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Jungle Gyms of Justice: Understanding the Urban Park Accessibility Problem

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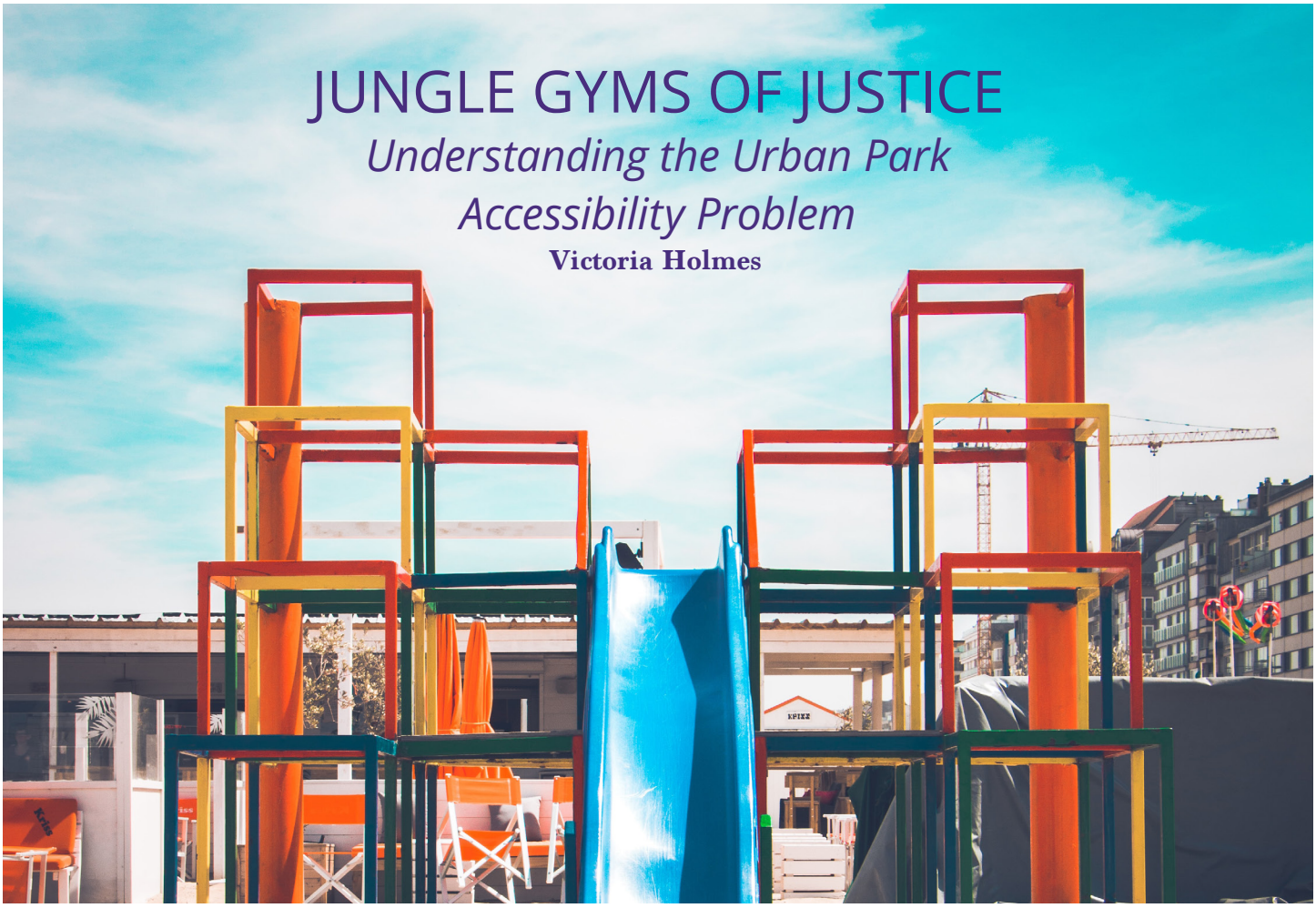

JUNGLE GYMS OF JUSTICE

Understanding the Urban Park Accessibility Problem

Victoria Holmes

ABSTRACT

Urban parks and green spaces have the potential to provide outstanding benefits to both children and adults. However, increased urbanization and the disproportionate placement of urban parks and green spaces can make these benefits elusive. Case studies focused on Los Angeles, Denver, and Chicago have found that access to urban parks and green spaces is more challenging for non-white and low-socioeconomic status populations. The present study, focused on the much smaller, much less populated city of Harrisonburg, Virginia, builds on this work using geographic information system (GIS) buffer analysis to find that all socioeconomic groups face access issues to some degree. To address the problem, the study proposes increased efficiency of public transportation and increased environmental education through school gardening programs.

