Accentuating Accessible Recreation in Greater Worcester

Developing the S.T.A.R.S. Health Equity Rubric and Promotional Tools to Help Increase Public Engagement in Physical Activity

An Interactive Qualifying Project submitted to the faculty of Worcester Polytechnic Institute in partial fulfillment of the requirements for Degree of Bachelor of Science

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Abstract

The project goal was to help the Worcester Division of Public Health (WDPH) fulfill the Community Health Improvement Plan objective to increase community member engagement in physical activity by developing a set of promotional tools to increase awareness of local accessible recreation opportunities. To accomplish this goal, we created the S.T.A.R.S. criteria - Safety, Transportation, Access, Recreation, and Social Value - to assess health equity of public recreation spaces. Using the evaluation and scoring system, we produced a set of featured recreation spaces that are publicly displayed using a web page, interactive map, guidebook, brochure, and video. We provided the WDPH an updated "RecSpace" database and associated instruction manual for updating these promotional resources.

Acknowledgments

The success of this project was made possible by many individuals, and we would like to express our gratitude towards all of the people who donated their time, energy, and support throughout this 14-week process.

First, we would like to thank our sponsor, Jacqueline Ewuoso, from the Worcester Division of Public Health, whose knowledge and contributions were essential to the success of this project. Along with giving our team the opportunity to collaborate with the WDPH to complete this project, Jacqueline also provided us with the necessary contacts and resources to make meaningful progress and developments.

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Also, we would like to thank Laura Robinson, from the Worcester Polytechnic Institute Library, for assisting us while writing the project report. Laura's advice greatly helped the advancement of this project and the process of writing the final report.

Finally, thank you to our advisors, Scott Jiusto and Creighton Peet, for continuously providing their guidance and support. Both of them expressed genuine interest towards the project, which was reflected by their ongoing excitement regarding the work we were doing to make impactful contributions in the Worcester community.

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Executive Summary

Physical activity is associated with a variety of health benefits, such as lowering the risk of obesity and heart disease and utilizing recreation spaces provides the necessary exercise to live a healthy lifestyle (United States Department of Health and Human Services, 1996; Berg et al., 2015; Peters et al., 2010; Neilsen & Hansen, 2007). However, citizens of urban communities often experience barriers that may restrict access to these recreation areas and exclude them from the benefits, such as the lack of transportation routes, poor public perception of safety, and the lack of universally accessible elements (Giles-Corti & Donovan, 2002; Lenhart et al., 2017; United States Access Board, 2018). Recognizing and removing these obstacles are key to creating a healthy community. Urban areas have made efforts toward this goal, yet, despite having a diverse set of public recreation spaces, the level of obesity and heart disease in Greater Worcester remains significant.

Community members and local sponsors can collaborate to implement strategies to increase public engagement in accessible recreation, thus helping to improve public health (Vermont Department of Health, 2013). Following this principle, the Central Massachusetts Regional Public Health Alliance (CMRPHA) was created by seven municipalities in the Greater Worcester Area to address prevalent public health problems in these communities. This organization developed a set of objectives within the Community Health Improvement Plan (CHIP) to address public health priority areas determined by the Community Health Assessment (CHA). More specifically, the CHIP created objectives to increase the awareness of accessible recreation spaces to confront the CHA's priority area on physical activity. However, recreation spaces in CMRPHA communities had not been assessed based on specific community needs and desires, and this information was not available to all population groups.

Methods, Results, and Key Findings

The team first identified the public recreation spaces in the CMRPHA communities by incorporating data from the Worcester 2013 Open Space and Recreation Plan (OSRP) and the Greater Worcester Land Trust (GWLT) 2018 Hiking Guide into a previously compiled list from the Worcester Division of Public Health (WDPH). We produced the "RecSpace" database to organize this information into five categories:

- Public Parks
- Public and School Playgrounds
- Indoor Community Activity and Rec Centers
- Outdoor Tracks and Sports Fields
- Trails for Walking/Biking/Hiking

We later conducted semi-structured interviews with various stakeholders, which enabled us to determine five major criteria necessary for thoroughly assessing the health equity of recreation spaces: Safety, Transportation, Access, Recreation, and Social Value (S.T.A.R.S.) (Figure 1). We then created a field data sheet (FDS) based on these criteria as a tool to assess and store accessibility data.

We then developed a rubric-based scoring method from the FDS to determine the relative degree of health equity and identify featured spaces for public promotion. On the rubric, each of the criterion had a sub-criteria section that had a 1-5 scale scoring system. The format in which this data was presented is meant for easy public understanding and can be used as a foundation for others to develop a more comprehensive system in the future.

Using previous assessments from the OSRP, the team entered information into the FDS in order to develop a fieldwork schedule that prioritized locations where information was lacking. To ensure consistency with the assessment process, the team pretested the FDS with representatives from the Commissions of Disabilities and other organizations. Photographs and notes were taken to supplement the responses in the FDS.

Based on the information entered into the field data sheet, each recreation space was given a score for the S.T.A.R.S. criteria as well as an overall health equity score that was visually represented using the team's Health Equity Star design (Figure 12). These raw scores were then used to identify a set of "Features Locations" based on their overall scores and/or accessibility features.
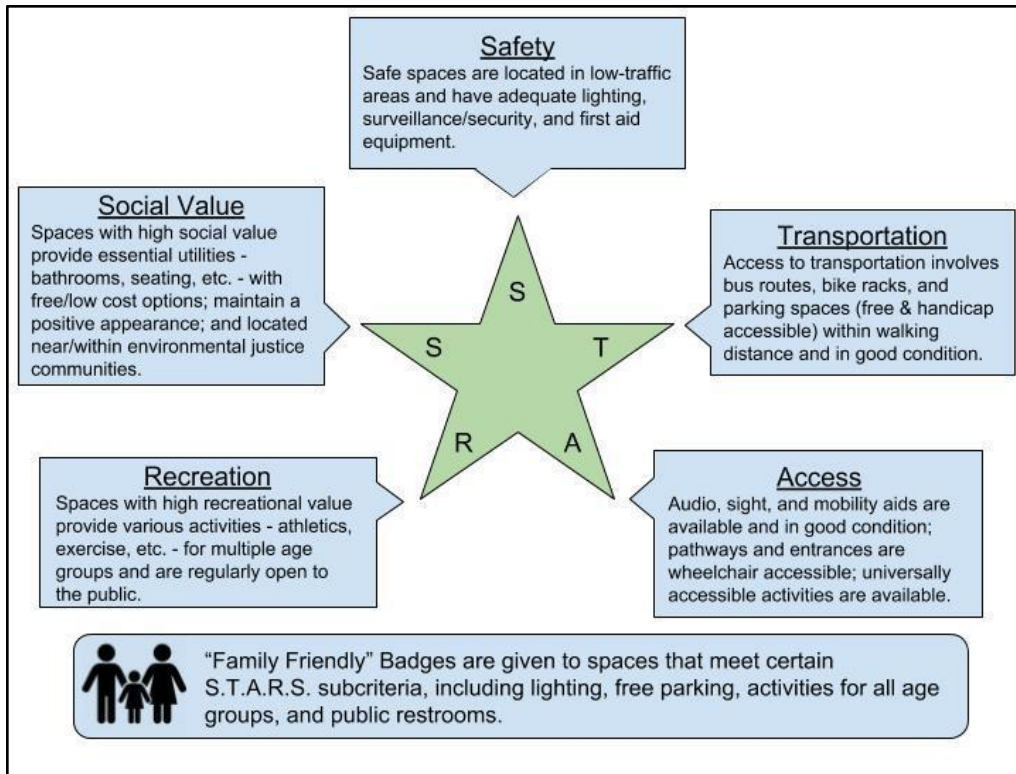
Figure 1: S. T. A. R. S. Accessibility Rubric divided into major criteria and associated definitions
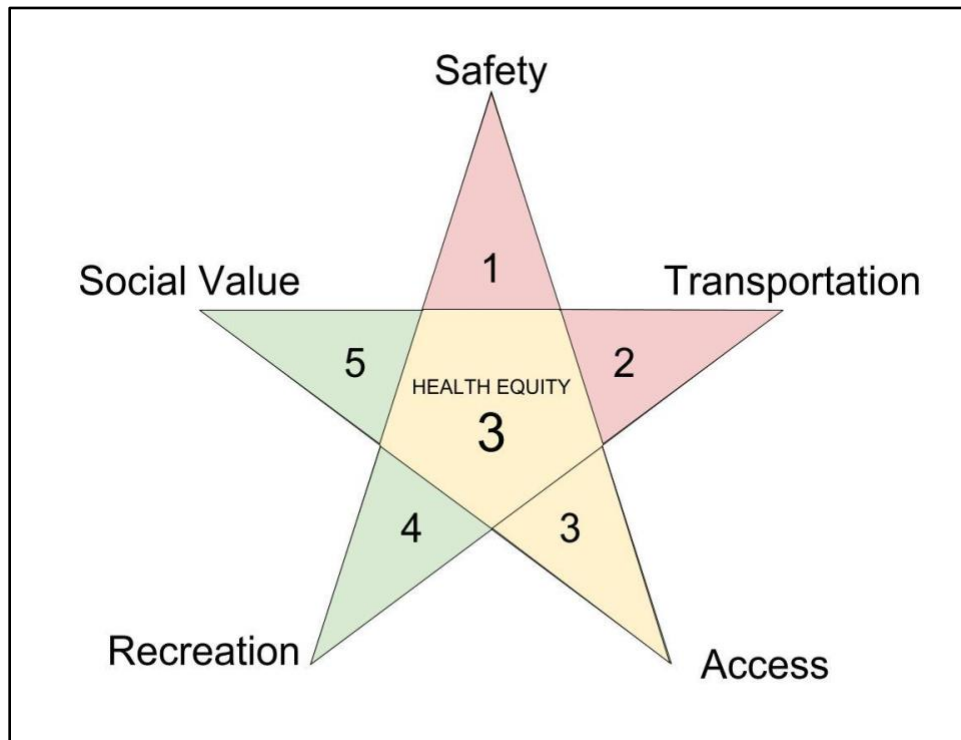
Figure 2: Scoring Graphic for Overall RecSpace Accessibility

Outcomes and Recommendations:

This project generated several deliverables for the Worcester Division of Public Health, in chronological order (Table 1):

Table 1: Project Deliverables and Descriptions

RecSpace Database	Stores the results from field data collection process and helped us score each location.
Field Data Sheet	Allows researchers to efficiently assess locations using questions and checklists.
S.T.A.R.S. Rubric, Scoring Method	Quantifies the results of field data collection and identifies sites' health benefits and areas for improvement.
RecSpace Web Page, Map	Displays the full and featured list of recreation spaces on a user-friendly platform and enables users to filter recreation spaces to match their interests.
RecSpace Guidebook, Brochure	Communicates key health equity concepts and information to the public in a concise, understandable format.
Promotional Video	Showcases some featured recreation spaces in Worcester to generate public interest and to guide viewers to the RecSpace web page.
RecSpace Revisions Manual	Provides WDPH staff and future project teams with directions on how to update the RecSpace's resources.

The RecSpace web page allows users to filter through the set of recreation spaces on the map based on the features of interest (Figure 14). For more detailed information, we developed the RecSpace Guidebook (Figure 15) containing full summaries, pictures, public transportation routes, and walking/biking directions from the nearest bus stop and from a central location, such as Union Station. Paper brochures (Figure 16) were created and given to the WDPH to distribute throughout the city. To secure the sustainability of this project, we developed the RecSpace Revisions Manual to be used by the WDPH and future project teams to keep the data in these resources consistent and up-to-date (Figure 17).

Figure 14: Excerpts from the RecSpace Web Page (Full Size in Appendix E)

Figure 15: Excerpts from the RecSpace Guidebook (Full Size in Appendix E)

These documents and devices were given to the WDPH to promote accessible recreation in Worcester and other CMRPHA communities. Ideally, the implementation of these promotional materials will result in increased engagement in recreation in and around Worcester, leading to healthier lifestyles within the CMRPHA communities. Based on the results and findings of this project, we have created a list of recommendations for the WDPH, City of Worcester, and other stakeholders to maintain the promotion of parks in Worcester and surrounding towns. Some of the key recommendations include:

1. Keep all future promotional materials easily modifiable and maintainable so the promotion or its effects won't decrease.
2. City officials should consider recreation space diversity when developing improvement master plans.
3. Use a categorized rubric which mirrors the field data sheet to turn qualitative measurements into quantitative data.
4. Consult stakeholders for feedback and recommendations on methods and consider their wants and needs when developing any new materials.
5. When displaying the top locations, order the locations alphabetically rather than by score to avoid implied precision.

We have concluded that the concept of accessible recreation extends far beyond the conventional definition of being able to locate and access places for physical activity. Over time, RecSpace will need to be updated to integrate new data as indoor and outdoor public spaces are built or renovated. Nevertheless, we believe that RecSpace fulfills its purpose by providing information on accessible recreation opportunities, and travel routes to these featured spaces for the public's benefit. Our team reviewed, updated, and assessed accessibility features in physical recreation spaces within the CMRPHA communities, with broader social and socioeconomic perspectives in mind, and developed materials to effectively communicate this information across media platforms. Also, this project documented and created tools to promote walking, biking, and public transportation routes to a set of featured places (CHIP objective 8.1.1). In a broader sense, this project contributed to the WDPH, the CMRPHA, and citizens of Worcester and surrounding towns by constructing a practical and relatively easy system to evaluate indoor and outdoor recreation spaces and displaying this information using a format that is readily available and user friendly.

Chapter 1: Introduction

Physical activity and recreation are associated with significant physical and mental health benefits that have the power to facilitate social cohesion (United States Department of Health and Human Services, 1996; Berg et al., 2015; Peters et al., 2010; Neilsen & Hansen, 2007). Geographic, socioeconomic, physical, and safety barriers presented by urban landscapes obstruct access to these recreation spaces and exclude citizens from equitably harnessing their associated benefits. In low-income neighborhoods, areas may not be perceived as safe, making it difficult for residents to utilize these areas (Giles-Corti & Donovan, 2002; Lenhart et al., 2017). Additionally, people living with mobility issues, visual impairments, or other disabilities may have a difficult time using parks that are accessible to able-bodied citizens. Ground material, slope, and adequate signage with raised letters are examples of many important considerations for enabling people with disabilities to adequately utilize a park (United States Access Board, 2014). Guided by and building upon previous efforts, some cities with similar problems are developing and executing new strategies to improve access to physical activity spaces and promote healthy lifestyles (Handy et al., 2002). Therefore, proper city planning and accessibility to recreation spaces may enhance public health in urban areas.

Obesity and cardiovascular disease due to insufficient engagement in physical activity have become increasingly prevalent public health issues in urban areas, including Worcester, Massachusetts (Forbes, 2013). Despite having a wide variety of public recreation spaces, the prevalence of obesity and heart disease in Greater Worcester remains significant. High traffic volume in Worcester can prevent safe travel across the city. Poorly maintained sidewalks, lack of bike lanes, and lack of crosswalks can all be dangerous obstacles preventing people who do not own cars from navigating the city (Atchue, Mikolajczyk, Sajjadi, & Snowden, 2017). However, access does not assume awareness. Some recreation spaces in Worcester and the surrounding towns are hidden, unknown to average pedestrians. One might not expect a disc golf course only a few dozen feet from the heavy traffic of Park Avenue, for instance. Barriers preventing access to recreation spaces may contribute to the lack of awareness and participation in physical activity and to many of the health problems in the Worcester area.

Past efforts by Vermont and Wisconsin, each ranked among the most physically active states in the country, have attempted to increase access to recreation. Environmental and policy changes led Wisconsin to implement evidence-based strategies that encourage citizens to be active (Wisconsin Department of Health Services, 2018). Meanwhile, the structure of Vermont's plan focuses on improving community members' relations with sponsors with the goal to improve public health, which enabled them to gather donations and long-term sponsors to reach their goal (Vermont Department of Health, 2013). Establishing local committees that served as an interface between the common population and the city officials contributed to the success of reaching state objectives.

Similar to Vermont's committees, the Central Massachusetts Regional Public Health Alliance (CMRPHA) was established by seven municipalities in the Greater Worcester area. Based on shared public health objectives, the Community Health Improvement Plan (CHIP) and

the Community Health Assessment (CHA) are used by the CMRPHA to analyze community problems and develop public health strategies to fix them (Forbes, 2013). Despite having these guiding documents, much work and research are needed by Worcester to reach the overall goal of being the healthiest city in Massachusetts by 2020. The CHIP document is actively supporting work on effectively promoting physical activity, however recreation spaces in CMRPHA communities have yet to be assessed based on specific community needs and desires, and this information is not equally available to all population groups in an accessible format. The Worcester ParkSpirit and WalkBike IQPs investigated park awareness along the East-West Trail and the current state of non-motorized transportation, respectively (Atchue, Mikolajczyk, Sajjadi, & Snowden, 2017; Gandolfo, Greenalch, & Todd, 2017). However, there is inadequate information on the extensive list of Worcester area recreation spaces beyond these two studies that assesses physical accessibility features with broader social and socioeconomic perspectives in mind.

This project helped address the public health issues facing CMRPHA communities through the development of an inventory of accessible recreation places and tools used to promote them. The Worcester Division of Public Health can use these resources to fulfill the CHIP objectives. The team systematically inspected and reviewed the accessibility of local recreation spaces through the lens of a health equity rubric, referring to rubrics used by other researchers as models. Field data used to rank recreational places on the degree of accessibility were compiled onto a database and displayed on an interactive map, similar to those previously constructed by WDPH interns. The team then designed a web page to relay and effectively promote the gathered information on accessible recreation to the public. By raising awareness of accessible recreation and the benefits to overall public health that can be obtained from physical activity, we hope to help increase public participation in physical activity in the CMRPHA.

Chapter 2: Background

The Worcester Division of Public Health released the Community Health Improvement Plan in 2016 to emphasize the focus areas for public health initiatives. This project prioritized Objective 8.1, which addresses the need for equitable and accessible recreation spaces to engage in physical activity. In this chapter, we define physical activity, establish a multi-dimensional definition of accessibility by considering geographical data, socioeconomic disparities, disability services, safety, and environmental justice. These concepts enable specific accessibility criteria to be developed for evaluating physical recreation spaces in Worcester, MA while drawing from national and local programs as methodological models. Finally, technical approaches, such as designing online and offline promotional tools, will be discussed based on their potential to assist the Worcester Division of Public Health to improve and raise awareness of accessible physical activity spaces in the CMRPHA community.

2.1 Defining Recreation

The Merriam Webster Dictionary describes recreation as "refreshment of strength and spirits after work; a means of refreshment or diversion" ("Recreation", Merriam-Webster, 2018). A deeper meaning can be found in Veal's definition of recreation, "Experiences and activities chosen and pursued by the individuals in his or her free time; 're-creates' the individual so that he or she may be refreshed to resume daily obligations" (Veal, 1992, p. 46). Further, The Park and Recreation Handbook adds that recreation "must contribute to society in a way that society deems acceptable" (Hurd & Anderson, 2010, p. 10). All sources, though, point to recreation as a revitalizing experience that brings balance to one's life and a break from performing the mandated tasks of everyday life. Overall, these definitions suggest recreation's effect extends beyond the actual physical act.

Two key categories of recreation are passive and active (Western Reserve Land Conservancy, 2008, p. 2-3). Passive recreation, also known as low-intensity activity, requires little to no land development and emphasizes wildlife and habitat preservation. Passive recreation is less expensive for a community as it requires minimally intensive development and management. Common examples of passive recreation include hiking, biking, walking, running, playing with a frisbee, wildlife watching, painting, and rustic picnicking. Active recreation generally requires "significant infrastructure for the purposes of active sports or organized events" (Hurd & Anderson, 2010, p. 11). Providing active recreation is often expensive, requiring intensive maintenance and management of larger parcels of land. Examples of active recreation places include sports fields, playgrounds, golf courses, outdoor theaters, game rooms, and skate parks.

2.1.1 Physical Activities

Leisure-time physical activity (LTPA) is daily physical activity completed solely for recreation outside of occupational, domestic, and transport domains (Berg et al., 2015). For example, LTPA includes activities such as sport and planned exercise but does not include manual labor, or biking as a form of transportation such as commuting to work. Participants mainly find LTPA pleasurable and enjoy the associated social interactions. Previous public health programs promoting healthy lifestyles and creating social change have disregarded adults and underprivileged groups with the belief that their behavior is unchangeable (Berg et al, 2015). However, these groups function as models for future generations to follow, so the need for physical activity by these populations is critical. Ultimately, the encouragement of sport and other LTPA is critical during early adolescence and through adulthood as it creates a diverse range of age and social groups that can benefit from its hedonic and social rewards.

Notably, alternative research has emphasized the importance of using other domains of physical activities to get the minimum daily time necessary to prevent obesity and heart disease (Bauman et al., 2008). Specifically, LTPA is recommended as a supplement to these other domains, and alone does not produce the same health benefits. In this case, physical activity is described as "any activity containing large muscle (body) movement… and energy expenditure" (Bauman et al., 2008, p. 119). For example, urban gardening programs have combined community engagement with physical activity to foster healthy living by educating people to grow their own healthy food while getting them to participate in the physical outdoor activity of maintaining a garden (Schram-Bijkerk et al., 2018). From this definition, it is evident that occupational, domestic, and transport domains should be combined with LTPA so that participants can earn the health, social, and hedonic benefits. For the purpose of this project, physical activity is defined as a form of recreation that can provide various health and societal benefits, such as preventing widespread obesity and heart disease while also encouraging social interaction and cohesion.

Physical activity can be viewed in four levels (inactive, low, medium, high), each being determined by the intensity and amount of time committed each day or week. The intensity is measured by baseline activities - such as standing, walking, and lightweight lifting- and health-enhancing activities, which are more engaged baseline activities. The range of these levels of activity can be found in Table 2. The level of activity that individuals partake in may have various effects on several aspects of their lives. Studies show health and mental well-being are significantly better for those reporting the medium to high levels of activity (Leavitt, 2008). The number of individuals who fall within this range is based on factors such as access to electronics, household income, promotion of the community, use of automobiles, and the surrounding environment. Those with more access to electronics are less likely to engage in physical activity and are found in greater numbers at the inactive-to-low level (French et al., 2001). Human behavior, especially physical activity, is dependent on the location of environments that enable physical activity, such as gymnasiums, parks, playgrounds, or trails (Brownson et al, 2009). The more of these places that are in each area, the greater the number of community members who fall into the medium to high levels of physical activity.

Table 2: Levels of Physical Activity (Brownson et al., 2009).

Classification of Total Weekly Amounts of Aerobic Physical Activity Into Four Categories

Levels of Physical Activity	Range of Moderate–Intensity Minutes a Week	Summary of Overall Health Benefits	Comment
Inactive	No activity beyond baseline	None	Being inactive is unhealthy.
Low	Activity beyond baseline but fewer than 150 minutes a week	Some	Low levels of activity are clearly preferable to an inactive lifestyle.
Medium	150 minutes to 300 minutes a week	Substantial	Activity at the high end of this range has additional and more extensive health benefits than activity at the low end.
High	More than 300 minutes a week	Additional	Current science does not allow researchers to identify an upper limit of activity above which there are no additional health benefits.

2.1.2 Urban Open Spaces

Open and accessible land is needed to facilitate physical activity in both active and passive recreation. Urban open space is defined as "Any piece of land that is undeveloped and is accessible to the public for use," such as urban green space or other public spaces available for recreation and leisure (United States Environmental Protection Agency, 2017, p. 1-2). Urban green space is defined as "public and private open spaces in urban areas, primarily covered by vegetation, which are directly (e.g. active or passive recreation) or indirectly (e.g. positive influence on the urban environment) available for users" (Haq, 2011, p. 601). Still, urban recreation is not restricted to green spaces, since recreation is possible in places like playgrounds, public plazas, brownfield sites and even vacant lots.

2.2 Recreation Associated with Physical, Emotional, and Mental Health

The availability of public recreation spaces is a significant public health determinant and should be considered when designing urban areas. Most notably, 30-60 minutes of moderately intense physical activity can reduce risks of cardiovascular diseases, diabetes, and obesity (United States Department of Health and Human Services, 1996). Epidemiological evidence determined that overweight people could receive the same benefits from maintaining a physically active lifestyle. Oftentimes, the number of public spaces in metropolitan areas influences a person's preferred mode of transport. When these spaces are abundant, residents tend to prefer walking or biking to vehicular transport (Schmid, 2005). As a result, the population's public health increases from the direct influence of more physical activity as well as the indirect effects of increasing eco-friendly modes of transport.

Ease of access, particularly "neighborhood walkability", motivates the public's regular utilization of recreation spaces. Previous work on neighborhood walkability demonstrated that certain urban features stimulate walking, biking, and jogging compared to other modes of transportation that can be difficult in high-traffic areas (Giles-Corti et al., 2005; Rundle et al., 2016). Consequently, enhanced neighborhood walkability correlates with an increase of physical

activity and more frequent utilization of public spaces. Finally, urban green areas have been linked with healthy mental and emotional well-being, low stress, and low risk of obesity, especially in areas of low socioeconomic status (Chiesura, 2004; Nielsen & Hansen, 2007).

Engagement in nighttime leisure activities can also discourage people, especially young adults, from participating in risky behaviors, such as alcohol drinking and substance abuse (Ngesan et al., 2013). Designing infrastructure specifically in low-income areas is important since the distance to these recreation spaces plays a prominent role in public participation. Therefore, city planners could benefit from educating the public on local spaces for recreational activity and encouraging participation, which would then positively influence the population's physical, mental, and spiritual health.

2.3 Recreation Promotes Social Interaction and Cohesion

Many social elements affect public perception and attitudes towards recreation spaces. For instance, geographical and structural differences influence the local communities' preference for public spaces. Past research on these variables concluded that both rural and urban communities favor large, open, well-maintained parks. Meanwhile, urban residents tend to utilize public parks mostly for physical activity and more often than rural residents (Shores & West, 2010). Public perception of urban green spaces can be qualitatively examined from the recreational value that these spaces provide (Daniels et al., 2018). Ultimately, people react positively to natural beauty, a pleasant aesthetic experience, apparent ecological value, and the arrangement of certain structural elements.

Additionally, urban parks and recreation spaces bring together groups of people from different backgrounds for social interactions (Berg et al., 2015). Many diverse communities congregate in cities; therefore, it is not uncommon to witness different social groups simultaneously gathered in public spaces. Urban parks and recreation spaces act as social cohesion centers for various ethnic groups to participate in informal social interactions and create more unified local communities (Peters et al., 2010). The outcomes of these social interactions shape groups' sentiment and appreciation of public spaces. For instance, community activism can transform parks with dangerous reputations into respectable and enjoyable local landmarks by establishing the value of the local space, recognizing the issue preventing people from utilizing it, and making the needed efforts to implement a solution (Beyer, 2011). In a social context, the relationship between the local population and the public parks critically influences public perception and maintaining the positive reputation of these spaces leads to stronger social cohesion.

2.4 Environmental Justice and Social Equity

It is also important to acknowledge social factors associated with the distribution and accessibility of park spaces from an environmental justice and social equity perspective. It is unethical, for example, to concentrate more hazardous, polluting facilities and less open space in areas containing racial and ethnic minorities or people of lower socioeconomic class. Similarly, providing physical recreation spaces only in high-income areas, while indirectly restricting low

socioeconomic areas from accessing them is also unethical (Wolch, Byrne, & Newell, 2014). Studies in Baltimore, Maryland, discovered that while a higher proportion of African Americans possessed walkable access to parks, their neighborhood received less total park space area within walking distance compared to predominantly-white neighborhoods (Boone et al., 2009). Anti-discriminatory federal and state efforts to amend the park space inequities produced the exact opposite effect, sometimes worsening the uneven distribution of park spaces between white-dominated and poverty-concentrated areas.

Equal access to physical recreation spaces can help to prevent public health disparities among social groups. Racial and ethnic minority groups are a primary focus of national health initiatives because they have generally demonstrated lower physical activity rates compared to the white population, leading to worse health outcomes (Whitt-Glover et al., 2009). Consequently, addressing the cost of physical activity resources, unattractive environments, unsafe conditions, and distance is key to promoting equal access to recreation spaces and providing everyone with equitable opportunities to benefit from them.

2.5 Accessibility and Recreation in the United States

The relationship between accessibility and recreation spaces within the United States has progressed through the years. Prior to 1968, state and federal programs were almost non-existent, but now these programs are striving to provide access to recreation spaces to people of all ability levels through Universal Design (United States Access Board, 2018). Federal regulations have increased the focus on promoting the creation of accessible recreation, but challenges still remain to achieve widespread accessible recreation. Several obstacles and factors contribute to the extent to which recreation areas are accessible to an entire community.

2.5.1 Federal Accessibility in United States

The relationship between accessibility and recreation spaces within the United States has progressed through the years. Prior to 1968, state and federal programs were almost non-existent, but now these programs are striving to provide access to recreation spaces to people of all ability levels through Universal Design. Federal regulations have increased the focus on promoting the creation of accessible recreation, but challenges still remain to achieve widespread accessible recreation. Several obstacles and factors contribute to the extent to which recreation areas are accessible to an entire community.

2.5.2 Accessible Recreation

Accessible recreation encompasses many definitions and social groups. The Merriam-Webster dictionary defines accessibility as "able to be reached or entered; easily used," which addresses the importance transit and usability play when considering the nature of accessible recreation. The United States Forest Service (USFS) refers to accessibility as considering those with physical disabilities when designing the built environment, to ensure everyone has equal opportunity to use it ("Accessibility Guidebook for Outdoor Recreation and Trails", 2012).

