics and park resource distribution. Using spatial data from the City of Worcester, we used ArcGIS, a spatial analysis program, to examine the income and diversity indices for the neighborhood that surrounds each park. A sample of these income and diversity maps are shown in the Spatial Mapping Analysis section of the booklet. The diversity index that we used shows the likelihood that two persons chosen at random, from the same area, belong to different race or ethnic groups. We understand that this definition of diversity can have complications, but it is consistent with the city’s census report. The parks in district one include, Shore Park, Morgan Landing, and Indian Lake Beach. Shore Park and Morgan Landing are located in middle-upper class communities, while Indian Lake Beach sits in a low-middle

Improvement Map Legend:	
Red- Green Hill Park	<ul style="list-style-type: none"> <li>• WWI Memorial Renovations, Improvements to Golf Course/Driving Range</li> </ul>
Purple- Castle Park	<ul style="list-style-type: none"> <li>• Fully Funded &amp; Completed Master Plan</li> </ul>
Yellow- Crompton Park	<ul style="list-style-type: none"> <li>• Pool Support Building Improvements</li> </ul>
Dark Blue- City Hall	<ul style="list-style-type: none"> <li>• Plaque Repairs, Redesign &amp; Development of Space</li> </ul>
Turquoise- Elm Park	<ul style="list-style-type: none"> <li>• Repairs to Chamberlain Fountain, Walkways, and Bridges</li> </ul>
Dark Green- Coes Park	<ul style="list-style-type: none"> <li>• Handicap Accessible Playground</li> </ul>
Grey- Shore Park	<ul style="list-style-type: none"> <li>• Beach Support Building</li> </ul>
Mint- Providence Street Playground	<ul style="list-style-type: none"> <li>• Completion of First City-Owned Synthetic Turf Playing Field</li> </ul>
Light Blue- Grant Square Park	<ul style="list-style-type: none"> <li>• Upgrades for Future Electrical Service</li> </ul>
Black- Holmes Field	<ul style="list-style-type: none"> <li>• New Baseball Fields, Tennis Courts, and Play Areas</li> </ul>
Highlighter Yellow- Mulcahy Field	<ul style="list-style-type: none"> <li>• New Dugouts for Baseball Field</li> </ul>
Lilac- South Worcester Playground	<ul style="list-style-type: none"> <li>• Construction Begins on Phase 1 of Master Plan</li> </ul>
Orange- University Park	<ul style="list-style-type: none"> <li>• Basketball Court Improvements &amp; Security Cameras</li> </ul>

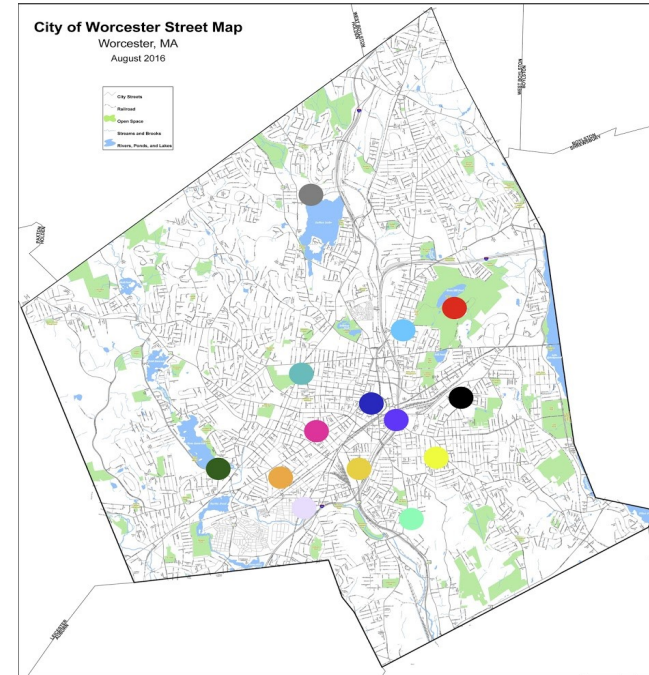


Figure 7: There have been many capital improvements made to city parks in all five districts in Worcester.