Since at least the mid-1970s, psychologists, social ecologists, environmentalists, and park officials have worried that children "are being denied the opportunity to explore wild places and to learn about nature" (Mergen, 2003, p. 645). In 2010, nearly 84% of the United States population lived in a metropolitan area (Short, 2012), and only 39% of the U.S. population lived within a half-mile of a park (Ussery et al., 2016). Researchers have examined the relationship between individuals of low-socioeconomic status and accessibility to public parks and urban green spaces in major U.S. cities. Case studies by Wolch, Wilson, and Fehrenbach (2005); Rigolon and Flohr (2014); and Tinsley, Tinsley, and Crosskeys (2002) suggest that public parks and urban green spaces are disproportionately inaccessible to low-socioeconomic groups, with marginalized communities not able to access the public benefits that parks and green spaces afford. These researchers' concerns and methods inform the current study in Harrisonburg, Virginia, where all socioeconomic groups face access issues to some degree. The current study identifies policy recommendations to address this issue.

Literature Review

The goal of urban park planners in the 1970s was to provide socioeconomically disadvantaged communities in the United States with areas to experience nature and recreation (Byrne, Wolch, & Zhang, 2009, p. 366). The emphasis on providing parks and green spaces to disadvantaged communities has continued since then, as these communities continue to face "disproportionately poor access to urban open space" (Byrne et al., 2009, p. 365).

Researchers working in a variety of fields have found that urban parks and green spaces can provide a range of benefits to communities (as cited in Tempesta, 2015, pp. 130-131). Parks and green spaces absorb heat and regulate temperatures, potentially reducing summer air conditioning costs (Nowak & Dwyer, 2007). Other benefits include absorption and removal of air pollutants and emissions, conservation of energy, and prevention of further emissions from power plants (Nowak & Dwyer, 2007). Harnik and Welle (2009) have also found that urban parks and green spaces provide measurable economic benefits, such as profits from tourism and increased property value from park proximity.

At a more personal level, urban parks and green spaces allow individuals to enjoy aesthetic landscapes, interact with one another, and have emotional and physical experiences (Tempesta, 2015). Park trails and play amenities provide a space with physical activities for both adults and children. When individuals live within proximity to an urban park or green space, they can engage in physical activities more frequently. These physical activities can prevent obesity-related diseases and premature deaths (Byrne et al., 2009). Green spaces and school gardening programs allow children to grow their own food. These programs may influence children to eat more vegetables and take an active role in planting and growing produce (Blair, 2009).

Individuals who do not live within walking distance—approximately half a mile—of a park or green space cannot easily access these amenities (Ussery et al., 2016). The U.S. Surgeon General's "Call to Action to Promote Walking and Walkable Communities" stated that distance often discourages individuals from walking (U.S. Department of Health and Human Services, 2015). In 2010, only 39% of the total U.S. population lived within a half-mile of a park. The 61% of U.S. citizens who do not live within access to an urban park or green space is often composed of groups of low-socioeconomic status (Ussery et al., 2016). It appears that the most common park visitor is a middle-aged, college-educated Caucasian male who lives nearby (Ussery et al., 2016).

Los Angeles

In "Places to Play: Environmental Justice and the Distribution of Urban Parks and Recreation in Los Angeles," Wolch et al. (2005) aimed to understand the dynamics of environmental injustice and racism in the Los Angeles community. Their case study found that history played a large role in environmental injustices directed at low-income and minority communities. Historically, urban parks were supposed to be places that not only represented nature but created a better society by establishing "better public health, social prosperity, social coherence, and democratic equality" (Wolch et al., 2005, p. 7). Wolch et al. cited these concerns as the reasons for new land acquisition and facility construction within the growing metropolitan area. However, as industrialization grew within Los Angeles, the demand for low-wage workers, often people of color, also increased. Wolch et al. show that Los Angeles planners deliberately built low-wage housing near industrial facilities for minority workers.

Public policy has also played a role in shaping these inequalities in Los Angeles. The Los Angeles zoning code of 1904 allowed commercial and industrial activities to be located near high-density housing on the city's eastern and southern borders where low-income workers often lived. This policy protected predominantly Caucasian, Westside residents from exposure to industry (Wolch et al., 2005). In addition to exposure to hazardous waste sites, low-income communities also dealt with environmental racism that resulted in "park-poor neighborhoods" (Wolch et al., 2005, p. 8). Wolch et al. (2005) identified park-poor neighborhoods as a major issue in the Los Angeles community because

children in high-density and low-income communities tended to utilize park resources more frequently and intensively compared to children in suburban areas.