Massachusetts' Universal Access Program approaches accessible recreation by ensuring "equal access to outdoor recreation" in the state's parks regardless of the participants' ability.

In 2002, the ADA and ABA published guidelines specifically for recreational and play areas as supplements to the original ADA accessibility guidelines passed in 1990. The US Access Board in 2013 and the Outdoor Developed Area Accessibility Guide (ODAAG) created further federal guidelines, covering regulations for trails, viewing platforms, beach access routes, and outdoor recreation access routes. The USFS employs the strategy of Universal Design to ensure all "new or reconstructed programs, facilities and associated elements" are as accessible as possible. According to the National Center on Accessibility, Universal Design is considered "exceeding the minimum accessibility standards for physical access to accommodate the widest spectrum of users and their various abilities" ("Accessibility Guidebook for Outdoor Recreation and Trails", 2012).

Accessible programming involves entities modifying policies and procedures to provide "auxiliary aids and services to provide recreation for those with disabilities" (Voight et al., 2008). While the inception of the ADA and its subsequent amendments significantly expanded accessible recreation programming, the implementation of the many esoteric rules and regulations concerning "program access" has been difficult for municipalities and professionals alike. The challenging task concerning accessible programming is exceeding the minimum standards set by the ADA, in efforts to create functional, universally inclusive programming for those with disabilities (Voight et al., 2008). Rising beyond the ADA's standard set of regulations has created a need for accessible recreation "best practices".

However, accessible recreation is not solely defined by its relationship to the physically or mentally disabled. Socioeconomics, geography, and neighborhood safety all factor into whether individuals, especially urban residents, can easily reach, afford, or feel safe enough to recreate in the established places of recreation found in their municipality.

2.5.3 Geographic Barriers from Accessing Physical Activity

An area's geography impacts whether residents will visit a park. One of the biggest obstacles to overcome is the distance between an individual and the park. A report on environmental justice in Baltimore, Maryland, found that the farthest distance someone will typically walk to a park is ¼ mile, or 400 meters, because individuals are far more likely to unexpectedly "drop-by" and get some exercise. Once the distance increases above the ¼ mile threshold, going to the park becomes a planned event that requires packing the car and carving out time specifically for exercise or other activities. The small increase in the distance makes a significant difference in park attendance (Boone et al., 2009). Travel distance and difficulty leads people to spend more time getting to spaces instead of actually using them for exercise.

For individuals without access to a car, biking or walking are other options. Pedestrians in Worcester face obstacles that make navigating the city difficult, such as the poorly designed Kelley Square intersection (Appendix B: Figure 18). Gerald Powers, the head of WalkBike Worcester, clarified that traveling through Worcester is more hazardous for cyclists than pedestrians, mostly due to the lack of bike lanes in Worcester (Atchue, Mikolajczyk, Sajjadi, &

Snowden, 2017). Only a handful of streets have bike lanes, and many do not run the entire length of the street. The perceived danger presented by walking or biking in Worcester could prevent citizens from attempting to access recreation spaces using those modes of transportation.

2.5.4 Socioeconomic Status Influences Access to Recreation Spaces

Social class can influence whether an individual has access to nearby recreation. A study in Baltimore, Maryland, found that income is directly proportional to the distribution of park space acreage, meaning the richer the individual, the more parkland they have access to. Citizens in the zero to $10,000 income bracket had access to only about 6% of the park space that the $85,000+ bracket had access to, however, the lower income brackets lived significantly closer to parks, by a factor of almost four on average (Boone et al., 2009). Unfortunately, parks in these areas were generally less safe than those accessible to the wealthier classes.

Other research investigated community engagement in recreation based on various socioeconomic groups' perceptions of urban public spaces. Their results concluded that lower socioeconomic status groups' collective perception of busier, less attractive, and unsupportive environment hinders their awareness of access to public spaces compared to people living in high socioeconomic neighborhoods (Giles-Corti & Donovan, 2002; Sallis et al., 1996). Additionally, high-income groups are more likely to afford gym memberships, activity lessons, and sports equipment, which enables them to partake in more frequent and intensive physical activity (Sallis et al., 1996). Therefore, disparities between socioeconomic classes can dramatically affect the availability of recreational resources and a socioeconomic group's tendencies to engage in physical activity.

2.5.5 Physical Obstacles Preventing Engagement in Physical Activity

Physical accessibility extends far beyond wheelchair access. Thus, individuals with visual, auditory or cognitive impairments will each have different sets of accessibility standards. For instance, someone using a wheelchair or stroller may have difficulty navigating narrow or highly sloped paths. Conversely, a lack of signage with raised lettering or auditory aids can make an area impassible to someone with a visual impairment. Several departments of the U.S. government set general requirements for accessibility via the Americans with Disabilities Act (United States Access Board, 2014). For example, the guidelines include constraints on trail dimensions so visually impaired individuals with canes can find their way and so wheelchairs can navigate the trails without obstacles (Figure 3).

Figure 3 below was taken from guidelines set by the U.S. Access Board (United States Access Board, 2014). The left image shows the required measurement tolerances for obstacles to someone with a visual impairment. The right image shows a potential obstacle for someone with a mobility impairment that could easily be fixed with a design change.
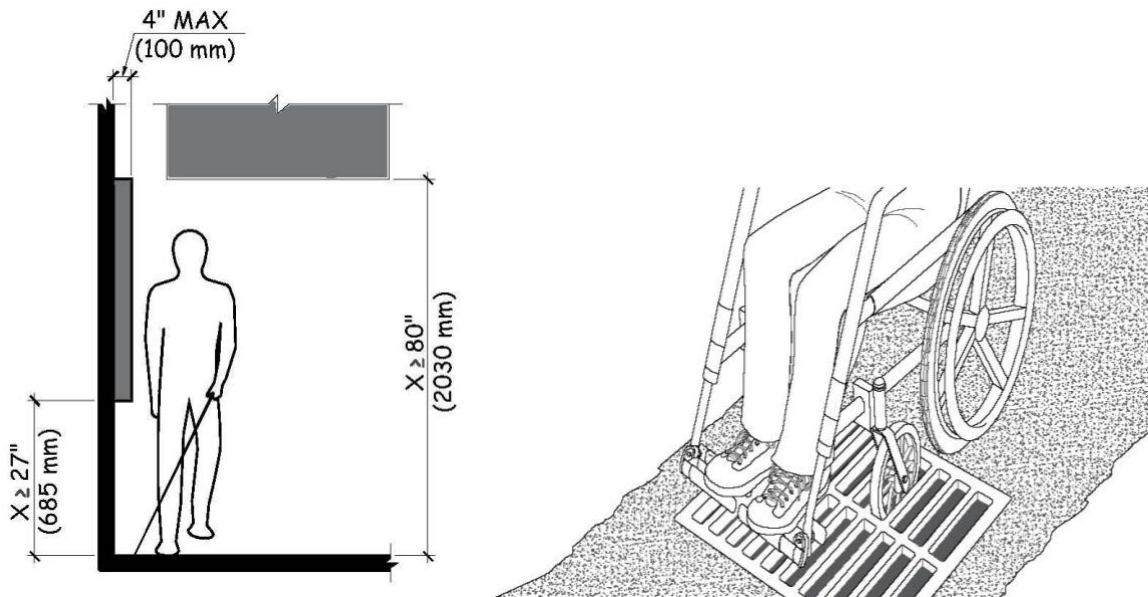
Figure 3: Two accessibility guidelines regarding visual (left) and mobile (right) impairments provided by the U.S. Access Board ("Outdoor Developed Areas", 2014)

2.5.6 Safety and Public Perception of Recreation Spaces

When considering using or traveling to places of public recreation, real and perceived safety are significant factors to the public. Neighborhood perceptions of safety are "distinct environmental constructs" relevant to urban residents (Lenhart et al., 2017). Perceptions of danger and violence are cited as barriers to the use of open space, more so than actual crimes. The loss of perceived safety decreases the collective value of parks and thus reduces the benefit they provide to the community.

Addressing the issue of safety with parks and recreation places is complex and involves proper design, increased programming, and citizen involvement. One approach from the National Recreation and Parks Association includes expanding recreation initiatives and programs to "encourage greater use and create a safer environment" (National Recreation and Parks Association, 2012, pg. 1-4). These programs attempt to increase human traffic during the evening to discourage criminal and antisocial behavior, and thus create a positive reputation.

Protecting the grounds of recreational places from neglect, vandalism, graffiti, and littering creates positive perceptions. Increasing a user's sense of orientation with maps and understandable signage enhances feelings of safety, as users know their location and destination. Ensuring that citizens feel safe traveling to and using the available recreational space requires a culture of high involvement and maintenance throughout the population surrounding the park (National Recreation and Parks Association, 2012, pg. 1-4).

2.5.7 Health Equity

Geographic, socioeconomic, physical, and safety factors mentioned in previous chapters function as obstacles that hinder various groups of people from accessing the means to maintain healthy and active lives. The term, "Health Equity", describes the overall ability of a space or service to overcome these barriers for all groups. Therefore, for the purpose of this project, recreation spaces that provide Health Equity enable people to access, enjoy, and benefit from the available physical activity opportunities regardless of age, ability, socioeconomic class, race, gender, etc.

2.6 Global Initiatives to Provide Accessible Recreation

Given the large immigrant population in Worcester, it is worthwhile to consider studies and experiments conducted around the world, especially studies from Asia and Europe. Starting in 1984, China began increasing the amount of accessible parkland in several of their megacities. Studies in China showed that the absence of recreation areas caused a lack of physical activity in about 10% of citizens and 87% of deaths from chronic conditions being related to sedentary lifestyles (Wang & Liu, 2017). The growth of recreation spaces accelerated rapidly in 2000. Parks per capita, park area per capita, and percentage of parkland in urban areas have increased exponentially from 1984 to 2014, which may reduce illnesses related to sedentary lifestyles.

A group in Hamburg, Germany, conducted a survey on the frequency of exercise and the public's preferences on types of urban green space based on where the subjects lived - inside or outside of the city (Boll et al., 2014). Against the team's expectations, the study demonstrated that highly physically active people were evenly distributed within and outside the city. In addition, most of the participants said that "perceived naturalness," or a natural or rustic appearance, positively influenced enjoyment at each park. Places with more nature or wildlife tended to be perceived in a much better light than those with less.

A team of marketing experts in Berlin, Germany, designed and placed motivational posters in three underground stations, each containing escalators, to promote the use of stairs (Müller-Riemenschneider et al., 2010). The efficiency of these posters was then analyzed based on the number of people who used the stairs before installation, during the time they were up, and two weeks after removal. Men and women were counted separately to determine gender effects. Results from 5,000 participants show that the posters significantly increased the use of stairs by women and a slight decrease in the use of stairs by men. This may be due to the attractiveness of the poster or that the men previously used the stairs more than women did prior to posters being installed.

2.7 United States Initiatives to Provide Accessible Recreation

The United States actively contributes to 25.31% of worldwide research towards increasing physical activity. Individual state efforts, such as those by Alaska, Vermont, and Wisconsin, have implemented a number of different strategies toward creating a more physically active community (Hitti, 2007). The Alaska Health and Disability Center (AHDC) partnered with other departments and community centers to develop a plan to promote public health in

areas such as abuse prevention, behavior health, nutrition, and physical activity (Figure 4). Improvements in access, data and surveillance, education and awareness, and collaboration are key focus areas of the AHDC vision. Providing resources for the built environment, communication/information on the accessibility of services, policies, and staff training are the action steps towards improving the access to nutrition and physical activity (Cooper et al., 2015). Collaboration with community members produced health promotion programs at local centers, distributed public service announcements encouraging active play, and provided workshops at schools and recreation centers.
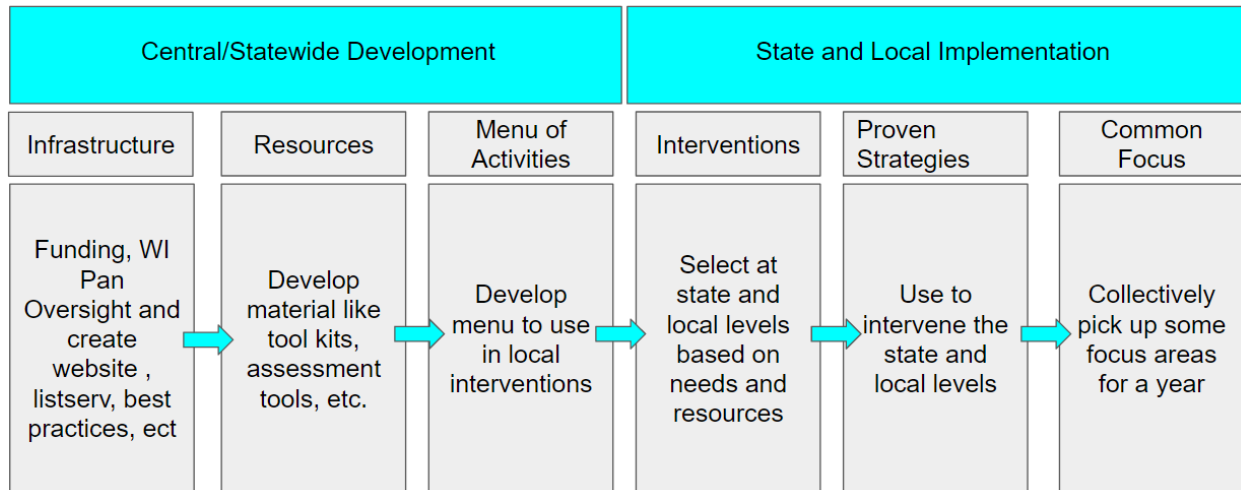
Central/Statewide Development			State and Local Implementation		
Infrastructure	Resources	Menu of Activities	Interventions	Proven Strategies	Common Focus
Funding, WI Pan Oversight and create website , listserv, best practices, ect	Develop material like tool kits, assessment tools, etc.	Develop menu to use in local interventions	Select at state and local levels based on needs and resources	Use to intervene the state and local levels	Collectively pick up some focus areas for a year

Figure 4: Alaska Health and Disability Center Policy Implementation Plan (Cooper et al., 2015)

State strategies provide a basis for how the community acts towards targeted goals. Wisconsin has been successful in their implementation of evidence-based strategies (Appendix B: Table 9). Although the Wisconsin and Alaskan strategies emulate the same guidelines, Wisconsin's 3-pronged approach differs by focusing on environmental, policy, and individual behavioral changes (Wisconsin Department of Health Services, 2013). The development of community plans, transportation options, access to facilities, and education strategies are created based on this approach. For example, changes made in environment and policy for local schools have shown improvements in physical activity for students. Environmental changes include well-marked crosswalks, controlled intersections with signs, and walk light indicators. Encouraging "walking school buses", cross guards on duty, and decreased distances to school bus stops are examples of policy changes that attempt to encourage physically active student behavior.

Likewise, the Vermont Department of Health (VDH) created the State Health Improvement Plan and the Vermont Health Community Design Resource, incorporating a 5-tier system (Figure 5) for interventions making it easier for people to live healthy lifestyles (Vermont Department of Health, 2013). The first document focuses on different areas and shows similarities to Wisconsin's strategies. The second document focuses on ensuring that the state remains one of the healthiest in the nation through active living and healthy eating. Compared to other Vermont cities, St. Johnsbury stood out by establishing a Community Health Advisory

Committee in 2002, which built bike rack locations in the town as part its health objectives. This was sponsored by the AARP and the Health Department prior to a Street Survey being completed. Factors that lead to a healthier community include the focus on community needs, strengthening relationships between local departments and board members, and the commitment of local officials to create a long-term vision.

The United States government experts developed the U.S. National Physical Activity Plan in 2010, which includes a set of policies that will guide citizens and businesses toward becoming regularly active ("National Physical Activity Plan", 2016). The plan also advocates for businesses to encourage and incentivize physical activity in the workplace. To achieve this, they plan to provide a toolkit for implementing recreation programs and educating business leaders on their ability to make a change.
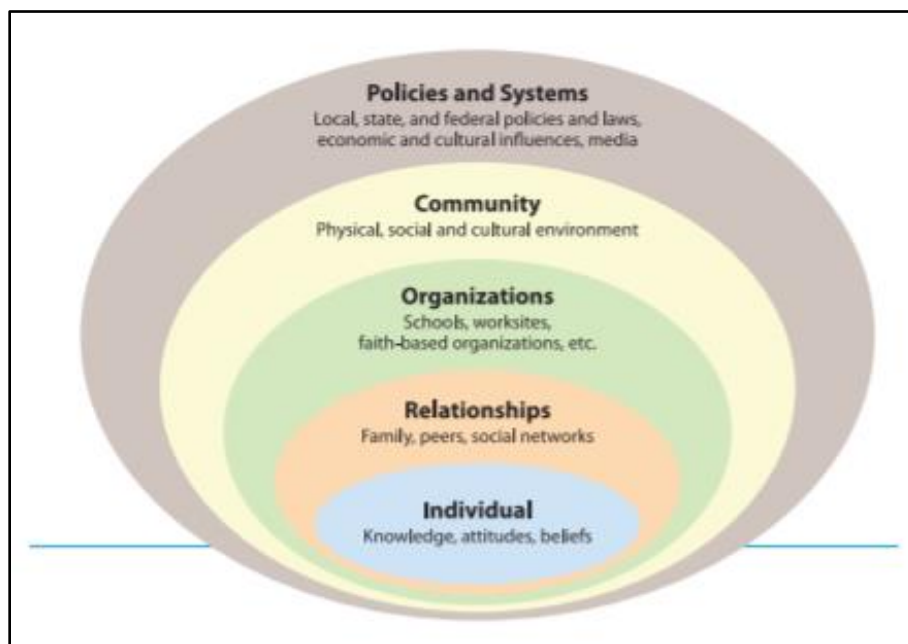

Figure 5: Vermont's 5 Tier Health Initiative (Vermont Department of Health, 2013)

2.8 Worcester Community History and Demographics

Worcester, settled in 1673, was a thriving mill town throughout the 19th and early 20th centuries (Sinha, 2010). The jobs in the city attracted immigrants from all over the world, which is why Worcester has a fairly diverse population today (Cullon, 2017). Poverty followed Worcester's shift away from industry, and although the city fared well compared to other mill cities of the time, deindustrialization has had an effect on the demographics of the city throughout history (HOBOR, 2013).

2.8.1 Worcester Community Demographics

The towns shown in Figure 6 are the focus area of this project since the respective demographics are important in determining the target groups. The population of Greater Worcester is about 819,500 people with the City of Worcester having the largest with 184,500.

Figure 19 and Figure 20 (Appendix B) show the population broken down by race and age, respectively. The data shows that Worcester is the city most exposed to minority groups, with Hispanic or Latino being the largest non-white groups. The age distribution among the areas is comparatively similar. Shown in Figure 20 (Appendix B), the 45-64 age group is the largest, and 65 and older is the smallest group.

Poverty is another issue in this area, and Figure 7 compares the percent distribution of poverty in Worcester including children and senior citizens. Worcester surpasses all the surrounding towns in both categories, indicating that it is at highest overall risk of the poor health factors related to lack of access to physical activity. A number of factors influences an individual's overall health with physical activity being more influential. Worcester conducted a behavioral risk factor survey to examine the percentage of the population that was obese and overweight, and the results compared to the state are shown in Figure 8.

Crime rates play a large factor in accessibility, especially since Worcester has the largest number of violent crimes compared to other CMRPHA municipalities. Table 8 (Appendix B) shows the crime rates in the CMRPHA communities, and Worcester's crime rate per population is 4 times greater than any of the other communities in the focus area. As of 2016, Worcester recorded 1642 violent crimes, and Leicester is next with 23.
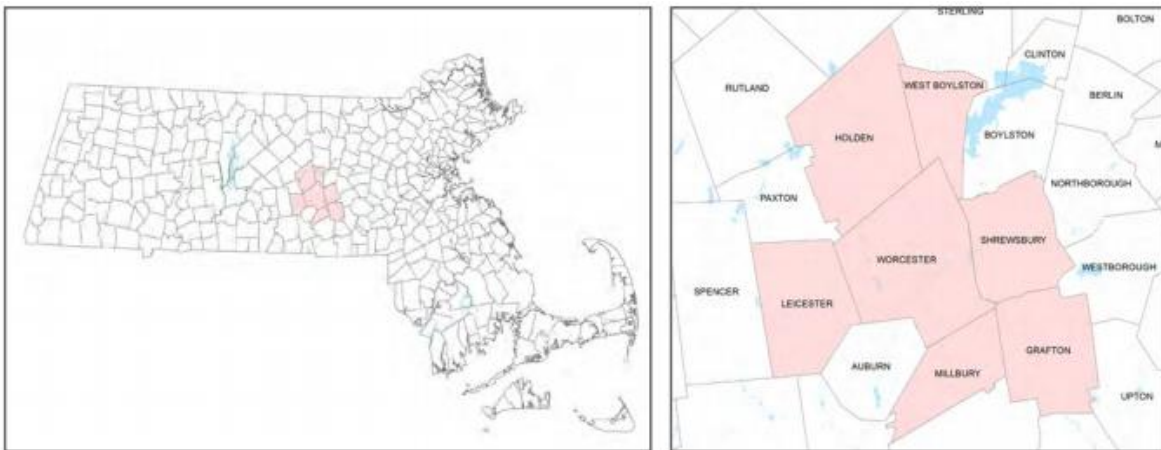

Figure 6: Seven Municipalities of the Central MA Regional Public Health Alliance (Central MA Regional Public Health Alliance, UMass Memorial Healthcare, & Fallon Health, 2015)
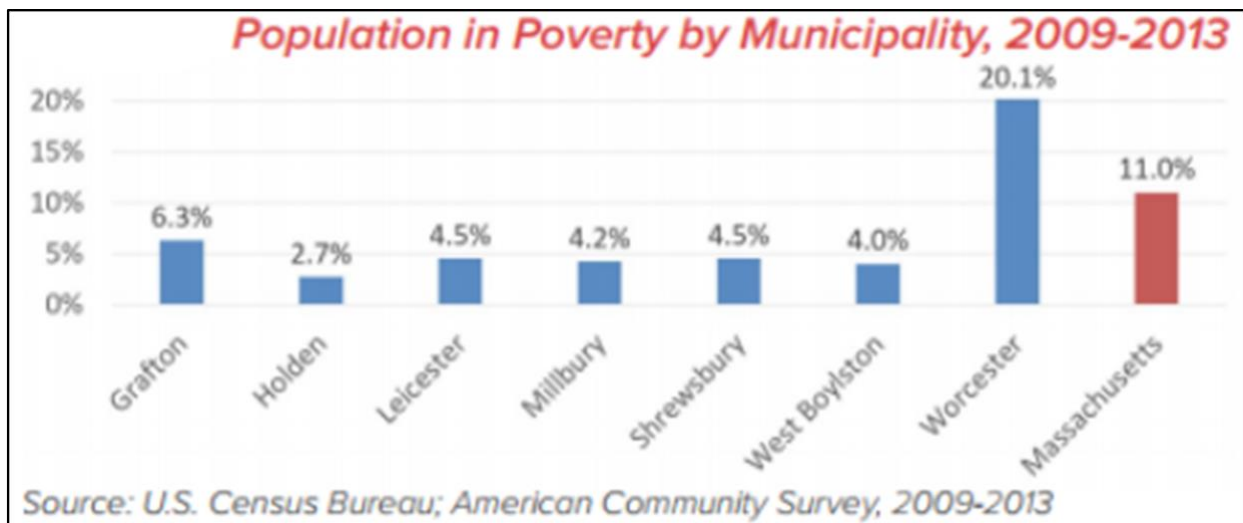
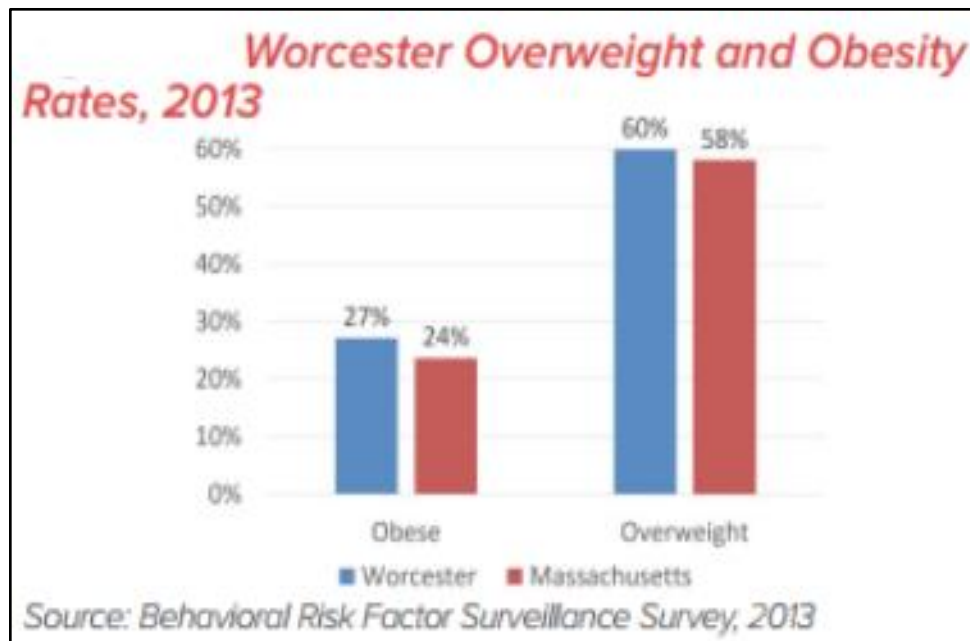*Figure 7: 2013 Analysis of CMRPHA Poverty Levels Compared to MA (Community Health Assessment 2015)*

Figure 8: Overweight/Obesity Rates in Worcester Compared to MA (Community Health Assessment 2015)

2.9 Local Initiatives to Provide Accessible Recreation

The City of Worcester made significant renovation efforts towards making public transportation routes more accessible ("City of Worcester: Public Health", 2018). Recently, the city partnered with MassDOT to propose a Harding Street Resurfacing and Streetscape project which would include pavement resurfacing, reconstructed sidewalks, new signage and street lights, improved landscaping, renovated benches and crosswalks, and bicycle accommodations. Other projects included renovations at Holmes Field, such as extended lighting and new tennis courts, which support additional physical activity. The Neighborhood Park Stewards Program

was also created to encourage youth interest in preserving public parks through outdoor engagement. Additionally, the City of Worcester celebrated the completion of a recent $2 million renovation project at Castle Park, including accessible walkways, a multi-purpose basketball court and playground, improved landscaping, and the addition of public fitness equipment.

Previous Interactive Qualifying Projects (IQPs) have investigated methods for promoting accessible recreation in rural and urban areas, which established foundations for this project. One project team worked with the Nantucket Commission on Disability (NCOD) to make outdoor locations more accessible for people with disabilities, so they could enjoy those spaces (Colman, Cote, Hague, & Perkins, 2016). The team developed a database of all local conservation trails, public beaches, and public playgrounds to be assessed based on published accessibility standards. Their results demonstrated that a webpage displaying information on public space accessibility with an interactive map effectively communicated available locations in Nantucket for people with disabilities to visit. Therefore, the Nantucket project team's methodology and accessibility assessment criteria serve as useful tools for developing a similar accessibility rubric; however, the project will expand beyond disability services to include various other significant social factors.

Similarly, another project team combined efforts with the WalkBike Worcester program to create a method for counting pedestrians and bicycles on the street in Worcester, MA (Atchue, Mikolajczyk, Sajjadi, & Snowden, 2017). This methodology recognized the rise in eco-friendly and physically active modes of transportation and determined the areas in desperate need of walking and biking infrastructure renovation in order to accommodate the high level of pedestrian traffic. The team utilized MAPC's "Local Access" program to collect data on highly used routes with an emphasis on sidewalks and bike paths in need of repairs. This project prioritized transit routes as a major criterion for assessing accessibility; therefore, we will incorporate aspects of the WalkBike project team's methodology and determine which routes are well maintained for pedestrian use.

Finally, a project team working with ParkSpirit in Worcester, MA examined public awareness and engagement in the East-West Trail and all of its available neighboring parks and landmarks (Gandolfo, Greenalch, & Todd, 2017). Part of this team's methodology incorporated an inventory and assessment of various sections of the trail and nearby parks (Appendix B: Table 16 and Table 17). Additionally, they collected community input on the types of features that attract people to visit the trail and on the types of promotional devices that would be most useful while visiting these spaces (Appendix B: Table 10 and Table 11). The final outcome of the ParkSpirit team's project included GPS mapping of the entire trail using Google Maps and publishing these data on a webpage that is compatible with mobile devices.

2.9.1 Worcester Department of Parks and Recreation

In 2013, the City of Worcester's Department of Parks and Recreation (WDPR) joined forces with the Worcester City Council, the Greater Worcester Land Trust, (GWLT), and Massachusetts Audubon to complete an Open Space and Recreation Plan containing a set of objectives for improving and preserving open spaces and public recreation locations (Worcester Department of Public Works and Parks, 2018). Their mission is to sustain Worcester's competitiveness and attractiveness compared to surrounding districts. According to this plan, Worcester has a surplus of parkland per resident compared to other high-density cities, while it is deficient in park playgrounds, staff, baseball diamonds, basketball courts, swimming pools, and off-leash dog parks. At the same time, the plan recognizes the need to improve environmental justice and disability access to these spaces. However, public outreach programs received feedback detailing many more community needs and wishes that need addressing.

Despite funding and staffing obstacles, the WDPR is able to continuously update their equipment and facilities while completing daily evaluations of the 55 playgrounds and over 60 parks in Worcester (R. Antonelli, personal communication, March 22, 2018). The WDPR is constantly improving their methods by communicating with and learning from outside organizations, such as the National Rec Park Association and the Commission on Disabilities. Moving forward, the WDPR aims to combine safety with accessibility in public spaces so that community members can regularly engage in and enjoy the outdoor space in Worcester.