income neighborhood, all of which have minimal diversity. In district two, Holmes Field is in a low-middle income and moderately diverse neighborhood, while Shale Street Playground is surrounded by a low income and very diverse neighborhood. In District 3, Mulcahy Field belongs to a low -middle income neighborhood with average diversity. In district four, we analyzed South Worcester Playground, Elm Park, University Park, and Oread Castle Park. South Worcester Playground sits in a very low-income neighborhood with high diversity. Elm Park is split into two sides by Park Avenue. The Western Newton Hill side is in a middle income and minimally diverse area. However, the Eastern side is part of a lower income and highly diverse community. University and Oread Castle Park are both in low income and very diverse communities. District five consists of Coes Park, Columbus Park, and Knights of Columbus Field. All of which, are in middle-income areas, with the exception of the low income housing community adjacent to Coes and Columbus Park. Diversity ranges from low to high in each of these parks. When these parks are mentioned in the following section please refer back to this

paragraph or spatial maps to understand the demographic.

### Resources are Distributed to Parks with No Environmental Justice Concern

The resources that are available for the parks of Worcester are distributed roughly equally amongst communities of different demographics, illustrating that there is no environmental justice issue for park governance in present-day Worcester. Worcester has seen a renaissance of the green space over the past five to ten years. A local business representative said, “About ten years ago there was a big increase in park development from the city” (Interview 6). The city’s greater prioritization of urban green space is evident through staffing and budgetary decisions relating to the Parks and Recreation Department. Over the last five years, Parks and Recreation has nearly doubled its staff and

increased the capital parks budget by \$50 million. With the increased budget, Parks and Recreation has carried out numerous infrastructure improvements. In 2018 alone, the department spent \$800,000 for equipment to improve maintenance. In addition, the city has completed the development of three dog parks, after once having dogs strictly prohibited from each park, highlighting greater flexibility about the ways that people experience/interact with parks (Interview 9, Interview 12). A high-ranking city official stated, “At one time, quality parks were seen as luxury in Worcester; now we see them as a necessity” (Interview 12). Of recent years, Worcester’s city officials have prioritized equitable and quality parks.

Although there has been increased attention towards parks, there are still limited resources available. Public schools and safety including police and fire receive 71.5% of city funds, while public works and parks receive 4.3%.<sup>23</sup> When compared to cities of similar population size, 175,000 to 190,000, Worcester has limited funds to spend on capital improvement. In 2018, the city had \$10.5 million to spend on capital park infrastructure.<sup>23</sup> However in 2009, the cities of North Las Vegas, NV and Irvine, CA had \$15.5 million and \$17.3 million, respectively without inflation.<sup>24</sup> With master plan projects costing up to \$2 million each and sixty-one parks in Worcester, there comes the decision to conduct less major developments or a greater number of small improvements. Additionally, the limited funds create

Table 2: Safety partnerships, programming partnerships, and financial partnerships are the three types of partnerships that are the most important for green spaces in Worcester.

<b>Safety Partnerships</b>	Determined Through City and Community Interviews	University Park & WPD
<b>Programming Partnerships</b>	8/13 Parks Want improved Programming 6/13 Interested in Concert Series	Coes Park & Seven Hills Foundation
<b>Financial Partnerships</b>	13/13 Could use Financial Support	Friends of Newton Hill & Blue Jeans Pizza

the issue of which parks are prioritized. A city official expressed their desire to improve as many parks as possible by spreading the funds. The official also stated, “We try to prioritize the projects by community needs” (Interview 12). The available park funds are widely distributed and show little evidence for an environmental justice concern.