2.9.2 Worcester Division of Public Health and the Central MA Regional Public Health Alliance

The major organization committed to improving the Greater Worcester community public health is the Central Mass Regional Public Health Alliance (CMRPHA), which is composed of seven districts: Grafton, Holden, Leicester, Millbury, Shrewsbury, West Boylston, and the City of Worcester ("City of Worcester: Public Health", 2018). The CMRPHA incorporates eight guiding principles in its mission to ensure that it makes knowledgeable decisions and delivers high-quality public health outcomes (

Table 3). From these guiding principles, it is evident that the CMRPHA is engaged in public health initiatives that combine professional, political, and community perspectives to create effective policies and practices. Protecting and improving community health is of the highest priority to the CMRPHA, and they plan to encourage the social, economic, and environmental factors that lead to healthy lifestyles and disease prevention.

Table 3: CMRPHA Guiding Principles (Central MA Regional Public Health Alliance, City of Worcester, MA, 2018)

	CMRPHA Guiding Principles
1	Fulfill all statutory responsibilities, enforce laws, and assure compliance with regulations that protect the public's health and ensure safety
2	Adopt and integrate the Institute of Medicine's three core public health functions of assessment, policy development, and assurance and the Ten Essentials of Public Health as the framework for a systems approach to carrying out public health functions
3	Provide leadership to foster collaboration and coordination among the many partners in the region's public health system
4	Promote and advocate for policies, programs, and practices that advance health equity and contribute to the elimination of health disparities
5	Engage and include residents, community and health care providers, academics, business owners, faith leaders, the media, and government officials in public health improvement efforts, including assessing public health needs and resources, setting priorities, planning interventions, and evaluating effectiveness and progress
6	Basic public health policy, practice, priorities, and evaluation on evidence and science; use a population-based approach to determine public health needs and effectiveness of interventions
7	Utilize performance measures to improve and sustain high quality employees and a public health department committed to continuous quality improvement
8	Create an organization committed to being at the forefront of public health learning through the formation of academic partnerships and investment in the public health workforce

The Worcester Division of Public Health (WDPH), the first nationally accredited public health division in the Commonwealth of Massachusetts, is the lead agency of the CMRPHA. In order to fulfill its vision to grant everyone an equitable opportunity to be healthy, the WDPH launched a program to provide leadership and services for better health outcomes and quality of life ("City of Worcester: Public Health", 2018).

In 2013, the WDPH created a core steering committee to collaborate with community members, stakeholders, and government officials to develop a strategic plan for guiding their work ("City of Worcester: Public Health", 2018). The plan outlined 19 objectives under five main goals, shown in Table 4, meant to help the organization produce an effective public health delivery system within a four-year timespan.

Table 4: CMRPHA Strategic Plan and Goals (Central MA regional public health alliance | city of Worcester, MA.2018)

	CMRPHA Strategic Plan
Goal 1	Build a Strong, Accredited Regional Public Health Department
Goal 2	Develop a Sustainable Regional Public Health Service Delivery Model
Goal 3	Mobilize Community and Academic Partnerships
Goal 4	Play a Leadership Role in the Development of Healthy Communities
Goal 5	Assure Conditions for Safe and Prepared Communities

In 2014, the WDPH extended a Memorandum of Understanding with Clark University to install the Center for Public Health Practice (CPHP), which later included Worcester State University and the University of Massachusetts Medical School and became known as the Academic Health Collaborative of Worcester (AHC-W) ("City of Worcester: Public Health", 2018). This organization works with the WDPH to establish community health programs under the leadership of a public health professionals committee. The combined efforts of the WDPH and the AHC-W have focused on raising student and academic faculty participation with community stakeholders to address elements of the Division's Strategic Plan.

Previous work by WDPH staff established an online mapping system of recreation spaces in Worcester using Google Maps and Carto (Figure 9). These maps accurately demonstrate the distribution of various recreation spaces by category, but lack sufficient information on these spaces that attract community members. A more user-friendly and understandable mapping platform, either a new version or updated from the current WDPH map, may lead to a significant increase in public awareness of recreation spaces.
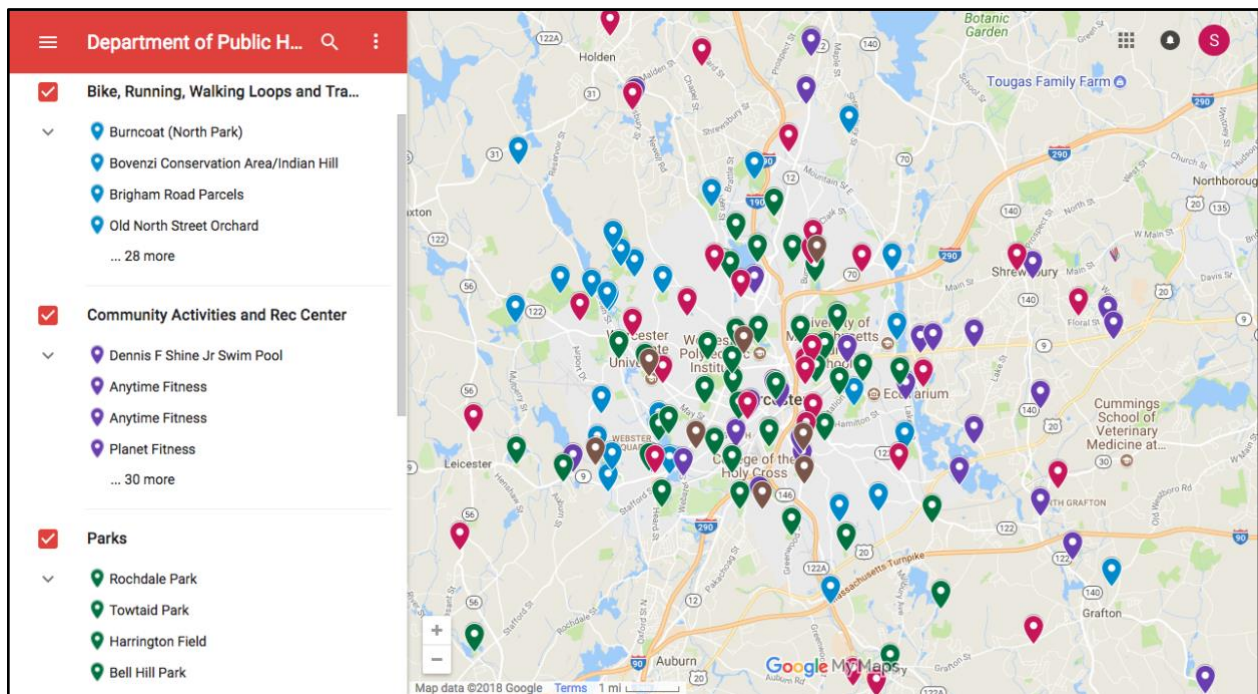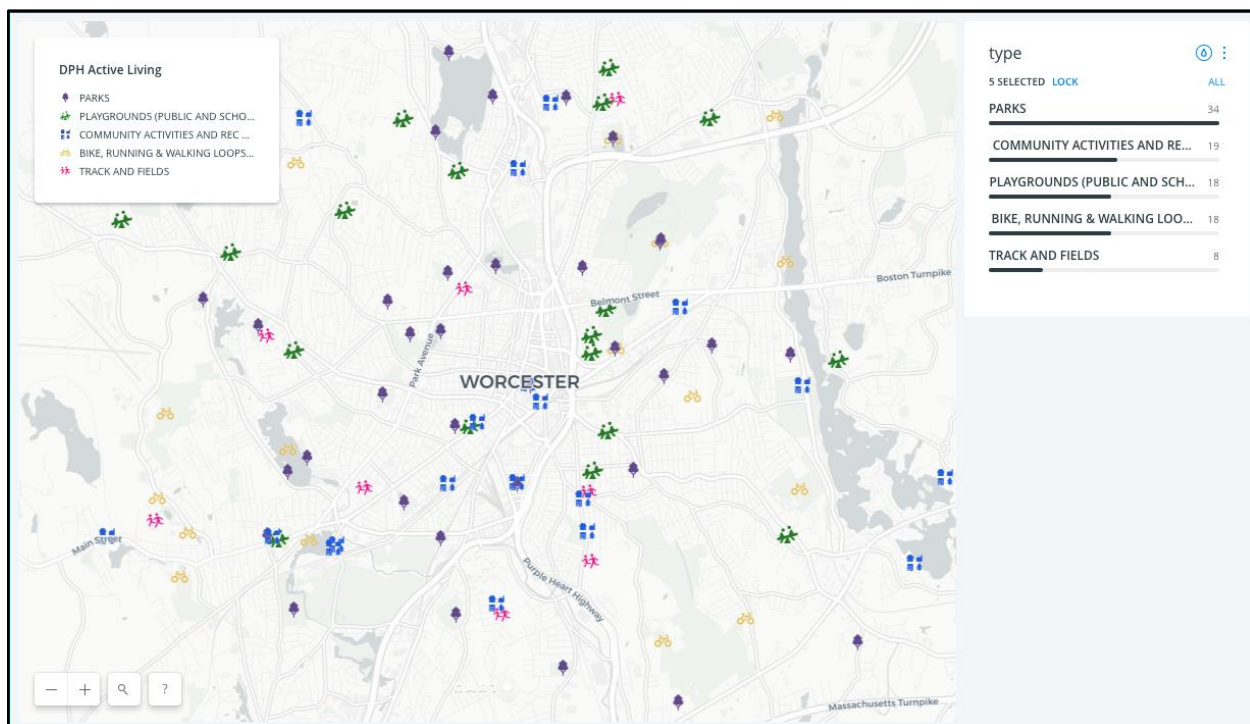
Figure 9: Example of mapping recreation spaces on Google Maps (top) and Carto (bottom), previously completed by WDPH interns

2.9.2.1 Community Health Improvement Plan (C.H.I.P.)

The goal of the Community Health Improvement Plan (CHIP) is to serve as a basis for health improvement in the CMRPHA communities (Forbes, 2013). This project focuses on objective 8.1: enhancing access to and promoting 25 places for physical activity. There are multiple strategies that this plan wants to implement to achieve its objective, such as creating and promoting safe transit routes, identifying access and programming gaps specific to vulnerable populations, improving the pedestrian network of high activity transit stops, and ensuring the safety of these areas (Forbes, 2013). Each of these strategies has a measurable outcome that needs to be achieved. The overall outcome is the number of physical activity resources utilized with increased access.

2.9.2.2 Community Health Assessment (C.H.A.)

With the help of the WDPH, Fallon Health, and UMass Memorial Health Care, the City of Worcester released the 2018 Greater Worcester Community Health Assessment survey (Forbes, 2013). This document is meant to serve as a resource for the community to improve the health in the Worcester region. Under the physical activity priority, the CHA provides statistical data on the physical involvement of the community (Forbes, 2013). The document highlights the walkability of Worcester with the use of a walk score as well as the safety of the areas.

2.10 Designing, Developing, and Marketing a Website/Database

When designing a website, especially for a government agency, clarity and organization are important considerations, followed closely by aesthetics (Propst et al., 2013). The website should be easy to use and engaging, but the main goal should be to convey information.

The Alaska Department of Health Strategic Plan, conceived a website to promote accessible recreation to citizens with disabilities (Cooper et al., 2015). A major focus of the web design team was to display all information in simple, plain English, to avoid confusing the reader with complex data included in the plan, and to instead inform them about accessible recreation and nutrition.

The Alaska Department of Public Health included links to various relevant resources from other pages within the same domain and on other websites. When adopting these methods through implementing a promotional website for the WDPH, it is imperative to link to other data on the Worcester City website. There is a wealth of information on other government websites related to the CMRPHA communities, and it would be worthwhile to leverage these resources rather than recreate them.

A method that can be employed for perfecting a website is Usability Testing (Propst et al., 2013). Usability Testing is a technique for getting community feedback on a piece of software, in this case a website, before it has been fully completed. Typically, potential users of the website are asked to try several different versions of a website, each one with a different set of features. After trying all versions of the website, the users are then surveyed on what they liked or did not like about each version. After collecting data from many users, an informed decision can be made about the best design to use.

Overall, this chapter investigated various professional guidelines to develop a complete definition of accessible recreation as it pertains to this project. Similarly, within this definition of accessibility is the presence of various barriers that prevent groups of people from engaging in recreation. Therefore, promoting health equity requires removing these accessibility barriers to provide everyone opportunities to receive the health and social benefits of participating in physical activity or recreation. Multiple initiatives, in the United States and other countries around the world, are being implemented to enhance overall access to public outdoor green space with the intentions of increasing awareness and engagement in them. Likewise, the Worcester Division of Public Health has spearheaded the Central MA Regional Public Health Alliance's strategy to improve the public health of Worcester and surrounding towns through the promotion of accessible recreation and physical activity opportunities. Ultimately, online and offline resources may be the solution to acquiring the public's interest in the vast and diverse range of public spaces in and around Worcester.

Chapter 3: Methodology

The goal of this project was to help increase CMRPHA community member engagement in physical activity through providing promotional tools on accessible recreation spaces. This chapter describes how we achieved our objectives, as shown in Figure 10, this process was divided into four distinct phases. The first phase focused on identifying recreational spaces to include in the RecSpace database. The second phase determined the relevant assessment criteria through identifying stakeholders and obtaining information on community needs. This phase helped us identify the tools needed to properly assess these recreation spaces. The third phase involved creating an interactive map with a supplemental guidebook to be linked to a webpage for the WDPH. Finally, the fourth phase was to determine "featured" recreation spaces and highlight transportation routes to get to them. The results of these phases combined to establish promotional tools that helped us achieve the overall goal for the project.
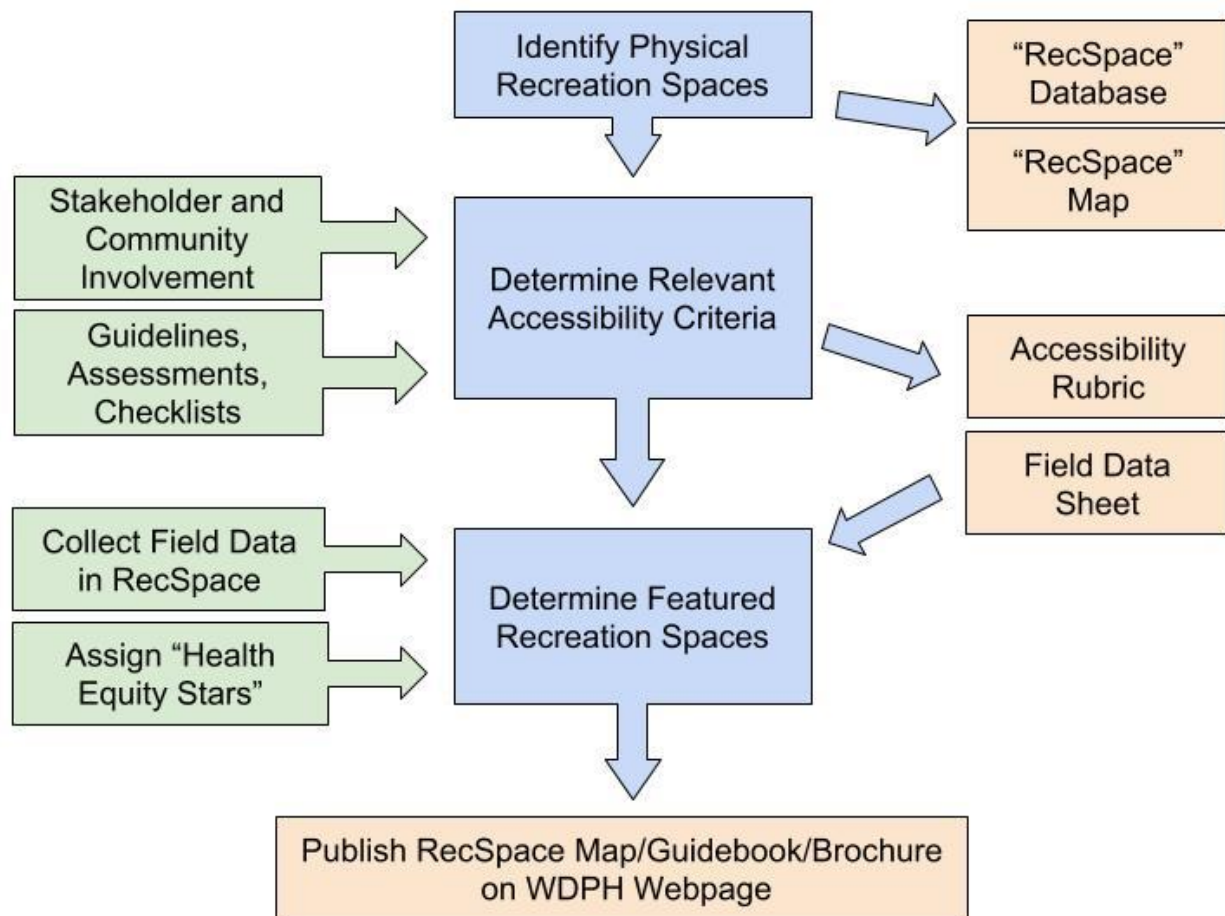
Figure 10: General outline of project objectives, research process, and deliverables.

3.1 Identify Public Places for Physical Activity in CMRPHA Communities

Central Massachusetts Regional Public Health Alliance (CMRPHA) identified over 100 known indoor and outdoor public recreation spaces in the CMRPHA communities, yet it is unclear whether citizens are aware of what these spaces offer for physical activity and recreation (Appendix C: RecSpace Database by Geographical District). One objective of this project was to identify the places that can best provide equitable recreational opportunities to individuals to improve their health and well-being through increased physical activity. CMRPHA recreational spaces were identified by reviewing the WDPH intern's master list and interactive map platform, which were the primary resources for developing the "RecSpace" database of sites available for physical activity. This reviewing stage involved confirming if the listed locations still existed, were locatable, and were in use. Afterwards, all private businesses and locations that require paid memberships were removed from the RecSpace database because they do not benefit this project's target populations equally/equitably. This master list was then cross referenced against the Greater Worcester Land Trust's 2018 Hiking Guide and the Worcester Parks Department's Open Space and Recreation Plan's inventory of properties. We added any locations not previously identified. Next, the RecSpace database was organized into five categories:

- Public Parks
- Public and School Playgrounds
- Indoor Community Activity and Rec Centers
- Outdoor Tracks and Sports Fields
- Trails for Walking/Biking/Hiking

The identified sites within Worcester were then categorized by their district number and ward. Sites in CMRPHA communities outside of Worcester were grouped by nearest Worcester ward. This style of grouping was the basis for scheduling efficient field data collection. By completing of this step, we were able to produce the RecSpace database and also include a shortened, organized list of physical activity and recreation spaces that allowed for an efficient and thorough assessment of public recreation sites in the CMRPHA communities.

3.2 Identify Stakeholders and Determine Criteria for Assessing Recreation Spaces

The overall process of completing this objective is represented in Figure 11. First, we identified a list of key stakeholders based on their broad knowledge and expertise on CMRPHA community recreation (Table 5). These stakeholders, specifically WalkBike Worcester, Worcester Commission on Disabilities, Worcester Parks and Rec, and the YWCA of Central Massachusetts, provided the most valuable and comprehensive insights into our methodology of assessing accessibility of the sites in RecSpace. The Worcester Division of Public Health liaison connected us with representatives from these organizations.
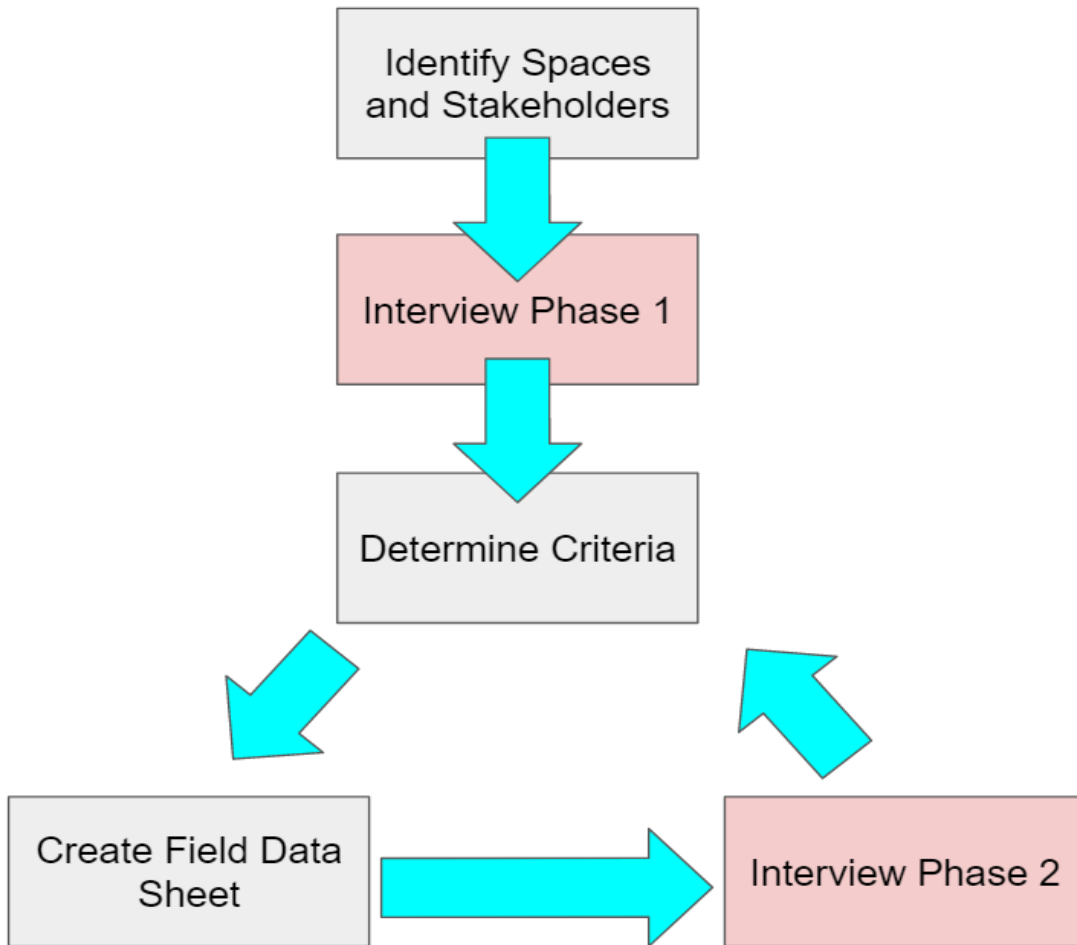
Figure 11: Cyclical process of determining health equity criteria, collecting feedback through interviews, and revising the field data sheet

Table 5: Categorized List of Stakeholders

Stakeholders	
Government	Worcester Division of Public Health
	Central MA Regional Public Health Alliance
	City of Worcester
	Greater Worcester Public Schools
	Worcester Regional Transport Authority
	Mass DOT
	Worcester Commission on Disabilities
Private	Private Businesses (Ex. Gyms)
	Colleges and Universities (Ex. WPI)
	Advisors
Non-Profit/Other Organizations	Greater Worcester Land Trust
	Mass Audubon Society
	ParkSpirit
	Worcester Boys and Girls Clubs
	Young Men's/Women's Christian Association
Public	Greater Worcester Citizens, Property Owners
	Citizens with Disabilities
	Low-Income Populations
	Senior Citizens

3.2.1 Worcester Division of Public Health (WDPH) - Jacqueline Ewuoso, Kelsey Hopkins

As the project sponsor, the WDPH also served as the primary stakeholder in our project. The WDPH staff also have extensive knowledge of the CHIP and CHA documents as well as frequent experience working with CMRPHA community members. Interviews with the WDPH representatives were performed in a semi-structured manner, and the interview protocol can be found in Appendix BA. No formal interviews were conducted as regular semi-structured sponsor-advisor meetings served as the medium for sharing information and questions regarding the project. They presented current knowledge of recreation sites and recreational needs, defined

"accessible recreation" within the scope of this project, and discussed past strategies used to address accessible recreation. By defining the exact scope of the project, the interview provided information on accessing recreational values of spaces and aspects to consider such as transportation routes.

3.2.2 Worcester Commission on Disabilities (COD) - Jayna Turchek, Liz Myska, Joe Prochilo

The Worcester COD is dedicated to providing all community members living with disabilities equal access to the city's programs and services. The team met with the Head Chair of Disabilities Rights, Joe Prochilo, and the Director of Human Rights and Disabilities, Jayna Turchek, who gave insight on methods used to define and examine areas for accessibility features, collecting and incorporating community feedback, and resources used by the COD. The interview protocol and format can be found in Appendix A. The main information gathered from this interview was to recognize the needs and desires of individuals with disabilities in site evaluations and to become aware of the accessibility factors that recreational areas include. These representatives accompanied the team on site assessments and provided feedback on our evaluation methods.

3.2.3 Worcester Department of Parks and Recreation (WDPR) - Rob Antonelli, Jeff Tomaino

The Worcester Department of Parks and Recreation has strived for fully accessible parks in the physical sense of the word. Rob Antonelli, Assistant Commissioner, and Jeff Tomaino, Recreation Coordinator, presented their perspectives on accessible recreation within Worcester's parks and recreation locations. The interview protocol and format can be found in Appendix A: Interview Questions, Informed Consent Form.

3.2.4 Young Women's Christian Association (YWCA) - Patty Flannagan, Various Members

The Worcester YWCA is a local organization that has acted as a resource center for promoting healthy living and social justice for over a hundred years. Their long history and diverse membership made the YWCA a valuable resource for public opinions on indoor recreation within the Worcester community. We conducted a two stage, semi-structured interviewing process to gain information from both YWCA's members and staff. The interview protocol and format can be found in Appendix A. Interviewing the YWCA members came in the form of asking incoming patrons to answer survey questions about their personal recreation habits and opinions on the YWCA's recreational resources. The members provided alternative views of different aspects of recreation.

3.2.5 WalkBike Worcester - Karen Goins

WalkBike Worcester is a non-profit organization that advocates for a "Complete Streets" approach to transportation in the City of Worcester and works to ensure non-motorized transportation is safer and more convenient for citizens around the city. A single, semi-structured interview was conducted with Karen Goins, WalkBike's Co-Chair, upon the recommendation of our WDPH sponsor. The interview protocol and format can be found in Appendix A. Ms. Goins

has actively collaborated with the WDPH in the past via efforts to improve the public health through increased walking and biking opportunities in Worcester.

Conducting interviews determined the most important criteria that make a location accessible. Using research from interviews and other organizations' accessibility guidelines and assessments, we identified five essential criteria pertaining to overall accessibility, designated as Safety, Transportation, Access, Recreation, and Social Value (S.T.A.R.S.). Through this method, we expected to completely define these criteria in order to establish a rubric (Appendix B: Table 18, Table 19, Table 20, Table 21, Table 22).

These criteria informed the design of the field data sheet (FDS), which was used as a tool to collect and store information from site assessments regarding general accessibility, and site-specific accessibility that will be discussed in the next chapter. We then developed a health equity rubric based on the questions and checklists contained in the FDS that enabled numerical scores to be calculated to for each of the S.T.A.R.S. criteria areas on a 1-5 scale (Appendix B: Table 18, Table 19, Table 20, Table 21, Table 22). An overall "Health Equity Score" was assigned to each recreation space by taking the average of the five S.T.A.R.S. criteria scores.

Next, we conducted a second phase of semi-structured interviews with YWCA staff, WalkBike, and Department of Parks and Recreation representatives to obtain stakeholder and community member feedback on the newly designed FDS and rubric. Patty Flanagan, the YWCA Director of Wellness and Health Equity, provided feedback on the Transportation, Safety, and Social criteria areas of the FDS, and emphasized including dance studios, locker rooms, and other amenities when assessing indoor facilities. In terms of safety, some locations might have features such as pools and fitness areas that require more detailed evaluations. Secondly, Karin Goins, the Co-chair of WalkBike Worcester, focused on Transportation and Safety perceptions while mainly discussing child safety in playgrounds, nearby traffic, universally accessible bus stops, and the condition of sidewalks and crosswalks. Finally, Rob Antonelli, the Assistant Commissioner of the Worcester Department of Parks and Recreation, discussed past methods and challenges to consider when assessing spaces. Many of the issues that were addressed pertained to funding and terrain challenges presented by the hilly landscape of Worcester and Western Massachusetts. The methodology and findings of the Open Space and Recreation Plan (OSRP) were also discussed, which identified Appendix D: Site Assessment Forms as a key resource for this project because it includes descriptions and accessibility evaluations of over 50 parks and fields. After completing the second phase of interviews and considering stakeholder feedback, we finalized the FDS and health equity rubric.

3.3 Integrate Field and Secondary Data into RecSpace Database

1. Pretesting Field Data Forms and Methods

Upon completion of the Accessibility Rubric and Field Data Sheet, the team was able to begin gathering data on public recreation spaces and entering it into the RecSpace database. These data were analyzed to give each recreation space a relative S.T.A.R.S. Accessibility score.

Before visiting each location, the Field Data Sheet was tested using recreation space information previously gathered by the Park Spirit IQP team, which includes quantitative and qualitative information on park features and amenities (Appendix B: Table 16 and Table 17). Since a lot of the data overlapped we entered the information that the Park Spirit team gathered into RecSpace. The results of this pre-testing phase were used to refine the Field Data Sheet format and data collection process.

2. Integrate OSRP data

Recreation space data from the Open Space and Recreation Plan Report, Appendix D: Site Assessment Forms, were entered into RecSpace. These forms included data such as the types of active and passive uses provided at various parks and fields, available transportation, infrastructure and amenities, disability accommodations, and pictures of current park conditions. Inserting the OSRP data into our team's designed Field Data Sheet enabled us to find gaps in the current knowledge and conditions of Worcester's recreation spaces as well as prioritize recreation spaces that were unknown over those that were already well-known and documented. The knowledge gaps were filled by conducting site visits and collecting field data in person.

3. Create visit schedule

The schedule for field work was determined after all Park Spirit and OSRP data had been transferred to the RecSpace database. It was determined that the most efficient strategy for visiting recreation spaces was by dividing the whole list by geographic location, rather than by category. Worcester is comprised of 5 districts and 10 wards, therefore we decided to first evaluate sites, lacking some or any key information, within each recreation space category - park, playground, trail, track & field, and indoor rec center - in each ward, if applicable. Using this strategy, we were able to gather information on available recreation spaces distributed broadly throughout Worcester rather than in a few densely-populated areas.

4. Field Assessments

The team assessed 49 sites using the field data sheets. The sites were located in all seven CMRPHA municipalities. Depending on the size of the area, each data sheet took roughly 20 to 30 minutes to fill out. Notes were taken at the end of each criteria section to illustrate any irregularities, points of interest, and/or concerns that the structured assessment questions could not capture. Several pictures were taken during the data collection phase, and these resources were kept in separate online folders to be easily found later. The purpose for these photos was twofold: first, they provided documentation of the physical features, landscapes, and amenities available at these spaces; second, they provided promotional imagery to be displayed on the RecSpace Webpage, WDPH brochure, and promotional video. The field assessment process started on the third week of the project and ended halfway through week 6.

During the initial weeks of field assessment, representatives from the Commission on Disabilities accompanied the team to select recreation spaces to impart their professional and personal perspectives on what accessibility meant to them in regard to recreation. These perspectives provided insight unattainable by us as able-bodied individuals when considering the natural environment of recreation sites. These insights helped mold further field assessments particularly for our assessments of pathway quality and sight-mobility aids.

3.4 Determine Featured Physical Recreation Spaces

Scores for each location were computed based on how field data from each location matched the different criteria in the accessibility rubric. These scores were represented visually using 'health equity star' graphics as shown in Figure 12 to demonstrate how each location's accessibility score breaks down by category. These raw scores then narrowed down the list of recreation spaces in RecSpace to a set of 'Featured Locations' that offer a well-rounded set of accessibility features. The featured locations are those that meet all accessibility criteria or excel in a few categories.
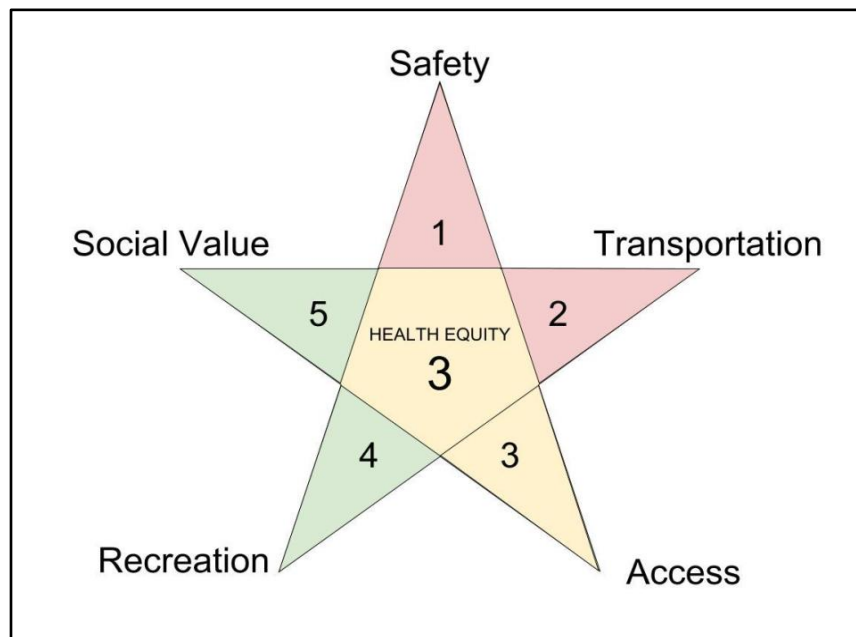
Figure 12: Scoring Graphic for Overall RecSpace Accessibility. The number of checklist criteria the locations meet in each category determines quantitative analysis. Color indicates quality of the specific category. Locations with green in each category complete their Health Equity Star.

3.5 Determine Travel Routes to Featured Recreation Spaces

In fulfillment of CHIP objective 8.1.1, walking, biking and transit routes were identified to all featured recreation spaces. The identification of these routes is intended to reduce barriers for the public to access the recreational spaces within their communities. Routes were established by putting the location of the recreation space into a geographical context, using central

locations, local landmarks, and the main roads of the CMRPHA communities as references. Multiple sets of directions were established to accommodate a broad range of starting locations.

3.6 Implement Promotional Devices to Advertise Featured Locations

The final step of the project was to provide information on the recreation spaces that are the most accessible and beneficial to the health of the people and the CMRPHA communities. Key was providing the information in a way that garners widespread reach across multiple demographics and is also user friendly. While also addressing the sponsor's desires, we determined that a web page and interactive map would most effectively promote information on accessible public recreation opportunities based on the previous success of the Nantucket and ParkSpirit IQPs (Atchue, Mikolajczyk, Sajjadi, & Snowden, 2017; Gandolfo, Greenalch, & Todd, 2017).

The website was created using a WordPress server controlled by the WDPH. Each park, trail or recreation facility and their vital information (pictures, health equity star, short description) could be entered in manually to the webpage, but we chose to do some of it automatically to speed up the process. For the interactive map, the data was copied out of the RecSpace Database and into another spreadsheet where it was formatted consistently and reduced to include just the information to be entered into the map. After exporting as a '.tsv' (tab separated value) file, we imported it into Google MyMaps using the 'Import Data' feature.

For the website's list of featured spaces, we wrote a python script that would read a '.tsv' file containing the name, location type, address, and description then populate a HTML template to be copied into the WordPress site. The template also had a space for an image to be inserted and correctly formatted once pasted into the site. Both procedures for the website could have been done easily using templates provided in the RecSpace Update Guide but doing so automatically made the process far quicker.

We developed a video for the WDPH as another promotional tool to create awareness of recreation opportunities in the CMRPHA communities, and of the newly published RecSpace database where such recreational opportunities can be found. To create the promotional video iMovie software was used to facilitate the editing and production process of the video. The promotional video used drone footage of several Worcester parks and vistas, along with various photographs of recreation spaces within Greater Worcester. The duration of the video was kept to less than a minute to ensure viewers wouldn't lose interest. Upbeat background music was installed in efforts to convey a positive theme and exciting tone.

Lastly, a trifold brochure was created as a non-digital alternative to the previously mentioned promotional tools. The trifold brochure was designed using Microsoft Publisher and was populated with pictures and information provided by the RecSpace Database Guidebook.

All of these promotional resources combine to provide online and offline information on publicly accessible recreation opportunities in Worcester and other local towns. Overall, by developing these promotional tools, we hope that the WDPH and future project teams can use these materials to continue increasing community member awareness and participation in physical recreation.

Chapter 4: Results

The purpose of this chapter is to present major results of the project. The overall goal for this project was to develop tools to promote the engagement of physical activity within the Central Massachusetts Regional Public Health Alliance (CMRPHA) communities. We identified recreation spaces, developed site assessment criteria, and created promotional tools that will be discussed in this chapter regarding results and outcomes. The following results are what will be highlighted in this chapter:

- Field Data Sheet (4.1).
- S.T.A.R.S. Scoring Method (4.2).
- RecSpace Web Page and Interactive Map (4.3).
- Downloadable Guidebook and Brochure (4.4).
- Promotional Video (4.5).
- RecSpace Revisions Manual (4.6).

4.1 The Field Data Sheet for Evaluating Recreation Space Health Equity

As previously explained in Section 3.3, a field data sheet (FDS) was created to evaluate health equity of recreation spaces in the CMRPHA communities. The FDS is a series of checklists and short answer questions that help the user gather information on five categories of criteria used to determine the space's degree of health equity. The five accessibility criteria assessed were safety, transportation, access, recreation, and social value. The FDS was developed to accommodate site assessment for different types of recreation spaces, including trails, parks, playgrounds, indoor recreation facilities, and athletic tracks. Each type of recreation space was assessed first for general features, such as available lighting and sidewalks, or specific features based on category, like the presence of posted trail maps.

General Accessibility:
1. Safety: Lighting, Surveillance, Security, First-Aid
2. Transportation: Parking, Bike Racks, Bus Routes
3. Access: Handicap Parking, Bathrooms, Pathways, Activities
4. Recreation: Age Groups, Activities, Public Hours
5. Social Value: Utilities, Cost, Environmental Justice Distance

Site-Specific Accessibility:
1. Parks: Types of Park Features
2. Playgrounds: Types of Equipment
3. Trails: Locatable Entrance, Maps/Signs, Pathway Condition
4. Rec Centers: Free/Low-cost Options, Types of Equipment
5. Track & Field: Public Hours

Due to the large geographical area and number of the recreation spaces within the CMRPHA communities, compounded with the limits of a 7-week time period for the completion of the project, it is important to note that the level of precision involved with assessments and data collection supports a general summary of the S.T.A.R.S. criteria. The approach helped us identify and assess notable accessibility features and relative quality of the locations to provide a general sense of what can be found there but not too much detail as to make the assessment process inefficient. Therefore, the format in which this data is presented is meant for easy public understanding. This rubric-based scoring method serves as a foundation for others to develop and use a more comprehensive system in the future to assess any unlisted or new areas.

4.2 The S.T.A.R.S. Method for Assessing and Scoring Recreation Spaces

To quantifiably determine the degree of health equity, and thus determine the featured recreation spaces for promotion, we created a rubric that employs the S.T.A.R.S. scoring method. The S.T.A.R.S. scoring method utilizes the same categories of criteria found in the FDS and the rubric uses the information provided in the FDS for each category to synthesize an overall health equity score for the recreation space in question. Each of the criterion had within it three to five sub-criteria that each were assigned its own score based upon data collected from the FDS (Table 6). These criteria contained within the rubric formed the basis of the Health Equity Star Concept (Figure 13).

Table 6: S.T.A.R.S. Sub-Criteria

SAFETY	TRANSPORTATION	ACCESS	RECREATION	SOCIAL VALUE
Surveillance	Bus Routes	Pathways & Entrances	Types of Activities	Utilities
Site Information	Parking	Disability Aids	Age Groups	Cost
First Aid	Bike Racks	Accessible Opportunities	Public Hours	Maintenance & Appearance
Traffic				Env. Justice
Lighting				Proximity

Figure 13: S. T. A. R. S. Accessibility Rubric divided into major criteria and associated definitions

The average of these sub-criteria scores produced the main criteria scores used to calculate the overall healthy equity score. It is important to note that the precision of our methods deserves only one decimal place for each criteria and overall score.

characteristics were included for each sub-criteria to determine a 1-5 versus a 1, 3, 5 scoring scale. To score high a recreation space must encompass a large majority of the positive characteristics. Each available score, one to five, was given required characteristics that each recreation area needed to have before receiving the appropriate score. The challenge was in establishing the spectrum of characteristics needed to describe each score for each sub-criteria.

Table 7: S.T.A.R.S. Scores for Featured Recreation Spaces

Name	Category	District	Safety	Transportation	Access	Recreation	Social	Overall
Kendrick Field	Park		2.3	3.0	3.0	3.0	4.3	**3.1**
Shore Park	Park		3.0	1.7	2.5	4.0	4.3	**3.1**
Norrback Avenue School	Playground	1	3.0	2.7	2.5	3.3	3.3	**3.0**
Quinsigamond State Park	Park		2.7	4.7	3.0	4.3	4.8	**3.9**
Grant Square	Park		3.0	3.0	4.0	3.7	3.8	**3.5**
Green Hill Park	Park		3.7	1.7	3.7	4.7	3.7	**3.5**
Cristoforo Colombo (East) Park	Park	2	1.7	2.7	4.0	4.3	3.3	**3.2**
Vernon Hill Park	Park		4.3	5.0	3.3	5.0	4.5	**4.4**
Broad Meadow Brook	Trail		4.0	3.3	5.0	4.0	4.7	**4.2**
John J. Grasseschi Field	Park	3	2.3	2.0	3.7	4.3	3.3	**3.1**
Oread Castle Park	Park		3.7	4.0	3.3	5.0	4.3	**4.1**
Crompton Park	Park		3.7	3.5	2.7	5.0	4.0	**3.8**
South Worcester Playground	Park		3.5	4.5	3.0	4.0	3.7	**3.7**
Elm Park	Park		3.7	2.7	2.0	4.7	3.3	**3.3**
University (Crystal) Park	Park		3.0	2.7	2.7	4.7	3.3	**3.3**
Cookson Park	Trail	4	3.3	2.7	1.3	3.0	3.3	**2.7**
Beaver Brook Park	Park		3.7	5.0	4.8	4.7	4.3	**4.5**
Newton Hill	Park		3.3	5.0	3.8	4.7	3.7	**4.1**
Coe's Park	Playground		4.3	3.7	4.7	2.3	4.3	**3.9**
Hadwen Park	Park		3.0	4.0	2.7	4.7	4.0	**3.7**
Knights of Columbus Park	Park	5	3.0	3.7	3.3	3.3	4.0	**3.5**
Airport Park (Grafton)	Park		3.3	3.7	1.5	4.7	4.0	**3.4**
Leroy E. Mayo School (Holden)	Park		3.0	2.3	3.5	4.0	3.7	**3.3**
Community Field (Leicester)	Park		2.7	1.3	1.3	3.7	3.3	**2.5**
Blackstone Valley Bike Trail (Millbury)	Trail		1.7	3.3	2.7	3.7	4.0	**3.1**
Elmwood Street School (Millbury)	Playground		3.3	2.3	2.7	3.3	4.7	**3.3**
Dean Park (Shrewsbury)	Park		3.3	2.7	3.3	4.7	4.0	**3.6**
Rail Trail (West Boylston)	Trail		4.6	3.7	2.7	4.0	4.0	**3.8**

4.3 The RecSpace Web Page and Interactive Map

This web page contains an interactive map where users will be able to get basic information on all surveyed places, a downloadable guidebook that will give more extensive information on the characteristics of these areas, and a promotional video that to provide a quick overview of all the areas in and around Worcester. Using a map developed by WDPH interns as a template, a Google MyMap was developed to visually represent the geographic locations of all of the recreation places in RecSpace. This interactive map was then populated with information uploaded from RecSpace that allowed the user to be able to search by feature. For instance, searching for 'Basketball' will highlight all the locations with a basketball court, making it easy for users to find locations that they are interested in.
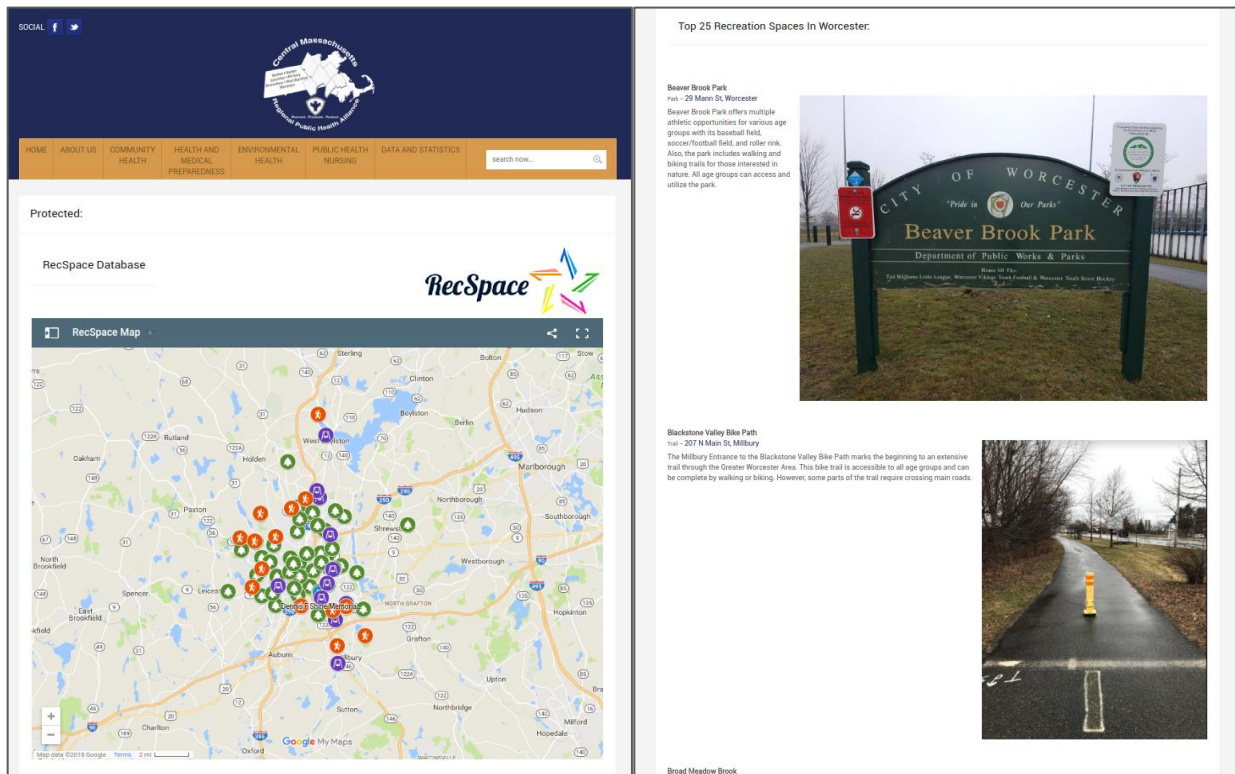
Figure 14: Excerpts from the RecSpace Web Page (Full Size in Appendix E)

The interactive map was embedded in the RecSpace webpage, so users can use it from the WDPH's website while also being able to read about the top featured recreation spaces in all communities within the CMRPHA area, and the features they have to offer. Links to other information on parks and more information on the project are included in the web page so users can learn more about what Worcester and the surrounding towns have to offer or about the process by which the RecSpace web page was created.

4.4 The RecSpace Guidebook and Brochure

The RecSpace Guidebook was developed to provide CMRPHA community members with additional information on physical activity opportunities beyond the information displayed on the main web page and map. Overall, the Guidebook contains the majority of data collected through field work and presents it in a concise, communicable way. The first page of each entry summarizes activities, accessibility, and other noteworthy features, while the second page describes various transit routes and directions. The Guidebook is tailored to different audiences by including multiple Tables of Contents displaying the recreation spaces divided by geographic district, by category, by accessibility levels, by featured spaces, and by hidden gems. Some excerpts from the downloadable guidebook are highlighted below (Figure 15), but the full document can be retrieved at the WCPC project webpage.

Additionally, a RecSpace brochure was created as a supplementary promotional tool to be distributed throughout the City of Worcester with the help of the WDPH. This brochure displays a simplified street map that highlights a few key locations that the team determined to be exemplars of accessible recreation or represent the hidden gems of Worcester. Also, the brochure indicates ways to reach the WDPH RecSpace web page for further information, downloadable content, and recreation resources.

Figure 15: Excerpts from the RecSpace Guidebook (Full Size in Appendix E)

Figure 16: Outline of the RecSpace Brochure (Full Size in Appendix E)

4.5 The Promotional Video

The video was created with multiple audiences in mind, such as young people, the elderly, and people with disabilities. The use of visual and auditory descriptions was done to make the video more accessible to citizens with visual and auditory impairments. The WDPH can CMRPHA can benefit from advertising this promotional video on social media and during events to gain public interest in and awareness of the newly designed RecSpace resources.

4.6 The RecSpace Revisions Manual

A step by step instructions manual explaining how to revise and maintain RecSpace's resources was created for the WDPH and any future students working on this project. The results within this chapter each have an explanation for the updating process.

Updating the Field Data Sheet (FDS) and RecSpace Database

Future revisions of these tools may consider the possibility of accessibility guidelines, public space assessment protocols, and stakeholder perspectives changing over time. Similarly, as park and public space improvement master plans are implemented, the accessibility data for these spaces are subject to change. The content within the FDS and rubric rely heavily upon each other and are meant to be updated together so that the information is consistent. Therefore, this section of the Revisions Manual (Figure 17) outlines how to efficiently use and revise the FDS and how to transfer FDS response data into the RecSpace Database using the correct formats.

Updating STARS Health Equity Scores and Visuals

The STARS Scores require recalculation if a recreation space's data changes or if the rubric-based scoring method is revised. This section describes how to use Excel equations to calculate criteria scores based on rubric data and then calculate an average Health Equity Score. Also, within this section is an outline for the STARS visual and how to change the numerical values and colors. Therefore, the featured list is subject to change depending on how the overall Health Equity Scores of recreation spaces are updated over time.

Updating RecSpace Guidebook

The Guidebook information relies upon having accurate field data, correct health equity scores, and up-to-date photos. This section of the Revisions Manual contains outlines for both the summary page and transportation page for any recreation space. Within these outlines are descriptions of the types of information that apply to each section and how to find this information in the RecSpace Database.

Updating Web Page and Interactive Map

The Interactive Map will ultimately need revisions as more recreation spaces are visited and assessed. This section of the Revisions Manual explains how to properly add locations to the map, insert descriptions and photos, and manage filtering mechanics based on the new data.

Also, this section contains code that can be used in the WordPress to update the layout and content within the overall RecSpace web page.

Figure 17: Excerpts from the RecSpace Revisions Manual (Full Size in Appendix E)

Chapter 5: Findings and Recommendations

     The process of completing this project was accompanied by various challenges and important discoveries. This chapter will elaborate on several of the group's major findings then offer recommendations related to them. The recommendations in this chapter can apply to multiple audiences, including community members, agencies, and future research teams.

5.1 Overarching Findings

Greater Worcester Is Home to a Diverse Set of Recreation Spaces

     It became evident through the process of collecting and analyzing field data that Worcester and the neighboring CMRPHA towns contain a multitude of parks, playgrounds, trails, track & fields, and indoor sports and recreation centers. Many of these spaces differ from each other by the types of features, amenities, and recreational activities that are available. Similarly, the presence of universal accessibility aids and structures indicated that city officials and decision-makers are making meaningful progress in providing inclusive, equitable recreation opportunities for people of all abilities. Likewise, the many diverse public recreation spaces in Worcester and surrounding towns demonstrates that participating in physical activity is possible for people of all interests. For example, a person looking for places to play basketball or tennis are just as likely to find a suitable locale as another person looking to enjoy a walk/hike through nature trails. Therefore, Worcester and surrounding CMRPHA communities possess a broad repertoire of locations for physical activity for diverse groups of people.

Recommendations:
1. City officials should consider recreation space diversity when developing improvement master plans.

5.2 Regarding the Field Data Sheet and Assessment Process

Less Detail is Useful for Assessing Large Numbers of Sites

     Many guidelines that were used for reference provided extensive detail in the assessment processes such as taking surface measurements, material properties, etc. By focusing on broad questions and less detailed analysis, we were able to assess the top featured spaces plus many more locations to produce a wider picture of accessible recreation opportunities. A more detailed analysis would not have allowed us to complete the featured site assessments within the time constraints of the project period.

Recommendations:
1. Update the level of analysis based on the innovations and standards of new parks being established.
2. The WDPH and CMRPHA can use our scoring method and make necessary adjustments based on community member response over time.

The Field Data Sheet Requires Input, Feedback, and Review from Multiple Perspectives

In the beginning stages of the Field Data Sheets there were multiple sheets for each of the categorized areas. This was an inefficient method as the individual sheets had overlapping information. It was easier to combine this information into one sheet by categorizing them based on site criteria. Starting on week three will allow for more flexibility with scheduling.

We collected a large amount of data for this project. Creating a rubric is helpful when scoring to ensure that the process is consistent, and all the information is accounted for. The rubric should mirror the Field Data Sheet and should be categorized accordingly. This project focused on the needs of the stakeholders. Considering their thoughts and recommendations is helpful to creating a product that is useful to the community. It is worth noting that the Commission on Disabilities made a significant impact on the progress of this project by accompanying the team during site evaluations, ensuring that we were properly and thoroughly collecting data on recreation space features based on the specific needs and desires of people with disabilities. In future projects related to accessible recreation, it would be most valuable to construct a team of representatives from each stakeholder group or agency to collectively accompany the project team during site evaluations to verify that everyone's perspectives are being considered during the process.

Practicing Intercoder Reliability Increases Consistent Results

The team gathered data together prior to splitting into two groups to be sure that the assessment process was consistent between the two groups. Logan field was assessed by the entire project team and four field data sheets were filled out for the site. Completing the first assessment together allowed for a discussion of perceived evaluation of different features. This discussion ensured a higher level of intercoder reliability as it established a uniform response to the FDS' questions and ensured that once the teams split, skewed data by perceptions individuals may have is avoided.

Planning and Scheduling Assessment Trips Increases Efficiency

Creating a schedule and pre-planning routes is important as this will maximize efficiency to avoid wasting valuable time or skipping over areas. We discovered this during the field assessment phase as time constraints caused deviations from the initial assessment schedule, thereby leaving missed sites still needing assessment for another day.

Recommendations Regarding Field Data Collection and Assessment Process
1. Categorize questions into criteria
2. Start collection as early as possible to avoid scheduling conflicts
3. Pre-plan routes before going out into the field
4. Create a rubric to turn qualitative measurements into quantitative data
5. Consult stakeholders for feedback and recommendations on methods before starting data collection

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5.3 Regarding the S.T.A.R.S. Scoring Method

Keeping Grading Criteria in to Assessment Factors

There are many factors to consider when assessing recreational areas. It is important to focus on the factors that affect the major needs of the community that these spaces are located in. S.T.A.R.S. is just a comparative reference and ordering by score may assert scientific precision where there is none. Additionally, deciding that a single park is 'the best' may spur conflict which should be avoided.

Recommendations Regarding the STARS scoring method.

1. The rubric should mirror the field data sheet questions and checklists in order to avoid discrepancies in the scoring method.
2. Some broader factors (i.e. level of traffic) should still follow the one to five scale but only using scores one, three, and five.
3. Pre-test a sufficient number of areas as a team to ensure intercoder reliability and keeping everything consistent.
4. When displaying the top locations, order the locations alphabetically rather than by score to avoid implied precision.

5.4 Regarding the RecSpace Web Page and Interactive Map

WordPress Limits Features

The WDPH website runs on a software called WordPress which facilitates the creation of websites. This facilitation can be both an asset and a limitation, making the choices of functionality fairly limited. WordPress is designed more for blogs than interactive maps. Fortunately, this forced us to keep the web page simple, making the design process quick and easy.

A major feature we would have liked to implement if time had allowed was to use JavaScript to recreate the embedded map with the Google Maps Application Programming Interface (API). This would allow for custom formatting, better integration into the website, and a practically endless number of other features. This however takes significant time and knowledge making it outside the scope of this project.

Using A Script to Write HTML Increased Design Efficiency

To facilitate the process of creating the web page, a script was written to generate a large portion of the web page code. This took some up-front time to develop, but once it was done, it made creating the web page easier and made any stylistic changes much more streamlined.

> **Recommendations for the Web Page**
> 1. Get the web page put on the city's website
> 2. Integrate the map with the web page further
> 3. Further develop the ability to filter for features

Having RecSpace on the WDPH main website is great for publicity but having it on the city website is much better. The city website gets much more traffic than the WDPH website, so it can reach more people being there. Also, integrating the map with the rest of the web page further using JavaScript creates a much more pleasant and user-friendly experience. We were unable to try extending the map because it would have taken much more time compared with embedding the map.

5.5 Regarding the RecSpace Promotional Tools (Guidebook, Brochure, & Video)

The Level of Detail Presented in the Tools Varies Among Audiences

This Guidebook is intended to serve a broad range of audiences from community members to professional organizations and planning committees. Therefore, everyone benefited from the information contained within this document since it was comprehensively presented and usable by all audiences. We chose to format the Guidebook to highlight positive accessibility features in order to appeal to both community members and professional organizations, while reserving site improvement recommendations for future projects.

There are many promotional tools that can be used for this purpose. Ensuring that all users are able to utilize what is being promoted is important. When creating a promotional video, it was important to consider audio and visual disabilities; using large text and voice overs to make it as accessible as possible. Although the brochure was set in stone after being printed, the web page was as easily modifiable so that, as recreation spaces change, the web page can be updated to reflect those changes. This means simple, readable code should be used to create it.

The Guidebook is Adaptable and Still in Development

Due to the limited seven-week schedule allotted to complete this project, it is difficult to visit and thoroughly evaluate all CMRPHA locations in person. Therefore, since a majority of the recreation space evaluations were completed by using previous data from the 2013 Open Space and Recreation Plan, it is important to note that the Guidebook can be updated and revised in the future to incorporate new data.

> **Recommendations for Promotion**
> 1. Consider users with disabilities
> 2. Allow the format to be revisable

5.6 Project Summary

Based on the research completed, we have concluded that the concept of accessible recreation extends far beyond the conventional definition of being able to locate places for physical activity. We learned that access is comprised of many other social, transportation, and safety factors. RecSpace - including the web page, interactive map, and guidebook - ultimately exists as an adaptable public recreation resource to address these accessibility barriers and enable community members to discover local opportunities for physical activity.