In the last five years, Worcester has invested in and completed infrastructure projects to parks with no correlation to environmental justice. The City of Worcester has contributed to infrastructure projects in each of the five districts. The full list of parks that received infrastructure improvements, based on our field work, over the last three years is displayed in Figure 7. The following projects are chosen to show the extent of the spread of resources to varied communities. In district one, Shore Park received a contribution of \$200,000 for the construction of a new bathroom and storage building (Interview 11). Holmes Field, in district two, is currently under construction with new baseball fields, tennis, courts, and play areas coming soon (Interview 6). In 2018, District three’s Mulcahy Field had new dugouts installed at their Little League Field. In district four, South Worcester Playground, Elm Park, and Castle Park had major capital improvements. South Worcester Playground had phase one of their master plan started in 2018 and will receive \$250,000 over the next four years for further developments (Interview 10). In 2016, Elm Park received several million dollars for benches, lights, paths, bridges, and retaining walls, while Castle Park received \$2 million to fully fund their master plan and reopen in the fall of 2017. Finally, In District 5, Coes Park recently opened their fully handicap accessible playground with help from city officials. Master plans have been created for the majority of Worcester’s Parks, the city council

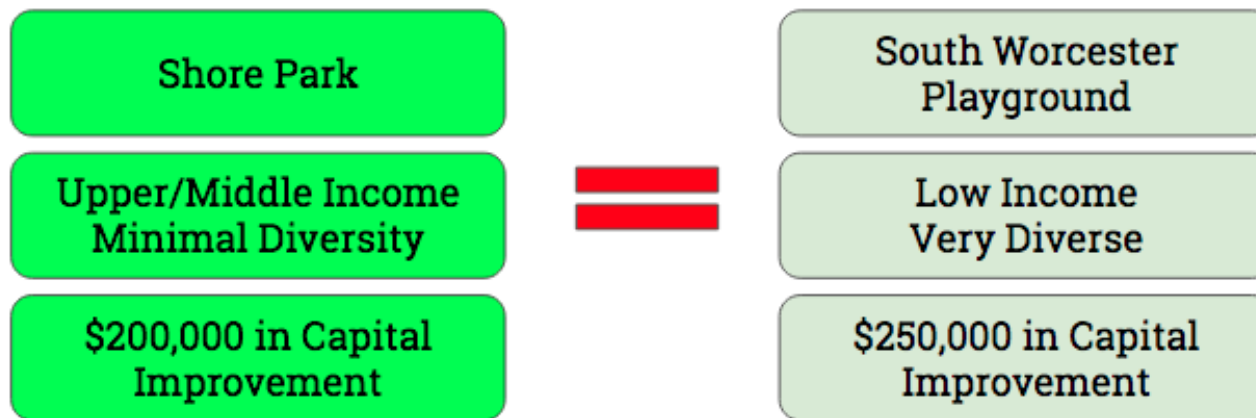


Figure 8: Parks in low income and high diversity neighborhoods see the same amount of capital improvements as parks in high income and low diverse neighborhoods.



Figure 9: Transparent Relationship and Partnership Resource Sharing are the key to enhancing Worcester's green space.

attempts to prioritize the plans in less privileged neighborhoods. For example, the first city-owned artificial turf field was intentionally constructed at Providence Street Playground, where the residents, on average, have a low income and little yard space (Interview 12).

A lack of communication has led to the misperception of resource distribution amongst Worcester's communities. A high-ranking city official recognizes that the city is not in frequent contact with park representatives, meaning there is a lack of communication when it comes to park space (Interview 12). This lack of communication can be illustrated by the limited knowledge of where communities stand on the priority list. One park representative recognized that their park completed a master plan five years ago and has not received any information about its design and construction schedule (Interview 11).

Additionally, there is a lack of communication amongst neighborhoods. This miscommunication is shown when comparing Shore Park and South Worcester Playground, both of which received similar money towards their projects, but reside in neighborhoods of different make-up. When talking to a Shore Park representative, she gave the level of city resources a one on a scale to five (Interview 11). This means that the Shore Park community is unhappy with the resources provided by the city. However, a South Worcester Playground representative gave a three, meaning they are moderately happy with the resources provided by the city (Interview 10). It is important to note that our research does not consider historical environmental justice issues in biases, but these ratings show that the perception of resource distribution does not illustrate the current reality.