In a broader sense, this project aimed to make several major contributions to the Worcester Division of Public Health, the Central MA Regional Public Health Alliance, and citizens of Worcester and surrounding towns. First, we expanded upon current public recreation assessment guidelines to construct a practical and relatively easy system to evaluate indoor and outdoor recreation spaces based on health equity criteria that directly apply to community needs and desires – the STARS system. Second, we developed a method of displaying information on accessibility information and local recreation opportunities at a level of detail that is readily available and understandable by the average user. Lastly, we developed an easily updatable and revisable system composed of the RecSpace database, web page, and guidebook that are efficient ways to keep the public informed and engaged about recreational opportunities.

Over time, RecSpace will need to be updated to integrate new data as indoor and outdoor public spaces are built or renovated. Nevertheless, we believe that RecSpace will fulfill its purpose by providing the public with useful information on accessible recreation opportunities, travel routes to these accessible recreation opportunities and featured recreation spaces.

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Appendix A: Interview Questions, Informed Consent Form

Worcester Division of Public Health

1. Apart from the AHC-W and the CMRPHA, how else is the organization structured with other collaborative agencies? How do their responsibilities towards this problem compare to the WDPH?
2. From your perspective, how is "accessible recreation" defined? (What types of recreation activities and spaces are you most concerned with, and what aspects of accessibility should be evaluated?)
3. How have the WDPH and other organizations addressed the problem of accessible recreation, and can you discuss any challenges along the way that changed your collective approach to this issue?
4. What technical approaches have you implemented to communicate the accessible recreation problem in Worcester and provide a viable solution?
5. What groups within the community are you focusing on addressing with this information, and have any previous methods been successful in providing it to them?
6. What resources at the WDPH have made a significant impact in your efforts to address the problem and do you have any recommended outside resources that could help us in our project?

Worcester Commission on Disabilities

1. What goals have the COD developed for improving accessibility in Worcester? What methods have you employed to accomplish these goals?
2. What programs/tools have been most effective? What challenges have you encountered?
3. How do you collect community feedback and incorporate it into your work?
4. Do you collaborate with outside agencies? Which ones and why did you choose them? What resources have helped you in your work?

Worcester Department of Parks and Recreation

1. Can you tell us about your role within the Department of Parks and Rec?
2. What methods or resources have you or the DPR used to assess and evaluate public parks for universal accessibility and recreational value?
3. When did the goal of park accessibility begin in Worcester? What are some examples of past initiatives or future plans to enhance park accessibility in Worcester?
4. What are some challenges that you encountered early on when attempting to make parks more accessible?
5. How are Worcester's Parks being improved for Universal Accessibility, and how easy would it be to do so?
6. How are you addressing accessibility barriers that go beyond the realm of physical disability, such as cost, perceptions of user safety, and transportation?
7. What are some ways Parks and Rec tries to increase awareness of recreational opportunities for Environmental Justice neighborhoods?
8. How do you collect community feedback and incorporate it into your future work?

9. In your opinion has the community's needs and wishes changed since the 2013 OSRP report?
10. Which public recreation programs or park improvement plans have been most successful/are you most proud of? Which of these would you like to see other cities implement and benefit from?
11. The end product of our project will be a website to be used to promote accessible recreation spaces in Worcester. There is a similar goal mentioned in the OSRP. What features would you like to see in such a website?

WalkBike Worcester
1. Tell us about WalkBike and your roles and significant experiences within the organization.
2. What methods or resources have you or the organization used to assess and evaluate transit routes for universal accessibility and environmental/public health value?
3. What are some examples of past initiatives or future plans to enhance non-motorized transit route accessibility and engagement in Worcester?
4. How do you collect community feedback and incorporate it into your work?
5. What are some challenges that you encountered early on when attempting to make transit routes more accessible?
6. Do you collaborate with outside agencies? Which ones and why did you choose them? What resources have helped you in your work?
7. Which public transportation programs or improvement plans have been most successful/are you most proud of? Which of these would you like to see other cities implement and benefit from?
8. The end product of our project will be a website to be used to promote accessible recreation spaces in Worcester. We plan to include a section on accessible transit routes. What key information do you believe will be most useful to make the public aware of these routes to recreation spaces?

Young Women's Christian Association (YWCA)
Staff Questions:
1. How do you reach out to community members to come to your organization?
2. Do you offer any free/low cost programs for non-members? Why or why not?
   a. If not, would the organization consider running some?
3. Do you think most Y members use personal transportation or public transportation to get to the Y?
4. What physical activities are available at the YMCA/YWCA?
   a. Which activities are the most popular among your members, according to time spent doing them and/or the total numbers of people doing/using them every week?
5. When are there more members present? (Seasonal?) Why?

6. Amongst the members, which age groups participates in physical activity the most? Why do you think this is so?
7. How accessible is your facility for people with disabilities?
    a. Did you face challenges in becoming ADA compliant?
8. Are you aware of any barriers to people attending the Y?
9. Biggest challenges faced? (Low membership, failed programs, etc.)

Member Questions:
1. How long have you been coming to the YMCA/YWCA?
2. How do you get to the Y? (Bus, car, walk?)
3. What activities do you participate in at the Y?
    a. How often during the week do you do these activities?
4. How do you learn about recreation spaces near you? What information do you look for that motivates you to use these spaces? What can be improved?
5. What are your thoughts on the membership fees?
6. Do you usually come here with friends? Family?
7. Would you recommend the YMCA/YWCA to other community members? Why or why not?

Greater Worcester Community Members

Phase 1:
1. Where do you live and for how long?
2. How often do you engage in physical activity? Do you prefer going to … ? Why or why not?
3. How do you learn about recreation spaces near you? What information do you look for that motivates you to use these spaces? What can be improved?
4. Do you feel that your neighborhood contains adequate space for physical activity?
5. What are your thoughts on recent efforts to improve and promote recreation spaces?

Phase 2: Questions were drafted after completion of the major project deliverables. Reconvening with stakeholders in individual and community meetings enabled the team to receive feedback and modifications to project ideas and methodologies.

Informed Consent Form

Investigator: WPI Interactive Qualifying Project in Partnership with the Worcester Division of Public Health – Accentuating Accessible Recreation in the Greater Worcester Community

Title of Research Study: Semi-Structured Interview

Introduction
We are juniors from Worcester Polytechnic Institute (WPI) located in Worcester, MA working on an Interactive Qualifying Project (IQP) with the Worcester Division of Public Health (WDPH) on Accentuating Accessible Recreation in the Greater Worcester Community. A primary goal of this project is to develop an understanding of public opinions on physical activity/recreation needs and desires in the community.

Purpose of the study:
We would like to understand your thoughts regarding physical and recreation spaces in Worcester and surrounding towns. We are primarily concerned with your opinions on the factors that determine if and when you participate in physical activity or recreation as well as the specific features that interest you when visiting physical activity/recreation spaces.

Procedures to be followed:
This procedure will follow a semi-structured interview, in which team members will ask conceptual questions that may lead to general discussion.

Risks to study participants:
Throughout the interview/discussion process, sensitive or personal information may be brought up. At any point, and for any reason, you are able to choose not to answer any questions. You may decide at any time not to participate in this process, and any information you provide will not be used in our report. This meeting is completely voluntary, and you will provide a copy of this form so that you are aware of your rights and have access to contact information if you have any questions after today.

Record keeping and confidentiality:
With your permission, we might include information you provide in our report that will be published online. However, your identity will not be included in our published report, unless we receive your permission to do so. Until then, your identity will be kept confidential and anything from this meeting used in our report will not state your name or identifying characteristics. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or it's designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect

and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you.

All audio recordings will be held as private property and will not be released. A copy of the final report will be made available to you, should you choose, when completed and approved by WPI and the WDPH.

For more information about this research or about the rights of research participants, or in case of research-related injury, contact:
Project Team: Stephan Barthold, Evan Duffy, Stephen Foley, Remington Gaetjens
wcpc18-wdph@wpi.edu

WPI IRB Chair: Professor Kent Rissmiller
Tel. 508-831-5019
Email: kjr@wpi.edu

University Compliance Officer: Jon Bartelson
Tel. 508-831-5725
Email: jonb@wpi.edu

Your participation in this research is voluntary. Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

By signing below, you acknowledge that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

_____		Date: _____
Study Participant Signature

_____
Study Participant Name (Please print)

_____		Date: _____
Signature of Person who explained this study

Appendix B: Supplemental Data and Figures

Figure 18: Kelley Square Intersection, bird's-eye view (Friend, 2015).
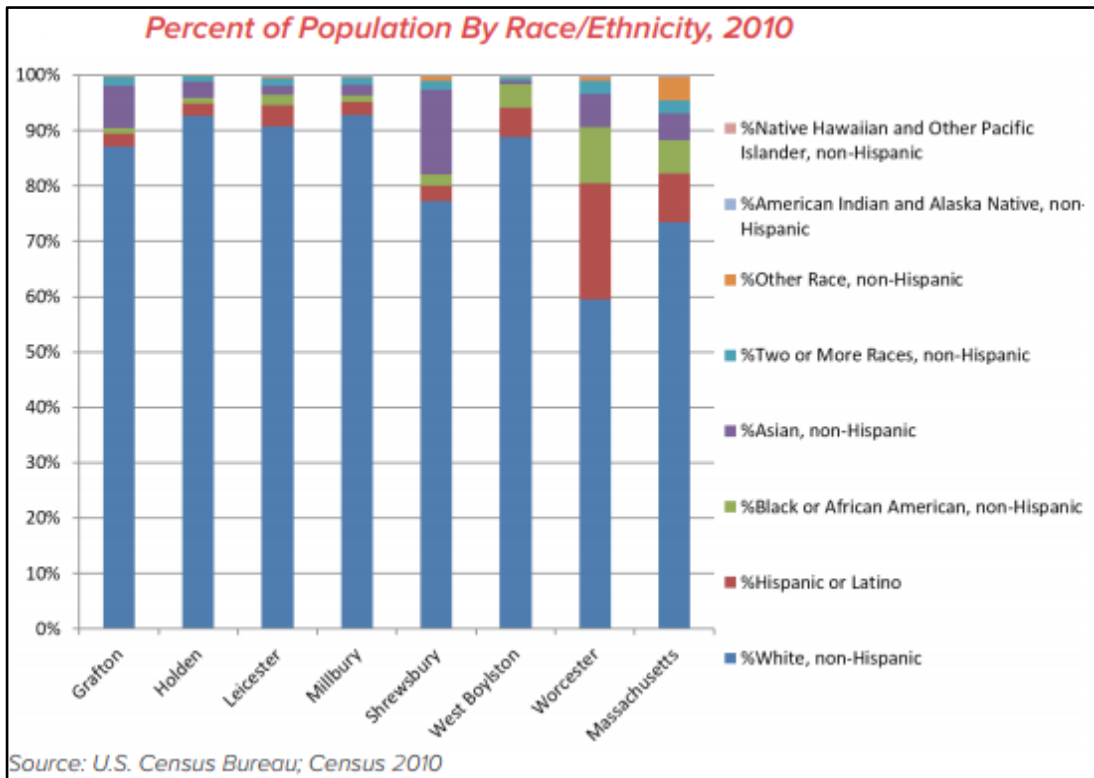
Figure 19: 2010 Census of Racial and Ethnic Demographics of CMRPHA Population
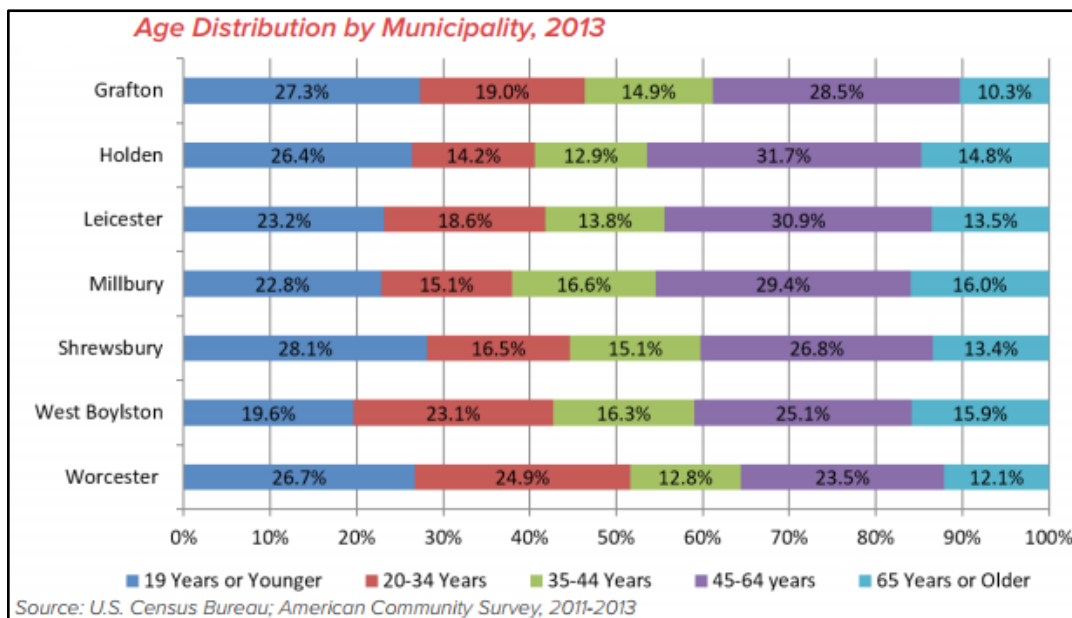
Figure 20: 2013 Census of Age Distribution in the CMRPHA Population

Table 8: Crimes Rates of CMRPHA cities in Massachusetts (Federal Bureau of Investigation)

City	Population	Violent crime	Murder and nonnegligent manslaughter	Rape (revised definition[1])	Robbery	Aggravated assault	Property crime	Burglary	Larceny-theft	Motor vehicle theft	Arson[3]
Worcester	184,595	1,642	8	63	394	1,177	5,358	1,366	3,473	519	5
Shrewsbury	36,874	4	0	0	0	6	23	3	18	2	1
West Boylston	7,895	8	0	0	0	9	144	16	123	5	0
Groton	11,372	4	0	3	0	1	49	10	38	1	1
Holden	18,829	13	0	2	0	11	55	15	37	3	1
Millbury	13,532	22	0	4	1	17	224	33	177	14	0
Leicester	11,355	23	0	4	0	19	149	21	119	9	0

Table 9: Wisconsin Evidence Based Strategies

Strategies
State-level policy change
Implementing change in the school systems
Developing education standards for grades k-12
Providing 60 min of physical activity for school-age children
Developing community master plans to incorporate strategies and promoting physical activity
Implementing active transportation options and providing safe routes to schools
Increasing access to public or community facilities
Building community partnerships

Figure 21: Joint use spaces (Ewuoso)

Table 10: Park Spirit IQP Survey Results on Park Amenity Popularity and Need

Park Ammenities	Yes	Maybe	No
Accessible Restrooms	64.86%	20.12%	15.02%
Postings about Community Events	53.55%	34.32%	12.13%
Paper Copies of Trail Maps	47.92%	34.52%	17.56%
Interactive Challenge	36.06%	33.64%	30.30%
Electronic Map	61.98%	22.46%	15.57%
Increase Number of Trail Markers	54.38%	31.02%	14.16%
Dog Friendly Components	49.55%	23.44%	27%
Additional Parking Availabilities	56.68%	28.49%	14.84%

Table 11: Park Spirit IQP Analysis of Technological Resource Effectiveness

Technological Resource	Cost	Public Opinion	GPS Tracking	Feedback Section	Points of Interest
Interactive PDF	$20 / month	Good	No	No	Yes
Creating App from Scratch	$200 / month	Good	Yes	Yes	Yes
QR Codes	Free	Poor	Yes	Yes	Yes
Appypie	$300 / year	Poor	Yes	Yes	Yes
Google Maps / Web App	Free	Good	Yes	Yes	Yes

Evaluation Checklist

Seven Hills would like to take their participants on more field trips but they need to know if locations are accessible. Our goal is to create a list of accessible venues for Seven Hills field trips.

Instructions: Check all that apply to your venue. Please answer to the best of your ability.

Mobility options of your venue to accommodate individuals in wheelchairs and with walking impairments
- ❑ Handicap parking
  - ❑ # of handicap parking spaces:_____
  - ❑ Handicap parking for a van
- ❑ Curb ramps leading into venue
  - ❑ At all entrances
  - ❑ At some entrances
- ❑ Handrails
  - ❑ Provided in all elevators
  - ❑ Provided in at least one elevator
  - ❑ Provided on all sloped walking surfaces
  - ❑ Provided on some sloped walking surfaces

- ❑ Unobstructed path of travel
  Continuous, unobstructed way of pedestrian passage by means of which the altered area may be approached, entered, and exited, and which connects the altered area with an exterior approach (including sidewalks, streets, and parking areas), an entrance to the facility, and other parts of the facility.
- ❑ Accessible Doorways
  Doorways should have a minimum width of 32 inches
  - ❑ Some doorways accessible
  - ❑ All doorways accessible
- ❑ Handicap accessible seating
  In stadiums, arenas, and grandstands, wheelchair spaces and companion seats are dispersed to all levels that include seating served by an accessible route
  - ❑ # of available handicap seats: _____
- ❑ Maneuverability
  Turning space of minimum 60 inches in hallways
  - ❑ Maneuverability in all hallways
  - ❑ Maneuverability in some hallways
- ❑ Drinking Fountain
  Spout outlets of drinking fountains for standing persons shall be 38 inches minimum and 43 inches maximum above the finish floor or ground.
  - ❑ # of accessible drinking fountains:_____

Figure 22: Section of Accessibility Checklist for 7 Hills Outing Sites (Chase et al., 2014)

Table 12: Evaluation Sheet from Nantucket IQP (Colman et al., 2016)

Site Name	
Owner	
Type of Location	
Region	North, South, East, West, Center
Sub-Region	
Current Accessible Elements	☐ Handicapped Parking ☐ Handicapped Bathrooms ☐ Ramps ☐ Boardwalks ☐ Benches ☐ Signage ☐ Sensory Elements
Current Inaccessible Elements	☐ Rolling terrain ☐ Cross-sloping terrain ☐ Loose sand ☐ Wetlands ☐ Roots, rocks, sticks, sand ☐ Poison Ivy, Ticks ☐ Hunting area in fall
Parts of Location Are Accessible to	
Short Term Recommendations	
Long Term Recommendations	

Table 13: Nantucket IQP team database to assess disability access (Colman et al., 2016)

Quantitative Data to Collect	Tools Used		Qualitative Data to Collect
Ramps			**Ramps**
Entrance Width	Measuring Tape		Presence of Ramps
Running Slope	Inclinometer		Surface of Ramps
Cross Slope	Inclinometer		Presence of Lip to Ramp
Length of Ramp	Measuring Tape		**Parking Lot**
Railing Height	Measuring Tape		Surface of Parking Lot
Clear Space Between Rails	Measuring Tape		Presence of Hcap Spaces
Clear Width	Measuring Tape		**Hcap Bathrooms**
Landing Area (Turning Width)	Measuring Tape		Presence of Them
Parking Lot			Ramp to Them
Area	Rotatape		Stall or Separate Bathroom
# of Feasible Parking Spaces	N/A		**Nature of the Surf**
# of Hcap Parking Spaces	N/A		Heavy or Calm
Distance from Hcap Space to Beach Entrance	Rotatape		**Levelness of Beach**
Beach Entrance			Flat or Large Cross Slope
Width	Measuring Tape		**Beach Entrance**
Running Slope	Inclinometer		Width
Cross Slope	Inclinometer		Surface
Bathrooms			Level
Distance from Hcap Space	Rotatape		**Sand**
Distance from Beach Entrance	Rotatape		Compact or Very Loose
			Signage
			Presence of Signage
			Content of Signage
			Location of Signage
			Presence of Braille

		Pathway
		Benches
		Surface
		Boardwalk to Beach
		Sensory Elements
		Presence of Them
		What is there
		Other Notes

Table 14: References for General Information for Field Data Collection Sheet

Category	Documents	Key Information
Safety	Community Park Audit Tool	Access, safety, and appearance of parks and surrounding neighborhoods
	POD Evaluation, Planning, and Selection Checklist	Building safety/security measures
Transportation	ADA's Checklist for Existing Facilities	Assessing parking and nearby sidewalks
Access	ADA's Checklist for Existing Facilities	Mainly focuses on indoor facilities - parking, signage, ramps, sidewalks, etc.
	Accessible Parks and Trails Assessment Toolkit	Addresses park and trail accessibility based on ADA guidelines
Recreation	Measuring Physical Environments of Parks and Playgrounds	Evaluating quality/use of park, information on park features
	Community Park Audit Tool	Park activity assessments
Social Value	Community Park Audit Tool	Park appearance - vandalism, graffiti, noise, littering, poor maintenance
	POD Evaluation, Planning, and Selection Checklist	Interior and exterior info - utilities including bathrooms, drinking fountains, lighting, exits,

Table 15: References for Site Specific Information for Field Data Collection Sheet

Category	Documents	Key Information
Parks / Public Spaces	ADA Checklist Quebec's Accessible Parks and Trails Assessment Toolkit Community Park Audit Tool	Structural regulations (i.e. parking lot dimensions, lighting, pathway material, etc.) Park features and safety
Playgrounds	Muskegon Public Schools and Playground Assessment Checklist (Chandonnet, Elam, & Lucas, 2013) US Access Board "Accessibility Guidelines" (2005) US Consumer Product Safety Commission "Public Playground Safety Handbook" (2010)	Factors that affect children safety and parental comfort Universal accessibility for community members with disabilities
Trails	Path Environmental Audit Tool (Troped et al., 2006) Universal Access Trails and Shared Use Paths Manual (Goldstein & Knutson, 2014)	ADA regulations for management of Universally Designed trails Trail conditions, amenities, safety, appearance, and accessibility
Indoor Rec Centers	Recreation Facility Evaluation Instrument (Cavnar, Kirtland, & Evans 2013)	Interior/exterior properties Safety/communication ADA guidelines for indoor spaces
Track & Field / Sports Facilities	Path Environmental Audit Tool (Troped et al., 2006) Universal Access Trails and Shared Use Paths Manual (Goldstein & Knutson, 2014) Recreation Facility Evaluation Instrument (Cavnar, Kirtland, & Evans 2013)	Joint Use Locations ADA Guidelines

Table 16: Park Spirit IQP Sample Checklist for Green Space Features

Green Space Name	Playground	Athletic Fields / Courts	Historical Landmarks	Pond / Body of Water	Cementery	Gardens	Fountain (not for drinking)	Picnic Tables	Benches
Cascading Waters				X					
Cascades Park				X				X	
Cascades West				X				X	
Boynton Park				X				X	X
Spillane Field	X							X	X
Tetasset Ridge									
Coe's Pond Beach				X					X
Coe's Knife Property				X					
Columbus Park	X			X				X	X
The Knights of Columbus Park				X					
Hadwen Arboretum		X				X			
Beaver Brook Park	X			X				X	X
Elm Park	X	X *disc golf course	X	X				X	X
Salisbury Park		X	X						
Institute Park		X		X				X	X
Rural Cemetery			X		X				
Grant Square Park	X	X				X		X	X
Green Hill Park	X	X	X	X			X	X	X
Trinity Woods									
Coal Mine Brook				X					

Table 17: Park Spirit IQP Sample Rubric and Scoring Method for Green Space Amenities

Green Space Name	Ample Parking	Garbage / Recycling Cans	Wheelchair / Stroller Accessability	Efficent Signage	Clean Restrooms
Cascading Waters	2	2	1	4	1
Cascades Park	2	2	1	4	1
Cascades West	2	2	1	4	1
Boynton Park	3	4	1	5	1
Spillane Field	3	4	5	3	4
Tetasset Ridge	1	1	1	3	1
Coe's Pond Beach	3	3	2	3	4
Coe's Knife Property	2	1	1	2	1
Columbus Park	3	3	4	3	1
The Knights of Columbus Park	1	1	1	2	1
Hadwen Arboretum	2	1	1	4	1
Beaver Brook Park	4	5	5	5	5
Elm Park	4	5	5	5	5
Salisbury Park	3	2	2	5	1
Institute Park	3	4	4	5	4
Rural Cemetery	4	1	4	4	1
Grant Square Park	3	3	4	4	1
Green Hill Park	5	3	4	5	5
Trinity Woods	1	1	1	1	1
Coal Mine Brook	2	1	1	2	1
	1 = little - none	2 = below average	3 = mediocre	4 = good	5 = very good

Table 18: Rubric for Safety

	Safety			
	Surveillance/Security	Site Information	First Aid	Traffic
1 =	None of: Video Surveillance, Adequate Lighting, Staff Present, Visibility	No information online or on site (signs, maps, etc.)	No First Aid Materials	Heavy
2 =	Lighting Only	Some online info or basic maps/signage		
3 =	Adequate Visibility, Lighting and Emergency Security Measures (Phone/Panic Button)	Detailed online presence or detailed maps/signage	Trained personnel present or First Aid kit /AED	Moderate
4 =	Video Surveillance, Adequate Lighting, and Emergency Security Measures	Detailed Online presence and detailed maps/signage		
5 =	Excellent Visibility, Video Surveillance, Adequate Lighting, Staff Present and emergency security measures	Sufficient online information, detailed signs/maps available onsite, (indoor locations have building plans)	Trained Personnel and First Aid Kit/AED present	Light

Table 19: Rubric for Transportation

	Transportation		
	Bus Routes	Parking	Bike Racks
1 =	Not Accessible by Public Bus System	No free parking within 400m and/or no marked handicap accessible spaces	No Bike Racks
2 =	Bus Stop within a half mile of the location	Some free parking within 400m, no handicap accessible spaces within 400m	Single Bike Rack, Poor Condition
3 =	Bus Stop within 400m of a location entrance	Free parking within 400m, some marked handicap accessible spaces within 400m	Bike Rack Available, But Not Enough or in Poor Condition
4 =	Bus Stop within 100m of a location entrance	Free parking on site within certain hours, some marked handicap accessible spaces on site	Ample Bike Racks in okay Condition
5 =	Bus Stop within 100 m of a location access point AND site is centrally located within bus network	Free all day, substantial parking spaces on site, clearly marked handicap accessible spaces	Ample Bike Racks in Good Condition

Table 20: Rubric for Access

	Pathways/Sidewalks	Disability Aids (Audio, Sight, Mobility)	Accessible Recreation Opportunities	Accessible Entrances
	Access			
1 =	Not Wheelchair Accessible, Dilapidated	None present	None Present	No entrances are 36" wide, doors are hard to open, Bi-leveled with NO ramps
2 =	Not Wheelchair Accessible, But Somewhat Passable with Assistance	Audio, sight, or Mobility Present	One is present but is NOT Operational	Only one entrance is 36" wide, doors are hard to open, bi-leveled and NO ramp access
3 =	Wheelchair Accessible, But with Difficulty. Walkers May Lose Balance	Two Present: Audio, sight, or Mobility Present	At least One is Available	A few entrances are 36" wide, some doors are hard to open, with no ramp but is level
4 =	Wheelchair Accessible but Not Fully ADA Compliant	Audio, sight, and Mobility Present	More than One but NOT all are Operational	All Entrances are 36" wide, doors easy to open, most surfaces level, and limited ramp access.
5 =	Fully ADA Compliant with Proper Ramps, Barriers, and Path Material	Audio, sight, and Mobility Present all in good condition	More than One and All are Operational	All entrances have easy to open doors that are at least 36" wide, and level

Table 21: Rubric for Recreation

	Recreation		
	Types of Activities	Age Groups	Hours Open to Public
1 =	Basic activities/exercise: walking/running	Targets a single age group: children, young adults, adults, elderly	Restrictive Hours or Short Seasonal Hours
2 =	One of the following: Sports, Biking/hiking, General Exercise, Extensive		
3 =	Two of the following: Sports, Biking/hiking, General Exercise, Extensive	Targets multiple age groups and families: children, young adults, adults, elderly	Closed Seasonally but Good Hours in Season. Or Year Round with Decent Hours
4 =	Three of the following: Sports, Biking/hiking, General Exercise, Extensive		
5 =	All of the following: Sports, Biking/hiking, General Exercise, Extensive	Targets all age groups and families	Open All Day Year Round