### Partnerships are Vital for Immediate Improvements

While the funds and resources for green space are increasing, community and city representatives recognize that partnerships are important in securing immediate improvements to the parks (Interview 5). After asking park representatives what types of partnerships would be most beneficial and what are the most important aspects of a park, we determined that the three types of partnerships that are most beneficial to parks are safety, programming, and financial partnerships (Table 2). Safety partnerships are most effective when made with the Worcester Police Department (WPD). The prime example for a safety partnership being beneficial is University Park and the Worcester Police

Department. A University Park representative expressed the need for safety to increase park usage. University Park had a strong perception of gang violence before representatives of the park partnered with the Worcester Police Department. The WPD makes regular sweeps of the park without any intention of interaction and the park has seen major turnaround in violent activity. After a door to door study conducted by Clark University students, the amount of perceived crime has decreased by 87% (Interview 3). A representative of the city also stated that safety is a priority and mentioned the city's plan to work with the WPD to

correctly place cameras at parks with criminal activity (Interview 12). In general, a safer park is more welcoming to families (Interview 3).

Programming partnerships can be made to quickly turn around a park and increase regular usage. Eight of the thirteen represented parks would like improved programming through partnerships. From park representative responses, our team determined that the majority of programming partnerships fall under service programming and entertainment programming. Service programming consists of workers that help the park. It is a

*“Capital Improvements are only as good as the ability to maintain them”*



mutually beneficial partnership because workers gain experience and a strong work ethic, while parks gain services that can include maintenance. Entertainment programming involves any activity or event that is held for community enjoyment. Partnerships can be made with groups that hold concerts, sporting events, or recreational programs. Coes Park created a service partnership with the Seven Hills Foundation to build a cafe and give disabled individuals jobs. Coes Park quickly became a handicap friendly park with their handicap accessible playground and the inclusion of on site bathrooms. The Park representatives recognize increased usage and attention from the cafe and accessibility (Interview 3). In contrast, University Park used entertainment partnerships to host the Rec Worcester Program, outdoor concerts and movies, and even a boxing tournament. The park was able to hold these events with the help from other parties such as the City of Worcester and Park Spirit Inc. Six of the thirteen park representatives expressed interest in a concert series similar to the one held at Elm Park by Park Spirit of Worcester.

Finally, financial support is recognized as the most important partnership type, with all thirteen of the represented parks actively expressing a desire for greater partnerships in order to raise more funds (Figure 10). Friends of Newton Hill are credited for vast improvements to the Newton Hill side of Elm Park. A 40-acre piece of land that was neglected until the 21st century, Newton Hill is now well maintained and full of amenities including the East-West Hiking Trail and a disc golf course. A member of the Friends of Newton Hill recognized that the improvements would not have been possible without donors, grants, and their sponsor Blue Jeans Pizza (Interview 2). A majority of park representatives specified that they would like Park Spirit to raise funds for their park. One representative expressed that locals would rather give money to an organization that represents the community then the city government (Interview 10).

Figure 10: Financial partnerships are vital to providing amenities and resources to parks such as park benches.

## Future Research Themes

Throughout our research, we identified two additional themes of maintenance, political representation, and programming, there have been other themes outside of our objectives which are also important to the management of green space in Worcester. The first theme concerns the allocation of funds in terms of capital improvements versus maintenance. Many community members felt that there is a disproportionate allocation between capital improvements and park maintenance. The general consensus from community members that the city's efforts to maintain the parks is lacking. In our interviews, however, city officials clearly identified park maintenance within the purview of the city, albeit in conjunction with community participation.. One high ranking city official stated that he felt maintenance was an issue that requires both the city and community to work together (Interview 12).

This differing viewpoint between community members and the city speaks to changes in park management over time in Worcester. Historically, the Parks and Recreation department was very underfunded and understaffed, causing a lack of park upkeep in the 1970s and 1980s. Since the 1970s, city spending has shifted away from the provision of public goods and focused to a greater extent on revenue-generating activities; this has decreased urban parks budgets across the country. Therefore, a combination of economic hardship and governance trends have shrunk Parks and Recreation budget and staffing progressively over time—and the recession of the 2000s shrank the department even more.

However, the past five years have indicated a sharp divergence from these trends, as the city has attempted to revitalize the department along with the parks by increasing funding and staff. Community members suggest that this increased prioritization has yet to be properly reflected in park maintenance. Some parks like Columbus

Park are somewhat neglected, filled with litter and trash, while parks like Newton Hill are completely maintained by the community and specifically Friends of Newton Hill. The community has been very appreciative of the city's efforts to enhance green space through capital improvement, but as a board member of Park Spirit stated, the capital improvements are only as good as the ability to maintain them (Personal Communication, 2019). The city is doing an equitable job distributing their available funds, but our research suggests that the city ought to improve park maintenance efforts in order to make their investments sustainable.

Another theme in our research concerns the ways that political representation impacts funding distribution across the city. Worcester's districts all have very unique qualities. According to a city official, districts one and five have a very high voter registration and participation rate. The other three districts tend to lack high political participation rate. South Worcester Playground, for example, is on the border



*High Ranking City Officials were essential to understanding environmental justice and the changing mentality for green space in Worcester.*

of district three and four, and it has an extremely low voter turnout in their district with about 300 registered voters. Representatives we met with in these areas felt that this could have been a reason for the lack of city attention in the past. A community member we spoke to stated that “no votes equals no political attention” (Interview 10). When political capital is low, the city will not give these neighborhoods attention. If communities want to see change in their city, they need to become politically active to ensure that the city prioritizes their neighborhoods/parks/etc.

The final theme was the importance of programming. Every single park representative that we interviewed emphasized that parks are as only as strong as the success of the programs that are run in the park. Park Spirit, as mentioned by every city official and community member, does a tremendous job regarding the Elm Park Concert Series and the Bancroft Tower openings. One community

member stated that programs anywhere from sports leagues, to celebrations of holidays, festivals, etc... are great programming events that need to be explored for the future not only in Elm Park but in all of Worcester’s parks. Another community member we spoke with stated the importance of event planning in parks, especially for neighborhood parks. She stated that “a community is where you live but a neighborhood is where people bond” (Interview 10). Programming in parks is valuable in creating tight knit neighborhoods that enhance quality of life for their residents, while they set precedents for creating a positive atmosphere in the parks and eliminating the opportunities for unsafe activities. In order for the current investments in capital improvements to succeed, the city and Park Spirit should focus on/prioritize park programming.

## Project Outcomes and Research Gaps in Evaluating Green Spaces

Our research spanned fourteen weeks of understanding the dynamic between a city, its citizens and green space. From learning how the government in Worcester works in terms of funding, to the roles of community organizations in parks, we were able to learn not only a ton about our research, but about the individuals in Worcester. A majority of the individuals we met with throughout our project were born and raised in the city, and they all praised the city as being able to keep its residents for their lifespan regardless of its issues or hardships. This project really showed us the drive and passion that the citizens and city officials of Worcester have to improve their



*Neighboring Park Organization Representatives were essential to understanding green space partnerships in Worcester.*

“home” and to make it the best it can be. We also got the opportunity to learn specifically about green space culture and takeaway some important knowledge about the city, green space, and partnerships.

The big takeaways from our research regarding green space in Worcester is first, that the funding and environmental goods in the city are equitably distributed. When analyzing the dispersion of capital improvements the city has done over the past few years, it can be seen that there is an inherent focus on environmental justice neighborhoods. The second takeaway is that partnerships are essential to proper green space advocacy, but they must be formed in manners that equally represent and benefit partners, both through aligning of missions and resource sharing. When looking deeper into partnerships, both trust and communication play a major role in the success of them. In order for Park Spirit to thrive in their role in Worcester, they must be well trusted and communicate transparently with their partners.

Throughout our research we experienced a handful of limitations. The first was with community response. We had reached out to about forty individuals regarding setting up interviews and tours of their respective parks, only hearing back from about fifteen in total. This shrunk our data set significantly from what we originally expected and affected our attempt at even distribution throughout Worcester. This was something that we could not really affect ourselves but attempted to do everything we could do to get into contact with these individuals.