Table 22: Rubric for Social Value

	Social Value			
	Utilities	Cost	Maintenance/ Appearance	Environmental Justice Proximity
1 =	Minimal Utilities, (Benches/Trash Cans), No bathrooms	No low-cost programs	Poor maintenance: litter, vandalism, and graffiti are visible	Prohibitively Far from EJ communities. No/Lacking (0-1) Sidewalks (1/2 mi +)
2 =	Minimal Utilities, single public bathroom, or public restrooms nearby	Restrictive low-cost programs only		Prohibitively Far from EJ communities. (2-3) Sidewalks (1/2 mi +)
3 =	Extra Utilities (Payphones, Wi-Fi, Picnic Tables), Multiple Public Restrooms on site	Low cost options only (<$10/day)	Generally maintained: some littering, free of vandalism or graffiti	Short Walk from EJ Communities or Acceptable Maintained Sidewalks / Paths Nearby (1/4 - 1/2 mi)
4 =	Water fountain, handicap bathrooms, Available sitting areas	Free and low-cost options		Short Walk from EJ Communities and (4) Maintained Sidewalks / Paths Nearby (1/4 - 1/2 mi)
5 =	Most utilities, multiple clean and functional bathrooms (all-gender and handicap accessible)	Free	Regularly maintained and positive appearance: free of trash, vandalism, and graffiti	Located Within EJ Communities. Well Maintained Sidewalks / Paths Nearby (1/4 mi or less)
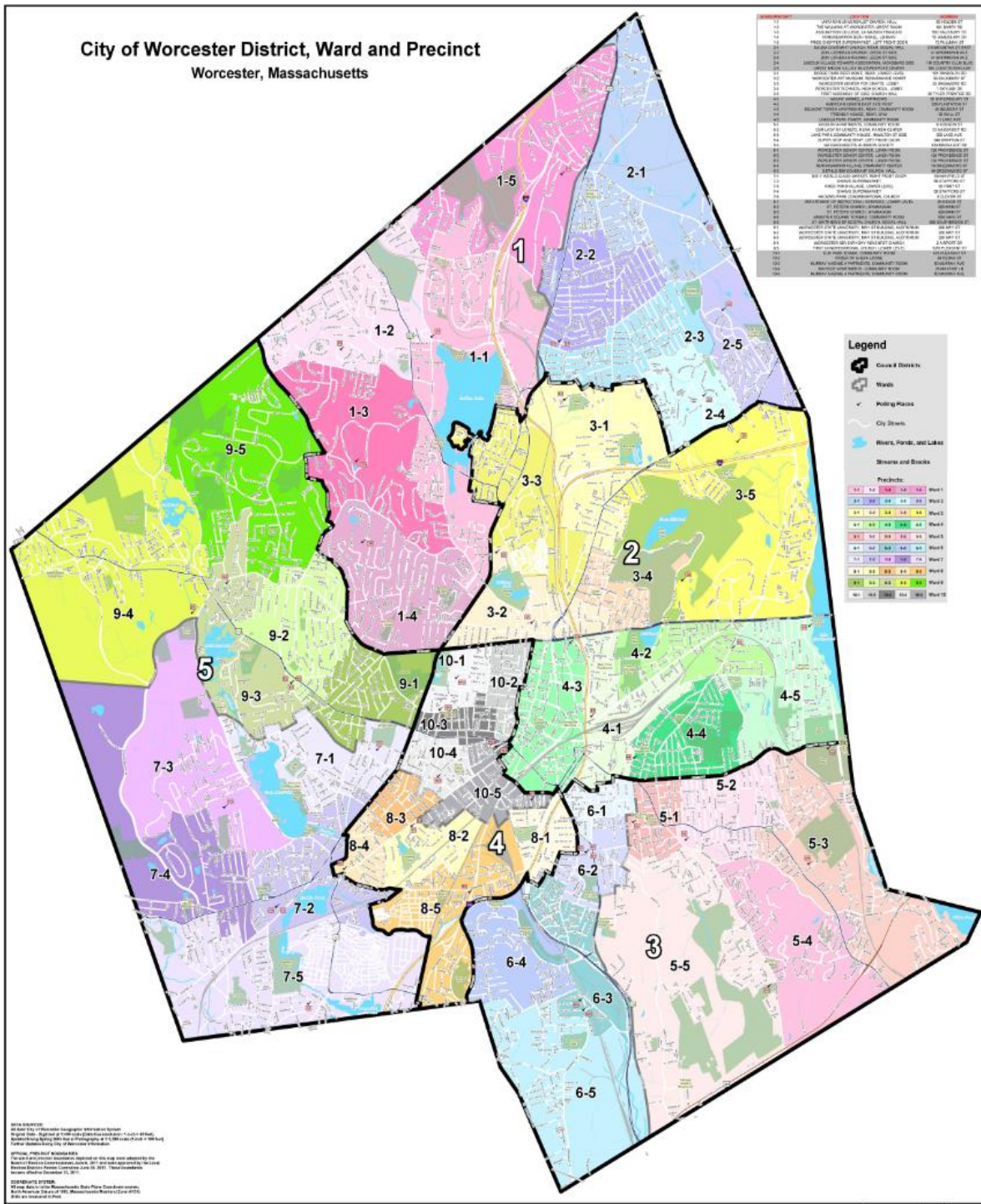
Figure 23: Worcester Divided by 5 Districts, 10 Wards, and 50 Precincts (The City of Worcester, MA: Maps)

Appendix C: RecSpace Database by Geographical District

| Name | Category | District | S. T. A. R. S. | | | | | Overall |
			Safety	Transportation	Access	Recreation	Social Value	
Kendrick Field	Park	1	2.33	3.00	3.00	3.00	4.33	3.1
Shore Park	Park	1	3.00	1.67	2.50	4.00	4.33	3.1
Greater Brook Valley Playground, Roberto Clemente Field	Park	1	2.33	3.33	3.33	3.67	3.00	3.1
Norrback Avenue School Playground	Playground	1	3.00	2.67	2.50	3.33	3.33	3.0
Indian Hill Park	Park	1	2.33	2.67	3.00	2.67	3.67	2.9
Morgan Park	Park	1	2.33	2.33	2.75	3.33	3.33	2.8
Tacoma St Playground	Park	1	2.67	2.33	2.00	2.67	2.67	2.5
Bovenzi Preserve	Trail	1	3.00	1.33	1.00	4.00	2.33	2.3
Harvey Ball Conservation Area	Trail	1	2.67	1.33	1.00	3.00	3.00	2.2
Major Edwards (Pride Park) Playground	Playground	1	2.33	1.67	2.25	3.67	5.00	3.0
Quinsigamond lake park	Park	2	2.67	4.67	3.00	4.33	4.75	3.9
Bell Hill (Chandler) Park	Park	2	1.67	3.33	4.00	4.33	4.67	3.6
Grant Square	Park	2	3.00	3.00	4.00	3.67	3.75	3.5
Green Hill Park	Park	2	3.67	1.67	3.67	4.67	3.67	3.5
Betty Price Playground	Park	2	5.00	2.00	3.00	4.00	3.00	3.4
Cristoforo Colombo (East) Park	Park	2	1.67	2.67	4.00	4.33	3.33	3.2
Institute Park	Park	2	3.00	2.67	3.00	4.33	2.67	3.1
Burncoat (North) Park	Park	2	3.50	2.33	2.00	4.50	3.00	3.1
City Hall Common	Park	2	1.67	2.67	3.33	4.00	3.67	3.1
Harrington field	Park	2	2.67	2.00	3.00	4.00	3.50	3.0
Burncoat St. Playground	Playground	2	3.00	3.33	2.33	3.00	3.25	3.0
Holmes field	Park	2	2.33	1.67	2.00	4.33	3.50	2.8
Dodge Park	Park	2	3.00	1.67	2.00	2.50	3.33	2.5
Holland Rink Playground	Playground	2	1.00	2.67	1.33	2.00	2.00	1.8

Vernon Hill Park	Park		3	4.25	5.00	3.33	5.00	4.50	4.4
Broad Meadow Brook	Trail		3	4.00	3.33	5.00	4.00	4.67	4.2
John J Grasseschi Field	Park		3	2.33	2.00	3.67	4.33	3.33	3.1
Blithewood Playground	Playground		3	2.67	2.00	3.25	4.00	3.67	3.1
Mulcahy Field	Park		3	1.50	3.67	3.00	2.67	4.00	3.0
Greenwood Park	Park		3	2.33	3.00	2.33	3.00	3.67	2.9
Providence St Playground	Playground		3	2.00	3.00	3.00	2.67	3.50	2.8
Banis Street Playground	Playground		3	2.50	2.33	2.33	1.67	3.33	2.4
Oakland Heights Playground	Playground		3	2.33	1.00	1.00	3.33	2.67	2.1
Crompton Park	Park		4	3.67	3.50	2.67	5.00	4.00	3.8
South Worcester Playground	Park		4	3.50	4.50	3.00	4.00	3.67	3.7
Elm Park	Park		4	3.67	2.67	2.00	4.67	3.33	3.3
University (Crystal) Park	Park		4	3.00	2.67	2.67	4.67	3.33	3.3
Cookson Park	Trail		4	3.33	2.67	1.33	3.00	3.25	2.7
Oread Castle Park	Park		4	3.67	4.00	3.33	5.00	4.25	4.1
Beaver Brook Park	Park		5	3.67	5.00	4.75	4.67	4.33	4.5
Newton Hill	Park		5	3.33	5.00	3.75	4.67	3.67	4.1
Coes Park	Playground		5	4.33	3.67	4.67	2.33	4.25	3.9
Hadwen Park	Park		5	3.00	4.00	2.67	4.67	4.00	3.7
Knights of Columbus Park	Park		5	3.00	3.67	3.33	3.33	4.00	3.5
Rockwood Field	Park		5	3.67	3.00	3.33	4.00	3.33	3.5
Bennett Field & Pool	Park		5	2.00	4.33	2.33	4.00	4.50	3.4
Boynton Park	Park		5	3.00	3.33	1.00	3.67	2.75	2.8
Logan Field	Park		5	3.00	3.00	2.33	2.00	3.33	2.7
Marois 28	Trail		5	1.33	3.67	1.25	3.67	3.33	2.7
East Cascades Trails	Trail		5	3.00	2.33	1.00	3.67	3.00	2.6
Nick's Woods	Trail		5	3.33	1.33	1.33	4.00	3.00	2.6
Duffy Field	Park		5	3.50	2.00	2.00	2.33	2.67	2.5
Tetasset Ridge/God's Acre	Trail		5	2.00	2.00	1.00	3.33	3.00	2.3
Moreland Woods	Trail		5	2.33	1.33	1.00	3.00	3.33	2.2
Apricot Street Playground	Park		5	3.00	3.00	1.00	3.50	3.00	2.7
Farber Field	Park		5	2.33	1.67	1.33	3.33	4.33	2.6
Muir Meadows	Park		5	1.33	1.33	1.00	3.00	2.67	1.9

Other CMRPHA Communities								
Dean Park	Park		3.33	2.67	3.33	4.67	4.00	3.6
Rail Trail	Trail		4.67	3.67	2.67	4.00	4.00	3.8
Mayo Elementary School	Park		3.00	2.33	3.50	4.00	3.67	3.3
Elmwood street school	Playground		3.33	2.33	2.67	3.33	4.67	3.3
Blackstone Valley Bike Trail	Trail		1.67	3.33	2.67	3.67	4.00	3.1
East Millbury Park	Park		3.33	1.67	2.00	4.33	3.25	2.9
Little Dorothy Pond Recreation Area	Trail		1.67	1.33	1.00	3.00	3.00	2.0
Holbrook Forest	Trail		3.00	1.33	1.33	4.00	2.75	2.5
Community Field	Park		2.67	1.33	1.33	3.67	3.25	2.5
John W. Spillane Memorial Field	Park		2.33	2.67	3.00	3.33	4.33	3.1
Airport Park	Park		3.33	3.67	1.50	4.67	4.00	3.4
Gummere Wood	Trail		2.00	1.33	1.50	3.33	3.67	2.4
Parker Preserve, Hassanamesit Wood	Trail		2.75	1.33	1.00	3.33	3.67	2.4

Appendix D: Health Equity Star Database
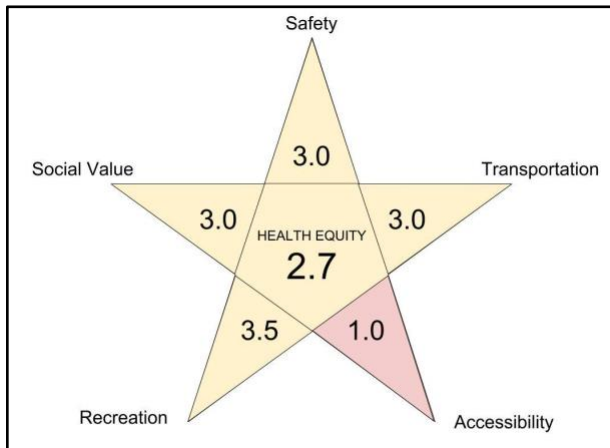
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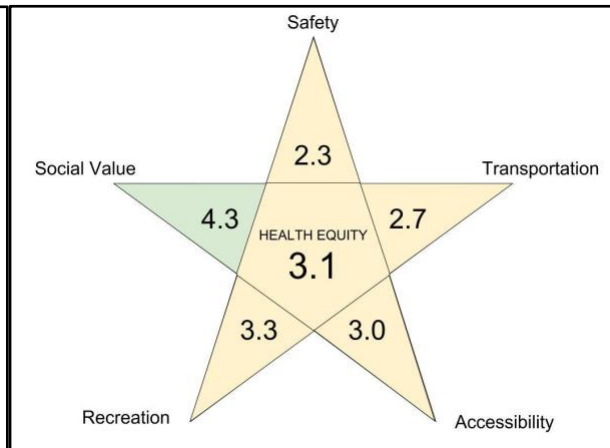
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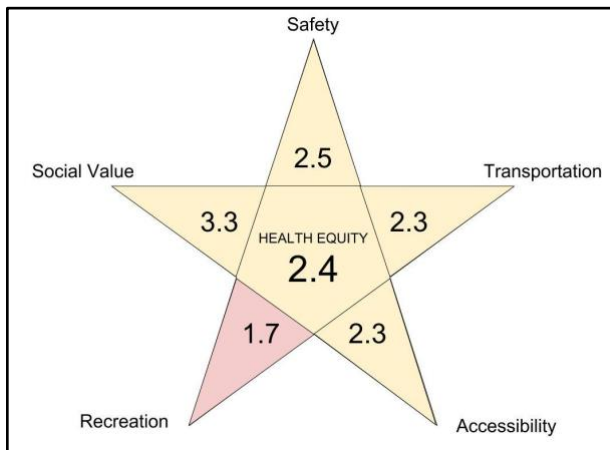
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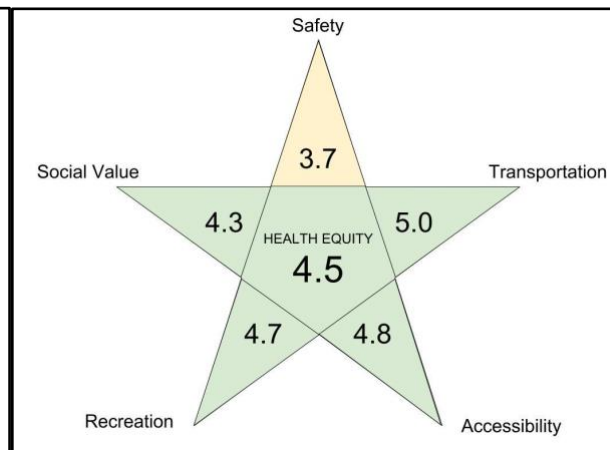
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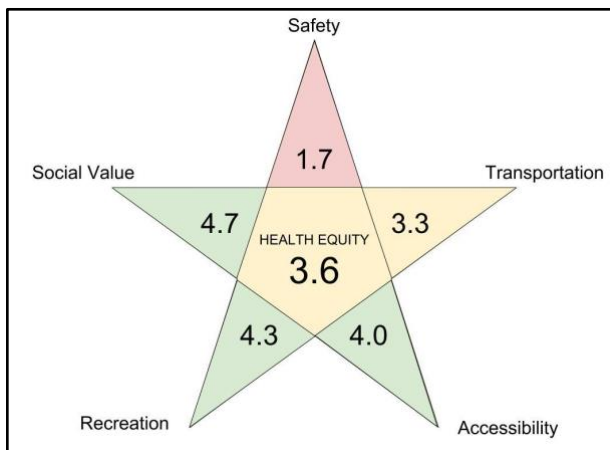
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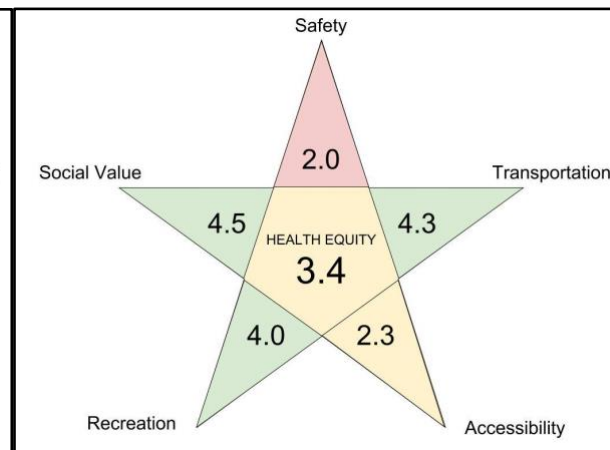
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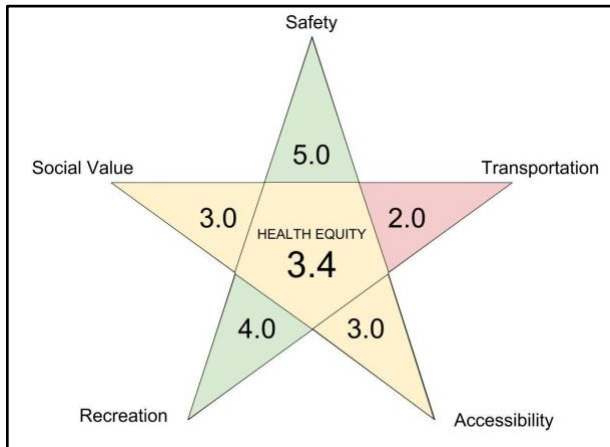
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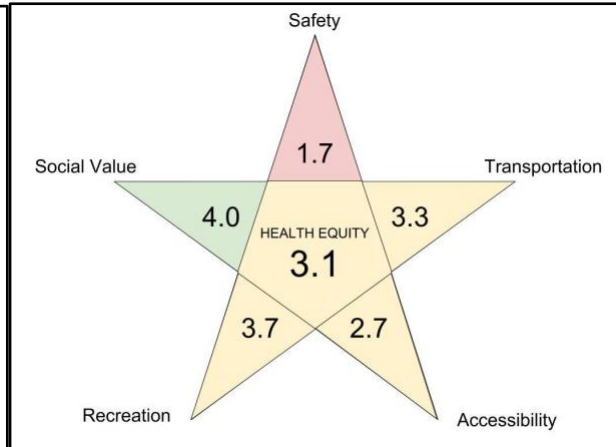
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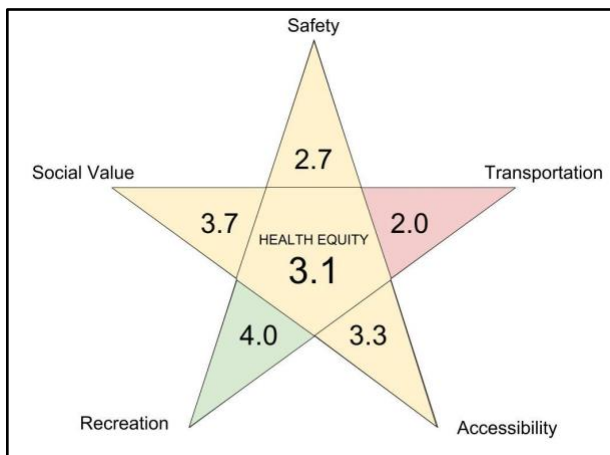
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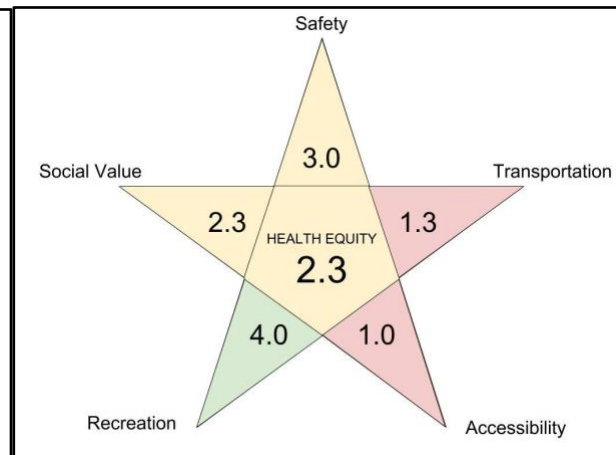
Bovenzi Conservation Area
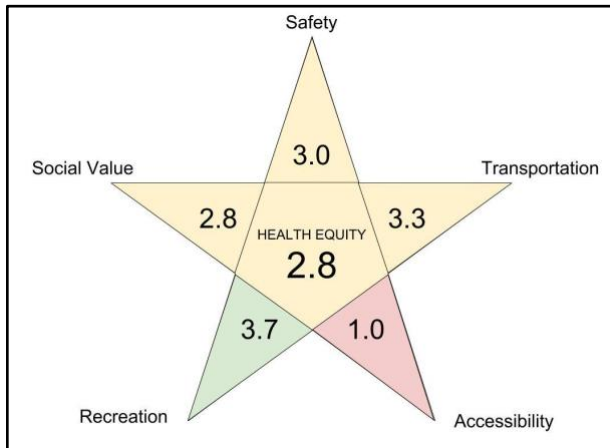
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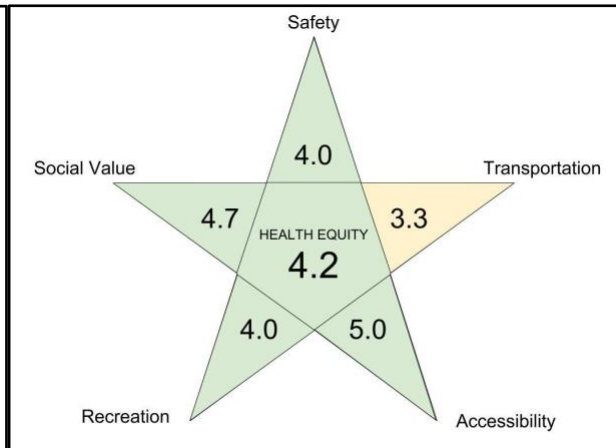
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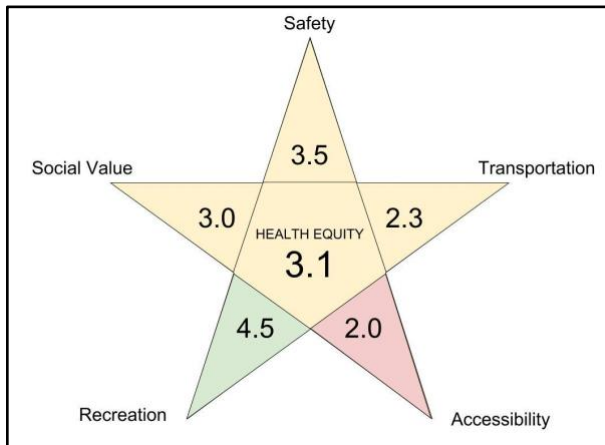
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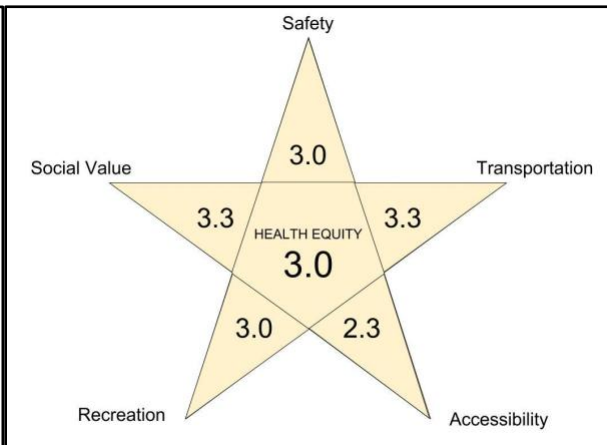
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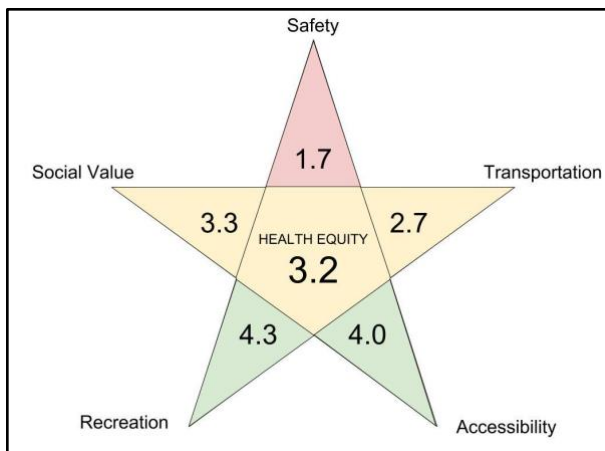
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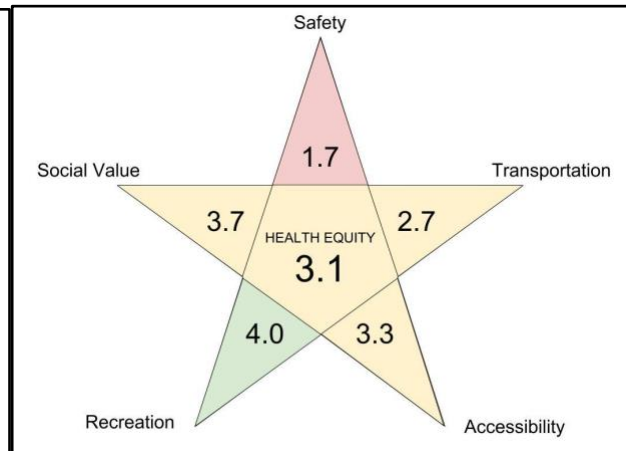
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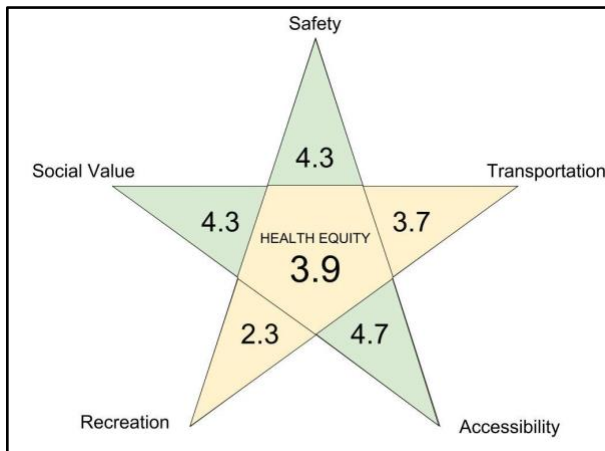
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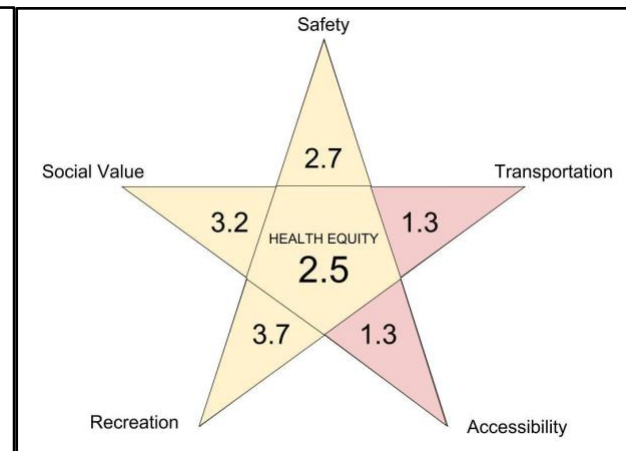
Community Field

Cookson Park

Safety 3.3
Social Value 3.2
Transportation 2.7
HEALTH EQUITY 2.7
Recreation 3.0
Accessibility 1.3

Crompton Park

Safety 3.7
Social Value 4.0
Transportation 3.5
HEALTH EQUITY 3.8
Recreation 5.0
Accessibility 2.7

Dean Park

Safety 3.3
Social Value 4.0
Transportation 2.7
HEALTH EQUITY 3.6
Recreation 4.7
Accessibility 3.3

Dodge Park

Safety 3.0
Social Value 3.3
Transportation 1.7
HEALTH EQUITY 2.5
Recreation 2.5
Accessibility 2.0

Duffy Field

Safety 3.5
Social Value 2.7
Transportation 2.0
HEALTH EQUITY 2.5
Recreation 2.3
Accessibility 2.0

East Cascades Trails

Safety 3.0
Social Value 3.0
Transportation 2.3
HEALTH EQUITY 2.6
Recreation 3.7
Accessibility 1.0

East Millbury Park

Elm Park
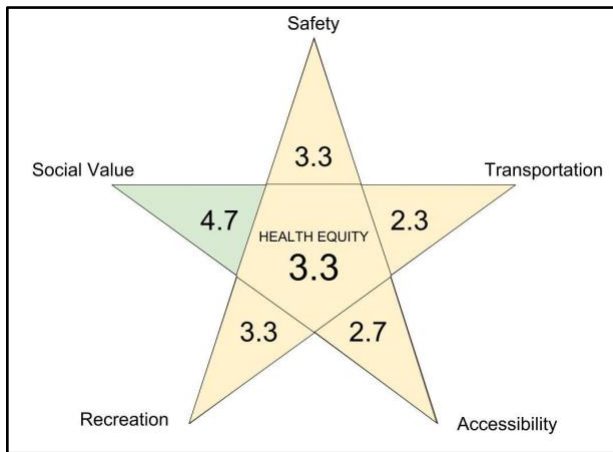
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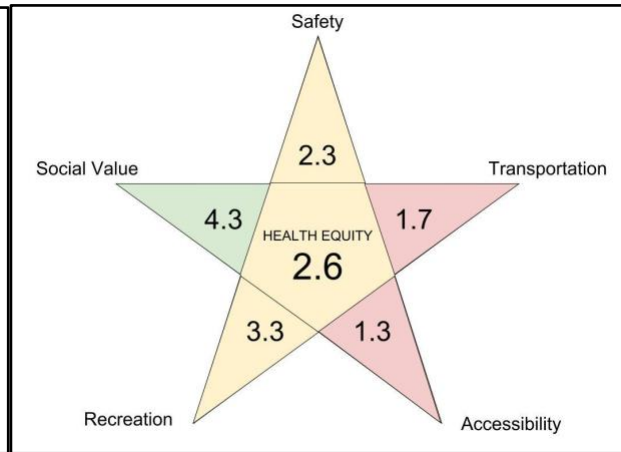
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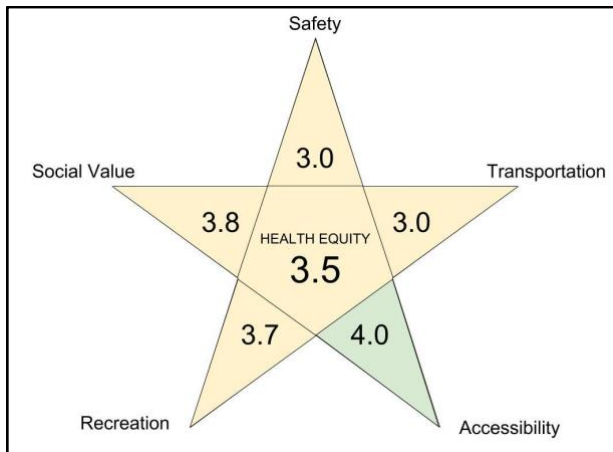
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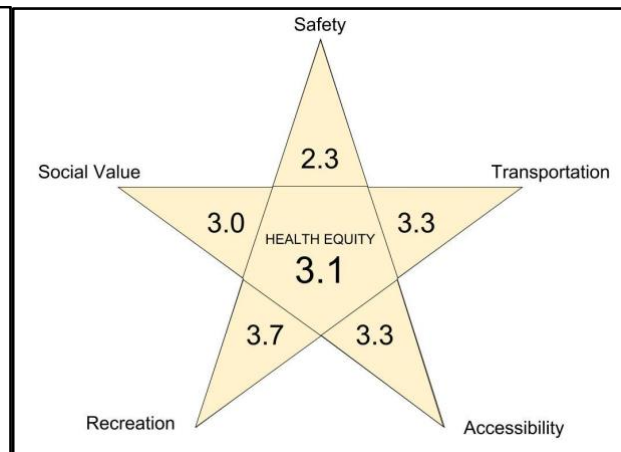
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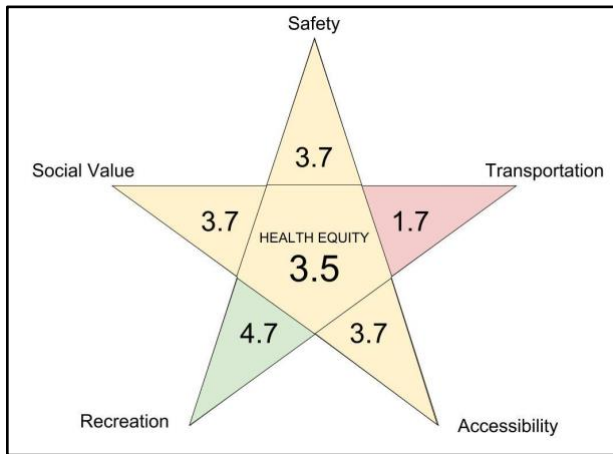
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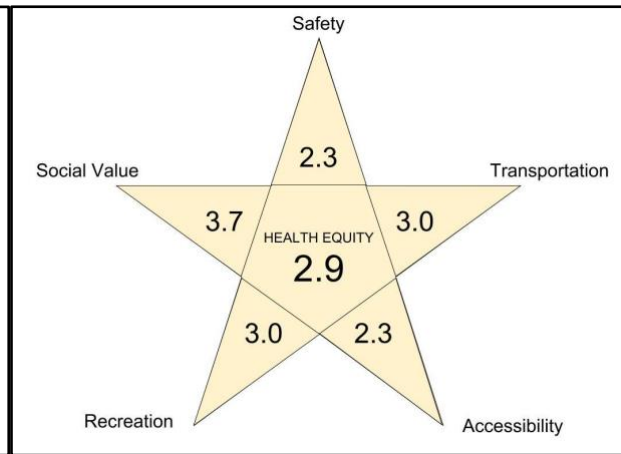
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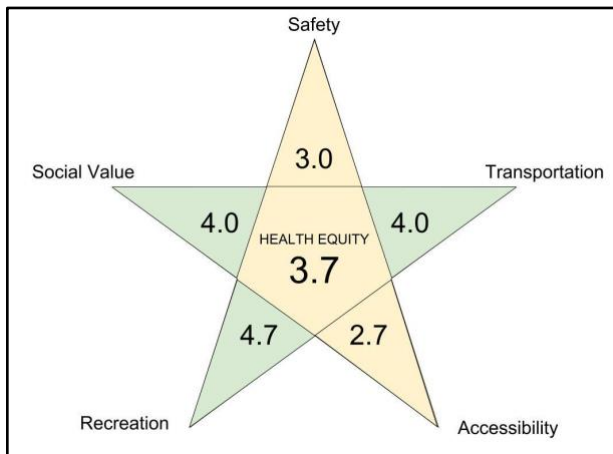
Hadwen Park
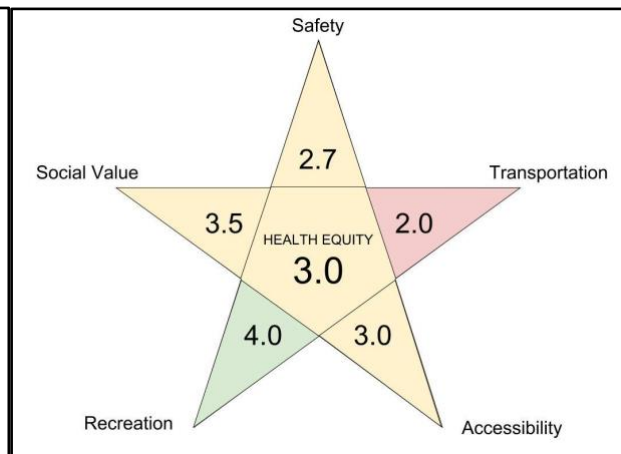
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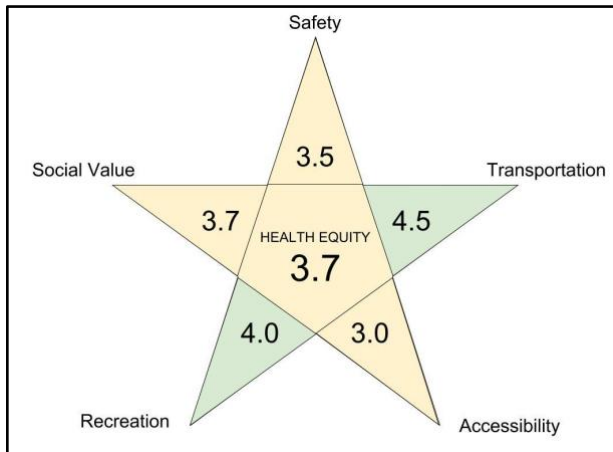
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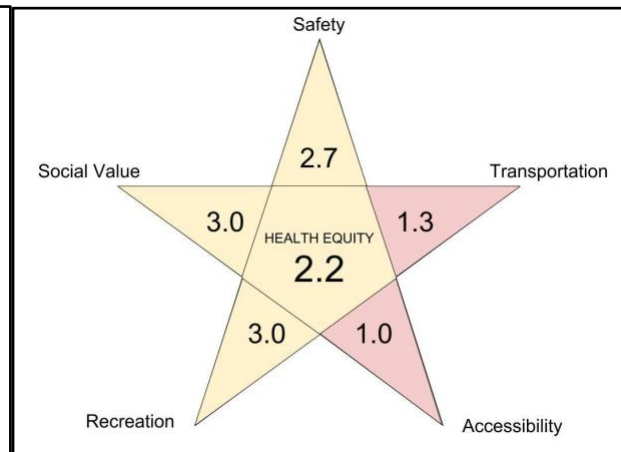
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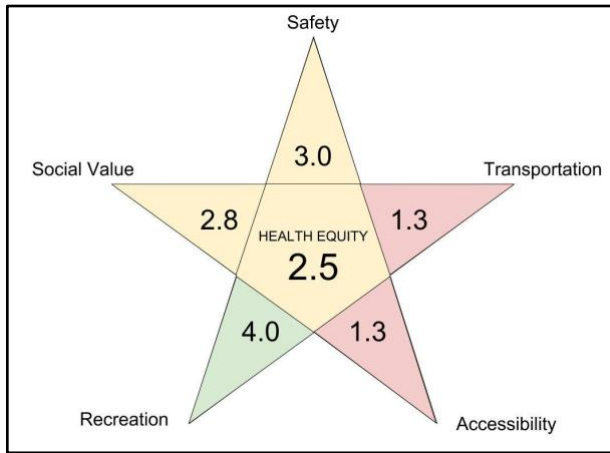
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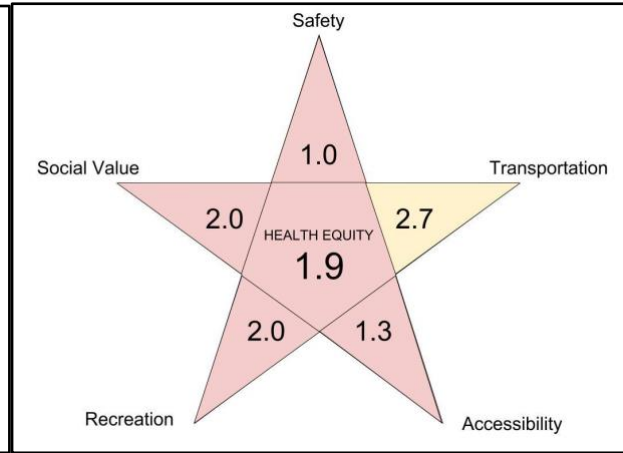
Holland Rink Playground
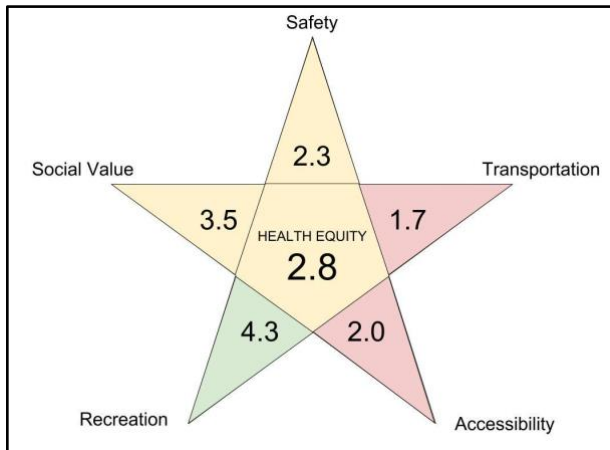
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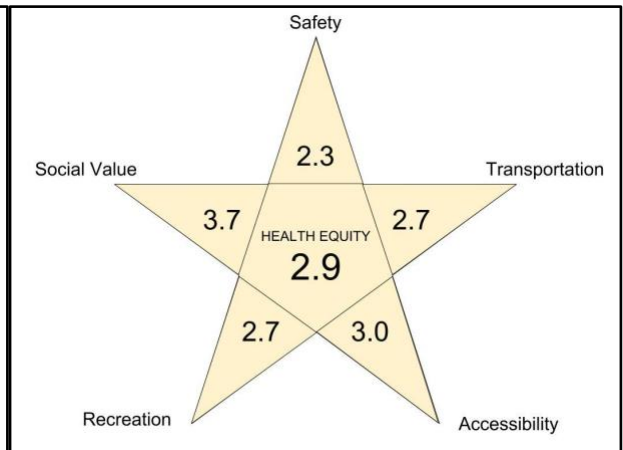
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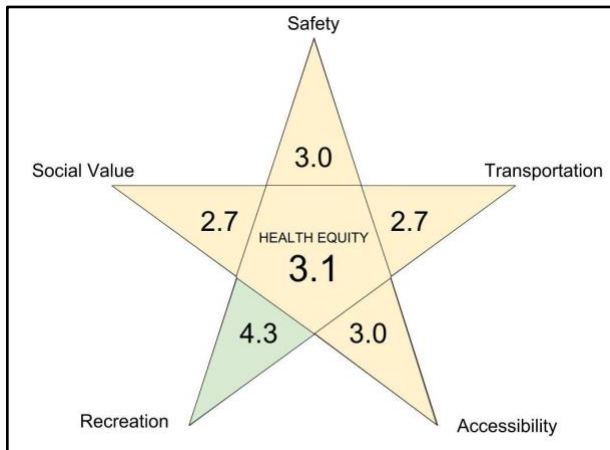
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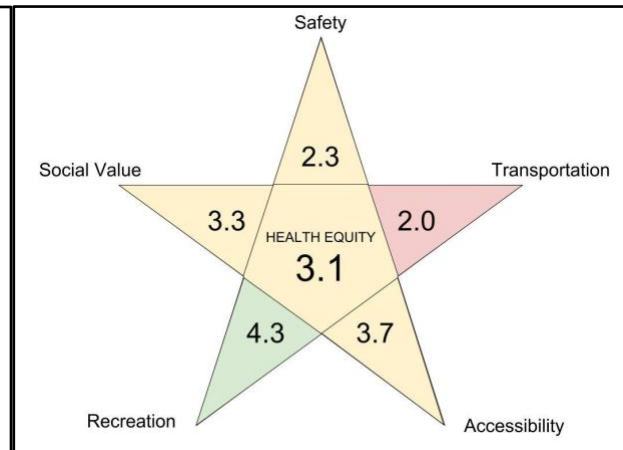
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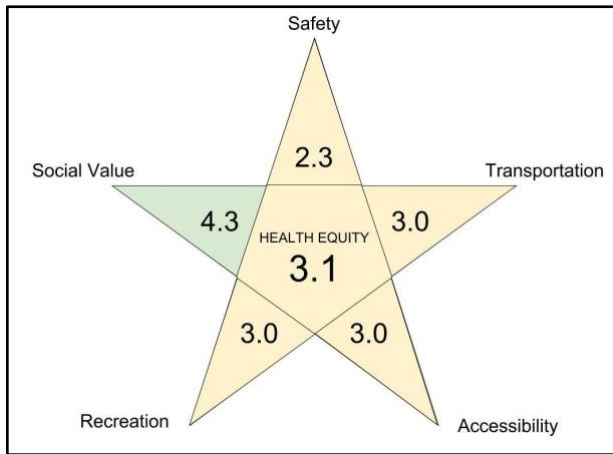
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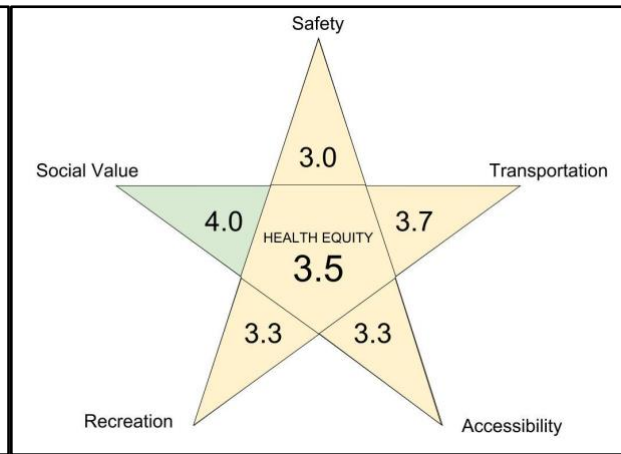
Knights of Columbus Park
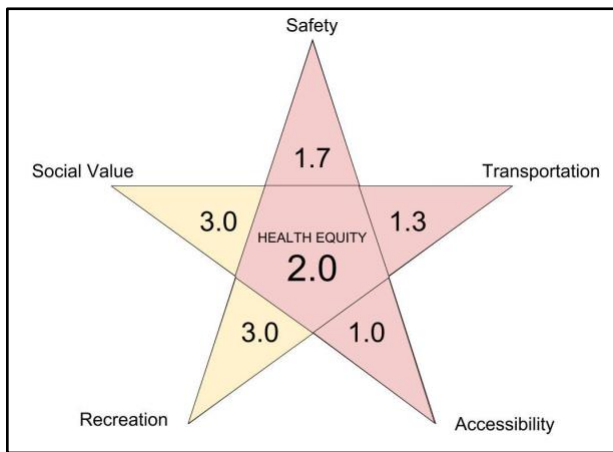
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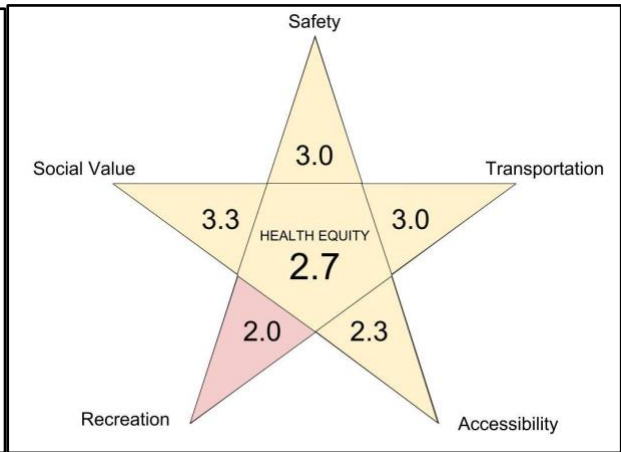
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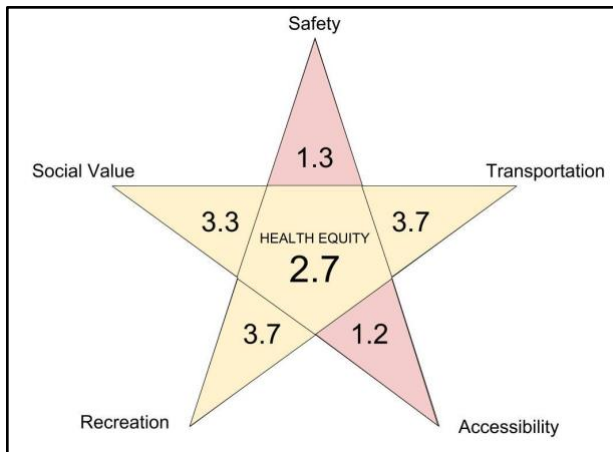
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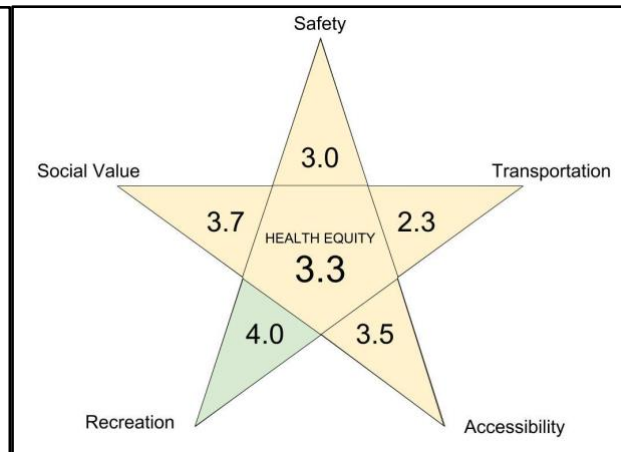
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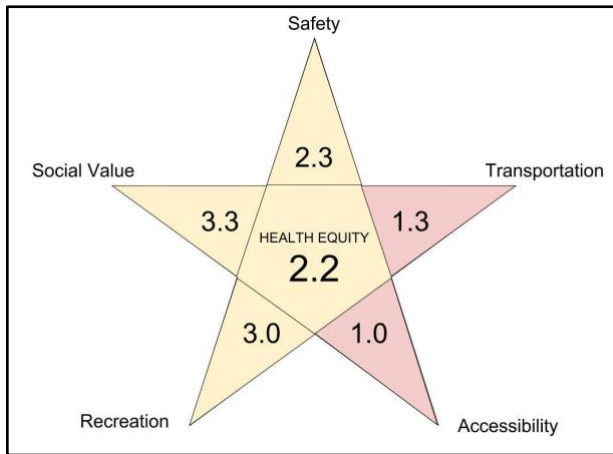
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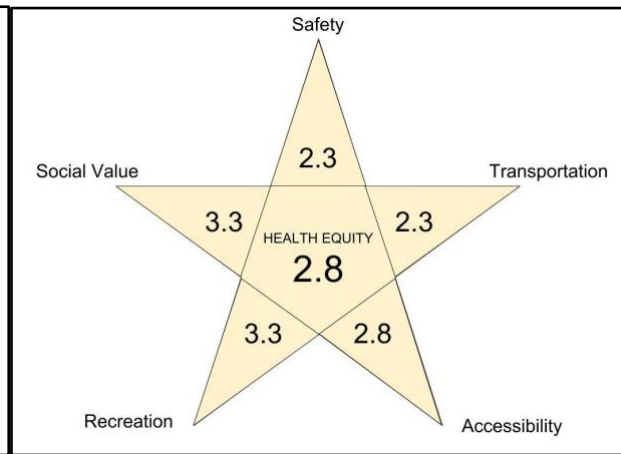
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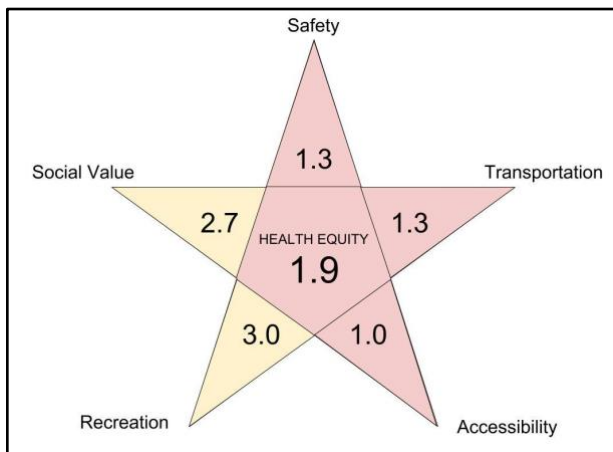
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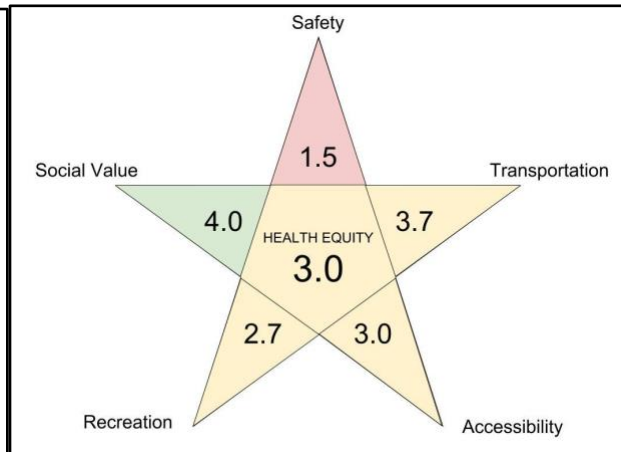
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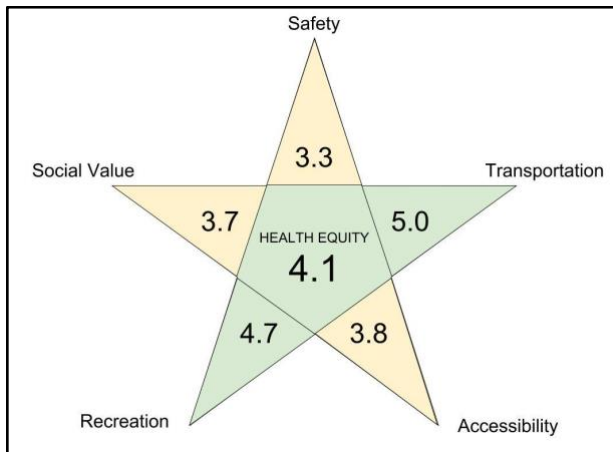
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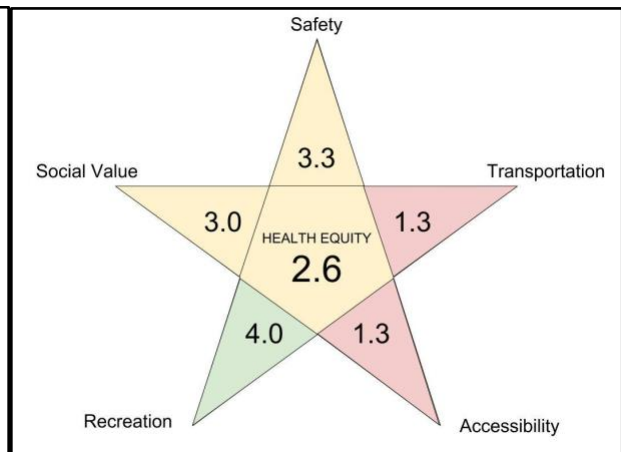
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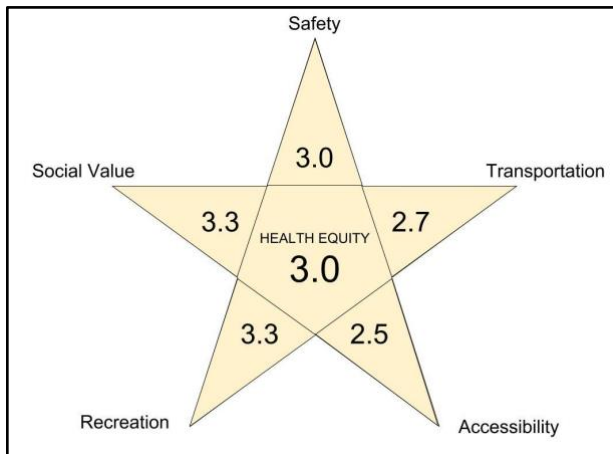
Norrback Avenue School Playground
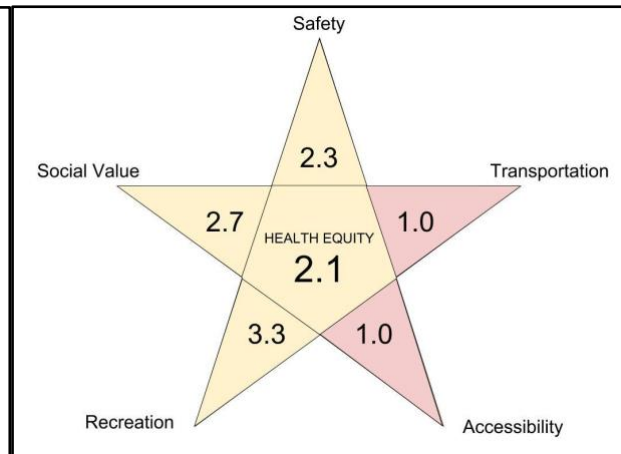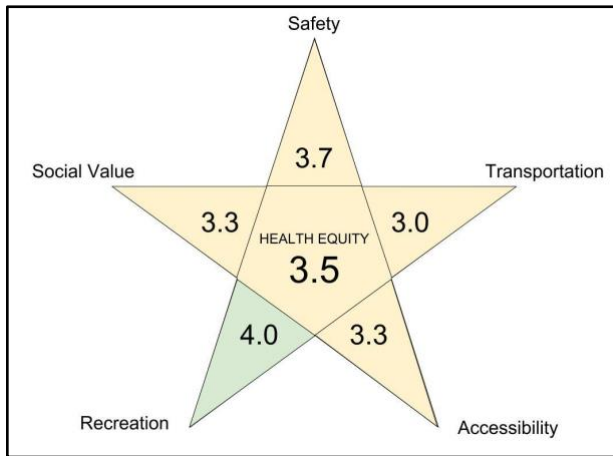