For the individuals we were able to interview, there are some limitations that appear in terms of bias. We noticed that often times whether it be on the topic of environmental justice or city funding there were answers that were not totally impartial. These organizations and individuals may have had past experiences with the city or with demographic issues previously and these often times were reflected in their answers, which made it very important for us to fact check all the answers we received. These issues can often spark emotions and trying to make sure that the data was impartial, and that we were receiving unbiased information was at times tough and definitely a limitation in our work. Another limitation we ran into was with the spatial mapping, specifically in the diversity section. For our spatial mapping we used an overlay that calculated diversity based on the likelihood of two individuals from the same area (census group in this case) being different in terms of race and ethnicity (arcGIS.com, 2019). While the diversity index was

likely constructed as a measure of social vulnerability, this method of calculation may actually conceal areas of vulnerability in certain instances. For example, in communities that are predominantly African-American, the diversity index would be low, although African-Americans have historically been a very marginalized social group in the United States.

The final limitation we experienced was with the budgeting information. Throughout the IQP process we spent many hours attempting to get clear budgeting information for each park. The public city budget on the website is very hard to maneuver, but it is also not broken down in a very detailed way in terms of parks and recreation. When meeting with two highly ranked city officials, we attempted to receive budgetary information from their offices, as they had both stated they had clearly broken up budgets for the parks available. From the first, his secretary directed us in the direction of the city budget and from the second we were given a list of a few parks, but no parks that we didn't already have monetary values for. This somewhat hindered our ability to confirm dollar amounts we were given by community organizations and for us to be able to fully comprehend the distribution of funding. We needed to go on what we had available and what we had learned from interviews to make our claims regarding the distribution of goods.

## *Park Spirit Moving Forward*

Park Spirit is currently serving as the strongest park advocacy group in Worcester. In order to further their mission of advocating for all sixty-one parks, there needs to be an enhancement in their communication with the city as well as the other organizations that represent green spaces in Worcester. The best way to get this started is by beginning a semi-annual Green Space Open House. This event would be sponsored by the city, and be an open forum for discussion between the green space organizations in the city. This meeting would have three primary goals. The first would be to help different groups understand each other's needs. Currently, there seems to be a lack of knowledge of the other parks in Worcester by organizations. If there was open communication on the current state, aspirations and necessities of all the green spaces there would be less confusion as to what parks are funded, and less animosity and frustration from communities. This would also allow for

the second goal to be achieved which would be building a priority plan for park improvements to present to the city. In this way, the community can decide what needs improvements the most and can agree on the distribution of the funding so that everyone is on the same page. This also creates transparency within “the system” which is something community members seek. These first two goals would create a cohesive communication platform between green space organizations and the city, which is super important to the success of green space in this city. Park Spirit plays the crucial role of being the middleman in bringing everyone together. Communication is a staple to success for Park Spirit and as the middleman they need to communicate on both ends to be as successful as possible.

As discussed in the other themes section, the continuing of programming and increase in programming would benefit Park Spirit profoundly. All of the groups we met with stated to us that they do a tremendous job with the concert series, specifically in Elm Park, but lack programming that is well spread throughout the city. Dispersing their programming throughout the city, especially to the parks with little representation will help achieve their goal of advocating for all sixty one parks, and good programming will help these poorly represented parks in attempts to clean them up and also make them safer.

The final recommendation for Park Spirit relates to the organizational form that Park Spirit takes. We feel that Park Spirit has a pivotal role in the city. This role could be used to its full potential if there was a potential organizational shift to a conservancy. A conservancy is an advocacy group that focuses on fund raising for green spaces. This idea was presented to us by many different organizations we met with throughout our research. They felt that donors would be far more comfortable giving to an organization like Park Spirit rather than giving money straight to the city in hopes it is used properly. Additionally, Park Spirit could align themselves as a city wide conservancy that focuses on park advocacy targeted to raise money for the parks on top of programming. This format could help further legitimize the organization with all other organizations and the city. Creating a conservancy would open a whole new door of opportunity for Park Spirit to continue to grow and expand.



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***To view the supplemental materials for this project, visit: [https://wp.wpi.edu/wcpc/park\\_spirit\\_2019/](https://wp.wpi.edu/wcpc/park_spirit_2019/)***

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