Oakland Heights Playground
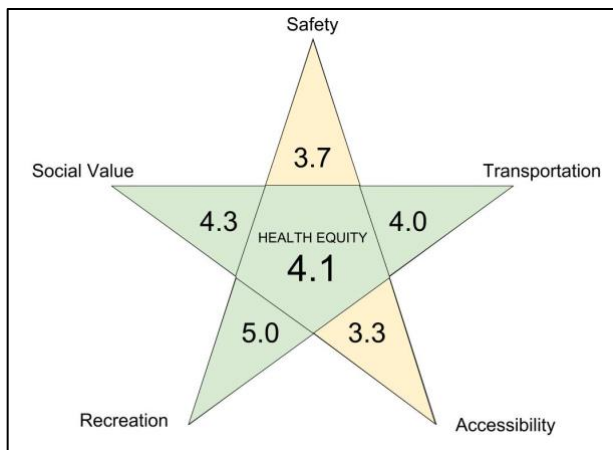
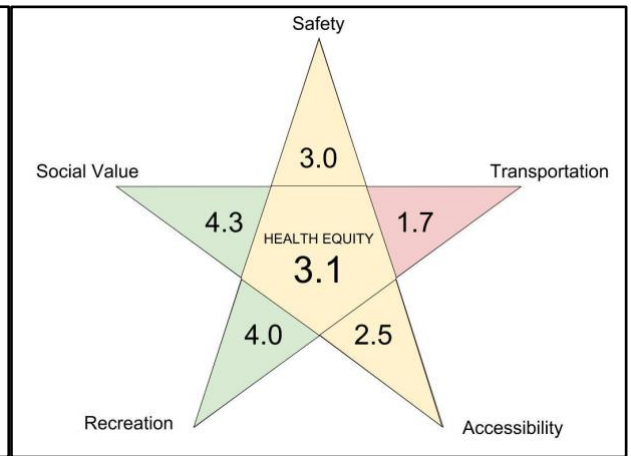Oread Castle Park
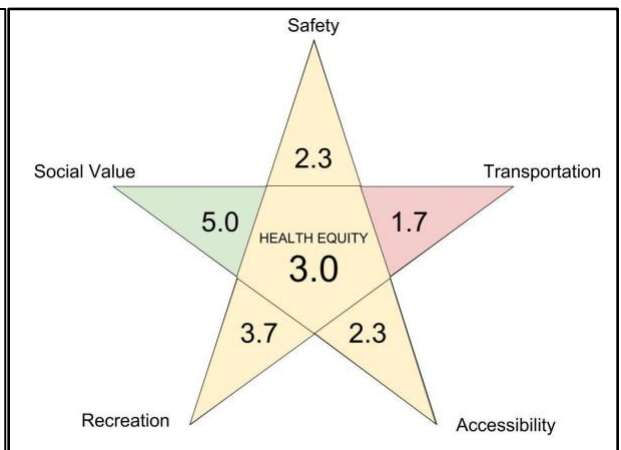
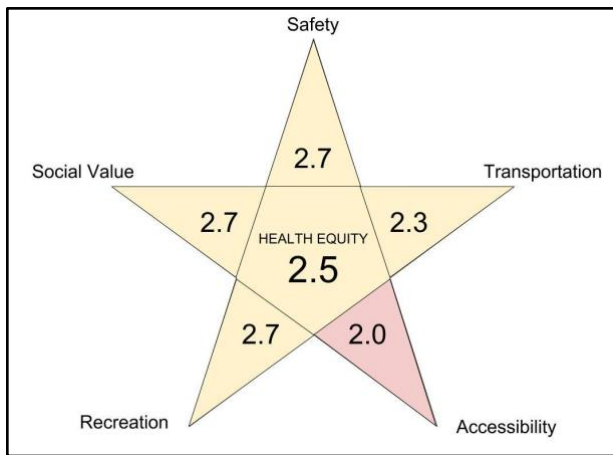Pride Park Playground (Major Edwards)
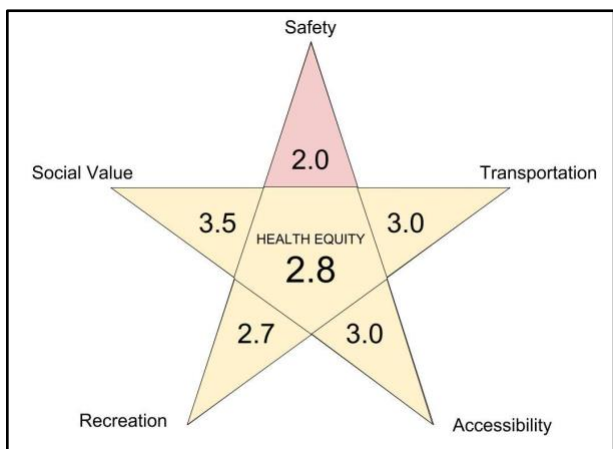
Providence Street Playground
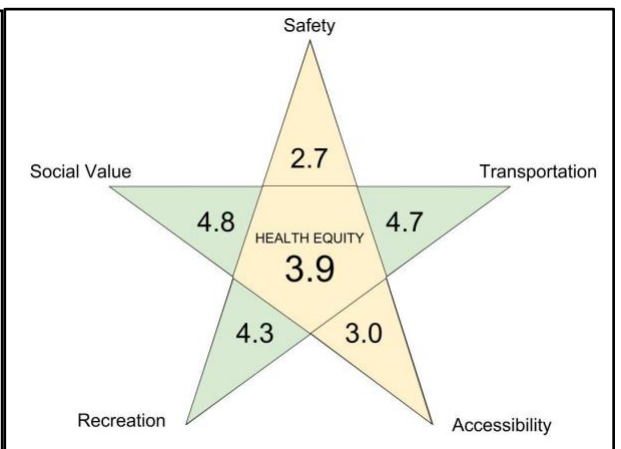
Quinsigamond State Park
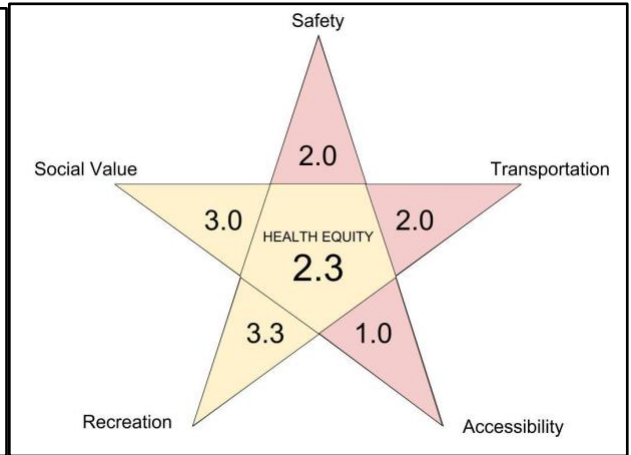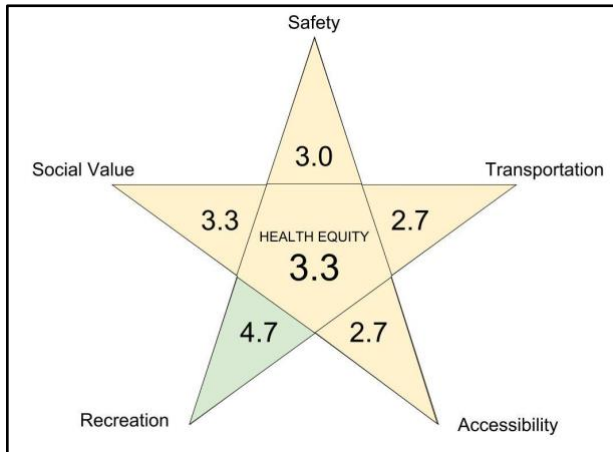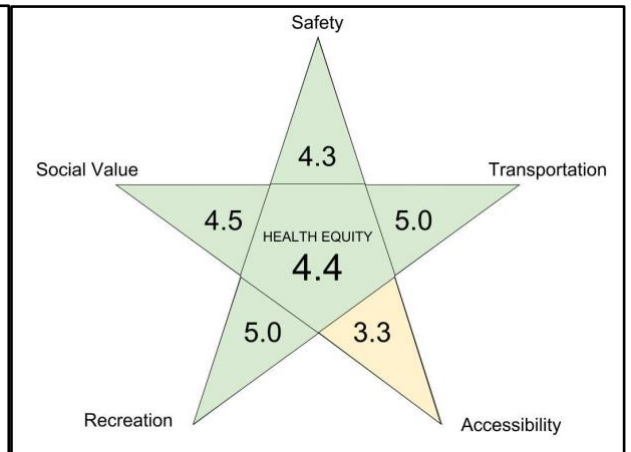
Rockwood Field

Safety 3.7
Social Value 3.3
Transportation 3.0
HEALTH EQUITY 3.5
Recreation 4.0
Accessibility 3.3

Shore Park

Safety 3.0
Social Value 4.3
Transportation 1.7
HEALTH EQUITY 3.1
Recreation 4.0
Accessibility 2.5

Tacoma Street Playground

Safety 2.7
Social Value 2.7
Transportation 2.3
HEALTH EQUITY 2.5
Recreation 2.7
Accessibility 2.0

Tetasset Ridge/God's Acre

Safety 2.0
Social Value 3.0
Transportation 2.0
HEALTH EQUITY 2.3
Recreation 3.3
Accessibility 1.0

University Park

Safety 3.0
Social Value 3.3
Transportation 2.7
HEALTH EQUITY 3.3
Recreation 4.7
Accessibility 2.7

Vernon Hill Park

Safety 4.3
Social Value 4.5
Transportation 5.0
HEALTH EQUITY 4.4
Recreation 5.0
Accessibility 3.3
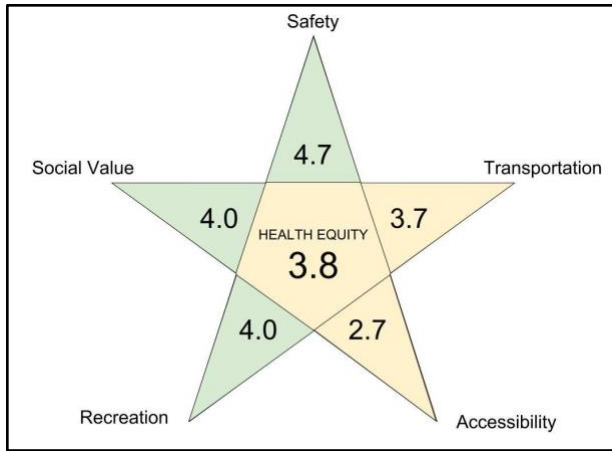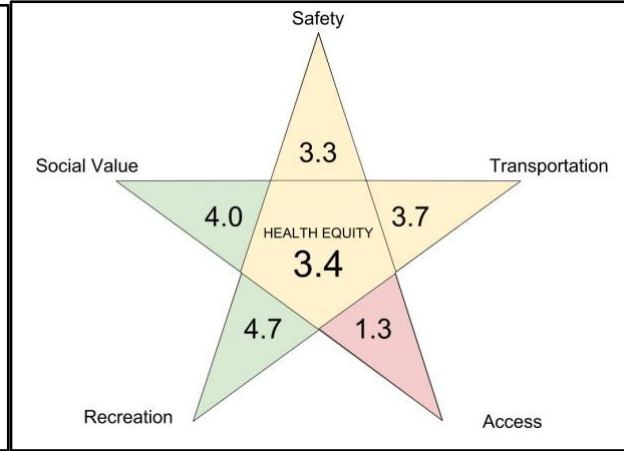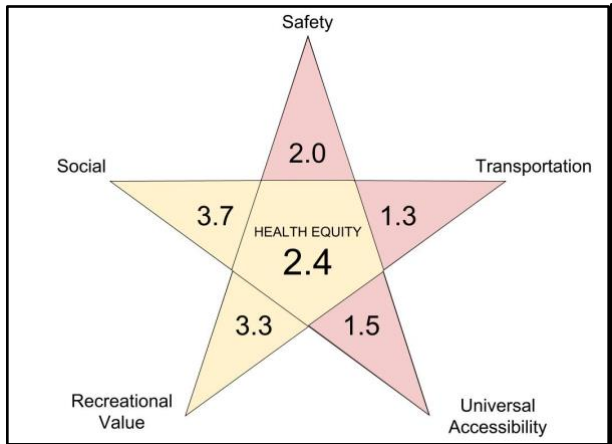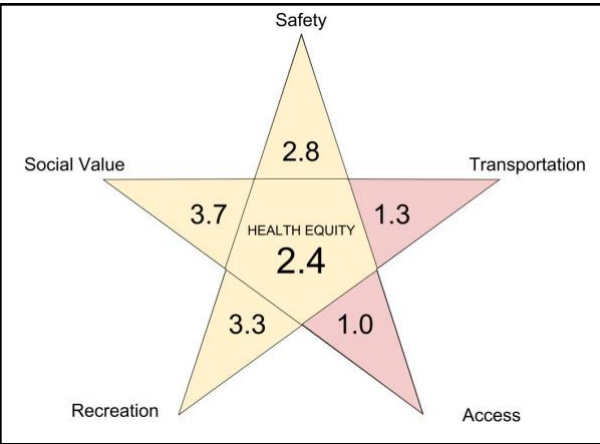
West Boylston Rail Trail

Airport Park

Gummere Wood

Parker Preserve, Hassanamesit Woods

Appendix E: Project Deliverables

RecSpace Web Page

Top 25 Recreation Spaces In Worcester:

Beaver Brook Park
Park – 29 Mann St, Worcester

Beaver Brook Park offers multiple athletic opportunities for various age groups with its baseball field, soccer/football field, and roller rink. Also, the park includes walking and biking trails for those interested in nature. All age groups can access and utilize the park.

Blackstone Valley Bike Path
Trail – 207 N Main St, Millbury

The Millbury Entrance to the Blackstone Valley Bike Path marks the beginning to an extensive trail through the Greater Worcester Area. This bike trail is accessible to all age groups and can be complete by walking or biking. However, some parts of the trail require crossing main roads.
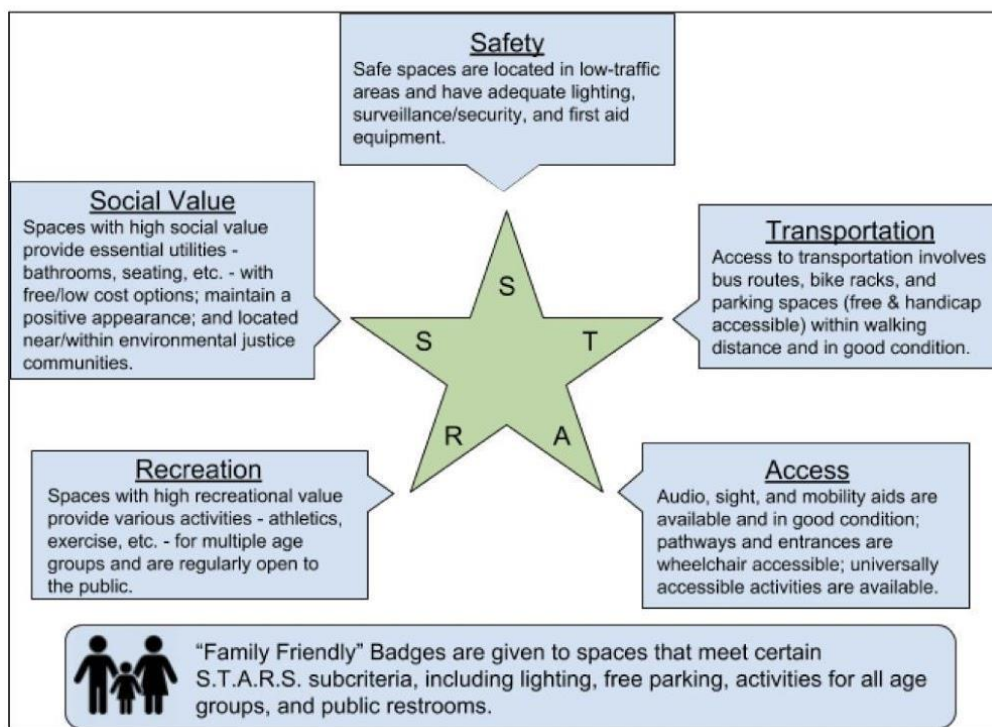

Broad Meadow Brook

A Guidebook to Public Recreation Spaces in the Central MA Regional Public Health Alliance (CMRPHA) Communities

Created by:
Stephan Barthold
Evan Duffy
Stephen Foley
Remington Gaetjens

S. T. A. R. S. Definition

This project produced a set of accessibility criteria to assess public physical activity and recreation spaces. Many obstacles - physical, environmental, and social - can prevent community members from accessing and engaging in physical activity opportunities. For that reason, five accessibility criteria were identified and defined using the S. T. A. R. S. acronym, shown in the figure below: Safety, Transportation, Access, Recreation, and Social Value. Together, these criteria encompass the Health Equity Star, which describes recreation spaces that enable people to access, enjoy, and benefit from the available physical activity opportunities regardless of age, ability, socioeconomic class, race, gender, etc.

Safety
Safe spaces are located in low-traffic areas and have adequate lighting, surveillance/security, and first aid equipment.

Social Value
Spaces with high social value provide essential utilities - bathrooms, seating, etc. - with free/low cost options; maintain a positive appearance; and located near/within environmental justice communities.

Transportation
Access to transportation involves bus routes, bike racks, and parking spaces (free & handicap accessible) within walking distance and in good condition.

Recreation
Spaces with high recreational value provide various activities - athletics, exercise, etc. - for multiple age groups and are regularly open to the public.

Access
Audio, sight, and mobility aids are available and in good condition; pathways and entrances are wheelchair accessible; universally accessible activities are available.

"Family Friendly" Badges are given to spaces that meet certain S.T.A.R.S. subcriteria, including lighting, free parking, activities for all age groups, and public restrooms.

Determining these criteria and incorporating them into the assessment and scoring of recreation spaces established the groundwork for conveying important information on accessibility factors to the public. In that sense, this Guidebook aims to build upon previous knowledge of public recreation spaces and reveal their overall accessibility and value to the community. Meanwhile, the strengths and points of improvement identified through this method can also be beneficial takeaways from this Guidebook.

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Cristoforo Colombo (East) Park
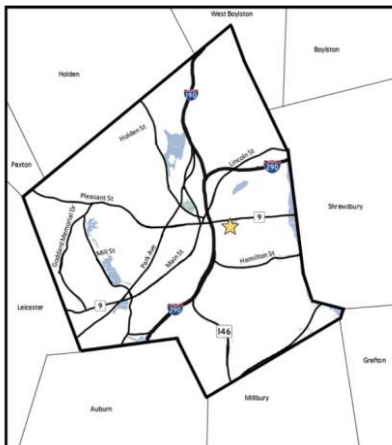
Summary:

Offering multiple athletic opportunities within its baseball fields, football/soccer fields, basketball and tennis courts, and skate park, Cristoforo Colombo Park is a great destination for families and all age groups. In the summer, children can enjoy the spray park and nearby playground while parents can relax in the shaded gazebo.

Safety 1.7
Transportation 2.7
Accessibility 4.0
Recreation 4.3
Social Value 3.3
HEALTH EQUITY 3.2
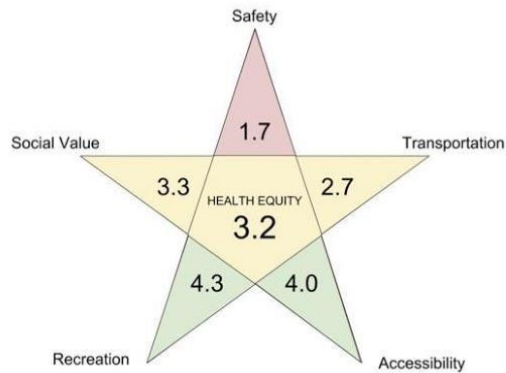
Features and Utilities:

- Free Parking
- Nearby Playground
- Amphitheatre
- Spray Park
- Picnic Tables and Benches

Accessibility:

- Handicap Parking Spaces
- Generally Compliant Pathway Condition
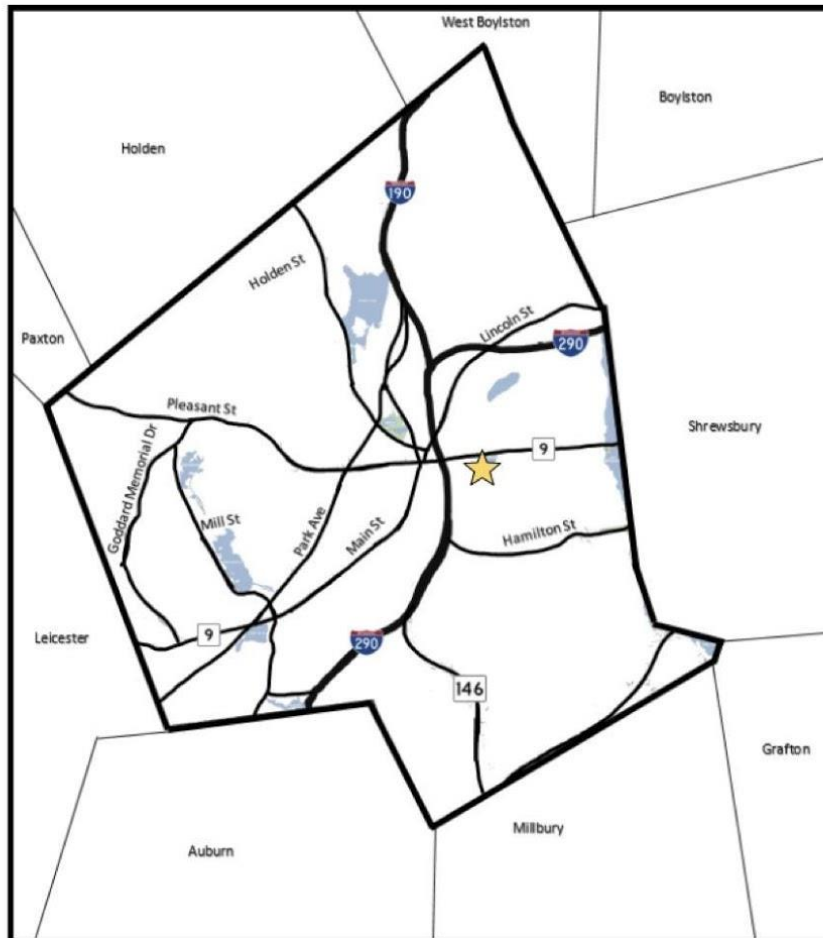- ADA Accessible Opportunities/Activities

Recreational Activities:

- Walking, Running, Hiking
- Basketball
- Baseball
- Tennis
- Football
- Skateboarding

Notes:

- Cost: FREE
- Public Hours: Dawn until 10pm

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Parking Address: 10 E Park Terrace, Worcester, MA

From WRTA Bus #15: (5:45am - 8:45pm)
- Get off at Shrewsbury St + Columbo Park
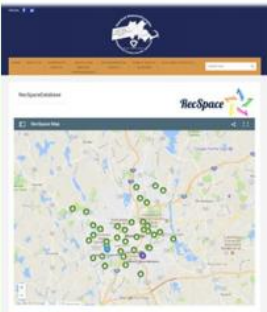
From Union Station: From Front of Union Station facing the rotary
- Cross Grafton Street onto Shrewsbury Street
- Continue East on Shrewsbury Street for 0.5mi, location is on the left
- *Location is past Chameleon (left) and before British Beer Company (Right)*

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RecSpace Brochure

Check out our new website:
- User Interactive Map
- Over 60 Parks, Trails, and more!
- 25 STAR places to visit in Greater Worcester
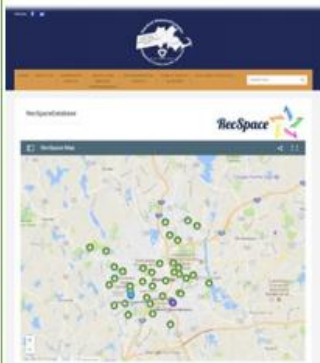
@worcester.dph
@healthycm

@worcesterDPH
@healthycm

@worcesterdph

Right in your backyard !

RecSpace   Public Health
Prevent. Promote. Protect.
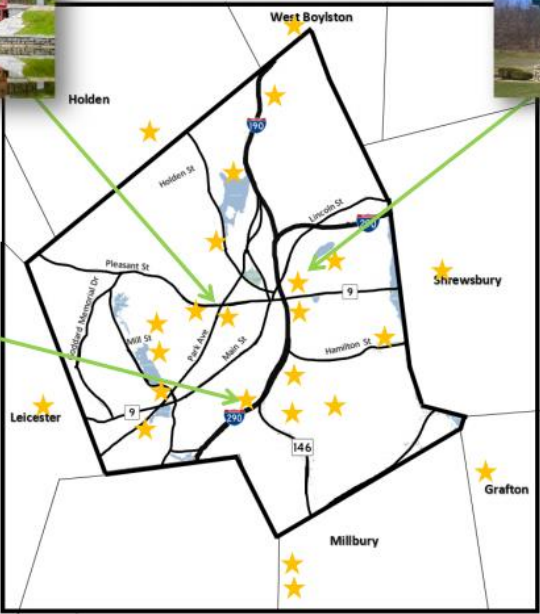
Discover Amazing Places in Greater Worcester TODAY!

We CHIP in! Do you?
#Healthy2020

Elm Park

Take a beautiful walk across the Myra Kraft Accessibility Bridge

University Park

Enjoy a variety of activities here! The tennis courts, playground, and basketball courts! Take a stroll around Crystal Pond

West Boylston

Holden

Holden St

Pleasant St

Lincoln St

Shrewsbury

Leicester

Godard Memorial Dr

Mill St

Park Ave

Main St

Hamilton St

146

Grafton

Millbury

Cristoforo Columbo

Great open field to enjoy on a sunny day! Take the kids to the Splash Pad and the playground. Grab that ball and bat and get to swinging!

Our Mission:

To promote recreation spaces in the community as a part of the C.H.I.P.

Learn more :

www.worcester.gov/build-a-healthy-community

Our Vision:

To get YOU to local parks in YOUR neighborhood

Updating the RecSpace Database

Using the Field Data Sheet

Access the Field Data Sheet online form and follow prompts when assessing location. The FDS is formatted to bring the user to specific sections of the form based on how key questions are answered. Be sure to fill out all required questions, however some questions or checklists may be left blank, if applicable. Access the FDS Editable File if the questions or checklists need to be revised. The submitted response will be found on the FDS responses spreadsheet. The data from the responses will need to be reformatted, so transfer the information from the responses spreadsheet to the Final RecSpace Database using the outline below.

Transferring FDS Data into the Database

Name	Category	Town	District	Public/Private	Visited/OSRP
City Hall Common	Park	Worcester	2	Public	OSRP*

*OSRP refers to data that was gathered from the Worcester Parks Department "2013 Open Space and Recreation Plan"

Address	Public Hours	Cost	Lighting, Surveillance, Security	Site Information	Traffic
Hyperlinked Google Maps Address	*Dawn-Dusk, After School, etc.*	*Free, Low-cost, etc.*	*Interior/street lighting, cameras, staff, card access, etc.*	*Maps, Signage, Web Address*	*Light, Moderate, Heavy*

| Crossing Information	Parking	Bike Racks (Y/N)	WRTA Bus Routes	Sidewalk / Pathway Quality (Material & Condition, 1-5)	Entrance Quality (36" wide, Y/N)
Crossing Signage, Markings, Tactile Paving, etc.	*Free, Parking lot, Street parking, Distance from site, Handicap spaces*	*Yes or No*	*Route #s, Hours of operation*	*Transfer number rating from FDS response*	*Yes or No*
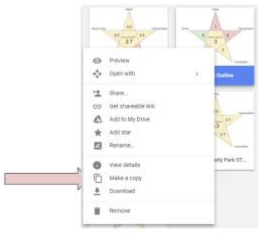
Updating S.T.A.R.S. Health Equity Scores

Adding and Editing Scores

To access the Health Equity Scores go on the Final RecSpace Database. View and edit the information for each space. Use the S.T.A.R.S. Rubric & Scoring System found on the second page as guidance when adding or changing scores. Input all numerical scores on to the first page of the Final RecSpace Database based on the responses found on the spreadsheet. The average scored for each of the STARS criteria will automatically updates upon changing/adding the scores for the subcriteria. Use previous data as examples.

Adding and Editing S.T.A.R.S. Visual

To access the Health Equity Star outline, go onto the RecSpace Google folder and select the STARS folder. To add a star go in the folder and make a copy of the STARS outline by right-clicking the drawing file and selecting "Make a Copy".

Save the copy as the site name followed by "STARS" (i.e Elm Park STARS). When making the outline be sure to follow the color code for each score (1.0-2.9 Light Red 3, 3.0 - 3.9 Light Yellow 3, 4.0-5.0 Light Green 3). All scores should have only one decimal value (i.e. 2.1, 4.0). Download as a jpeg to use for other documents. All stars can be found in the STARS folder and may be edited and re-downloaded for further use.
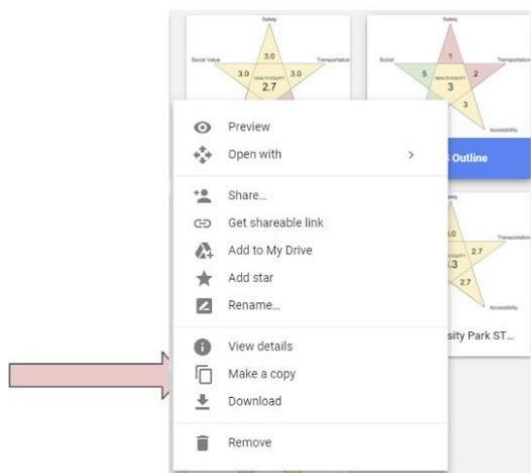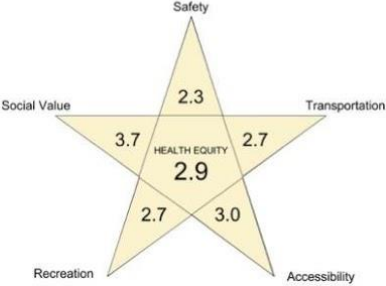
Updating the RecSpace Guidebook

To edit site information go to the RecSpace Guidebook. Use the template to add additional sites. Be sure to download the correct Health Equity Star jpeg from the STARS Folder and insert the the image into the template.

Guidebook Summary Page Template

Name of location

|	
Summary: *(Unique features, landmarks, general information, age groups, etc.)*	
Features and Utilities: - *(ie. Benches, Lifeguard (Seasonal), Public bathrooms)*	**Accessibility:** - *(handicap spaces, pathway conditions, other accessible features)*
Recreational Activities: - *(i.e. football, ice skating (seasonal) swimming)*	**Notes:** - *(Cost and public hours)* - *Family Friendly (if applicable)*

[Address+Of+Location], it should be the address with '+' instead of spaces, there should be no spaces in the link. Replacing the rest of the [] parts should keep the new site consistent.

Updating The Interactive Map

First log into a google account which has editing access to the interactive map. Then open the map from the "shared with me" or "my drive" sections of google drive.

To Add A Space

1. First click on the type of space you want to add on the left side bar (Park, Trail, Playground, etc.)
2. Next click the "Add Marker" button.
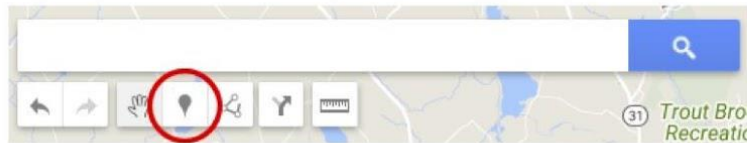
3. Click where the new marker should go. A window will pop up an prompt you for some information, you can enter it now or enter it later by editing the data table.
4. To move the newly placed marker, click the marker so it is highlighted, then click and drag it to where it should go.
5. After placing the new location, fill in the other information such as cost, parking information, etc. with the information from the RecSpace database.

To Edit A Space

1. First click on the type of space you want to add on the left side bar (Park, Trail, Playground, etc.)
2. Click on the "Layer Options" and click "Open Data Table" in the drop down menu.