RESEARCH METHODS. Wolch, Wilson, and Fehrenbach (2005) began their research by defining communities according to their ethnic identity and then considered local access to park space. They employed a "park service area" approach which assumed that every resident utilized the nearest park at a consistent rate. Residents in each neighborhood were then assigned to their closest park. Wolch wrote in 2012 about the 2005 study that the National Recreation and Parks Association "historically recommended 6–10 park acres per 1,000 residents." Recent data shows that the median acres of park land per 1,000 residents is 10.1 acres, with the lowest quartile of Americans able to access only 5.2 acres of park land per 1,000 residents (National Recreation and Parks Association, 2019).

FINDINGS. Wolch et al. (2005) found that predominantly Latino and Asian-Pacific Islander neighborhoods had the highest population densities, with predominantly African American neighborhoods following closely. The densities in these neighborhoods were two to five times higher than in predominantly Caucasian neighborhoods. The Latino population had 0.6 park acres per 1,000 residents, the African American population had 1.7 park acres per 1,000 residents, and the Caucasian population had 31.8 park acres per 1,000 residents. Out of the 1,674 park service areas, only 24% experienced a park pressure within the recommended standard of 6–10 park acres per 1,000 residents, while 76% sustained a park pressure higher than the recommended standard. The study found that the 24% of park service that were areas within the recommended range contained larger green spaces, while the rest had smaller parks, a higher number of visitors, and were located in the central Los Angeles basin.

Denver

"Access to Parks for Youth as an Environmental Justice Issue" by Alessandro Rigolon and Travis Flohr (2014) is valuable for its broad definitions of play spaces, detailed accessibility assessment, and strategies for reaching their conclusion. The work sought to examine the relationship between the proximity of green play spaces to different ethnic groups and classes in Denver, Colorado. Denver had few parks in low-income neighborhoods, and advocates have exhibited concern for children's physical health due to these circumstances. However, it was apparent that not every play space had the same benefits on a child's mental and physical health (Rigolon & Flohr, 2014).

RESEARCH METHODS. For research purposes, Denver was divided into 78 different neighborhoods based on density, distance from downtown, and income level (Rigolon & Flohr, 2014). In order to achieve a comprehensive understanding of which park amenities were present in park areas, the parks were classified according to formal play spaces, informal play spaces, and levels of intimacy. Rigolon and Flohr (2014) defined formal play spaces as areas such as playgrounds, pools, skate parks, and sports fields where children could engage in activities. Informal play spaces featured natural elements such as sand, water, trees, and rocks that help children develop an intimate relationship with nature. Levels of intimacy referred to the degree to which play areas provide a sense of enclosure in nature, often surrounded by vegetation or rocks. Rigolon and Flohr state children prefer areas with higher levels of intimacy because they give them a place of refuge and a sense of privacy from adults. Each Denver park was then evaluated on its accessibility. Rigolon and Flohr (2014) created a "walkability index" using the speed limit, tree canopies that provide shade, and sidewalks to calculate whether a park was in safe walking distance from a child's home.

FINDINGS. Rigolon and Flohr's (2014) results provided evidence of environmental injustices. Their statistics revealed that parks with a better and wider range of play amenities (formal, informal, and levels of intimacy) were located near predominantly Caucasian neighborhoods with higher income levels. According to the walkability index, low-income neighborhoods had the lowest access to parks, and high-income neighborhoods had the highest access.

Chicago

"Park Usage, Social Milieu, and Psychological Benefits of Park Use Reported by Older Urban Park Users from Four Ethnic Groups" by Tinsley et al. (2002) focused on the park experiences of African, Hispanic, Asian, and Caucasian groups in Lincoln Park in Chicago, Illinois. The case study identified racial differences in access and their role in park usage for long-term residents of a specific area.

RESEARCH METHODS. Interviewers requested information about the participants' visits to Lincoln Park. The 437 interviews were conducted at different times of day, in different areas of the park, and on all seven days of the week to ensure a random sample of respondents. The average participant had lived in Chicago for 20 years or more, which made them knowledgeable about the location, transportation methods, facilities and programs, and different festivals or special events that the park hosted.

FINDINGS. The study found that the mean travel time was 24.3 minutes for African American park users, 24.1 for Hispanic American users, 22.6 for Asian American users, and 18.2 for Caucasian users. The research further showed that 29% of Caucasians had driven to the park while the majority of

of people of African (52%), Hispanic (50%), and Asian (58%) descent drove. These results were supplemented by bus statistics showing that 14% to 18% of people of Asian, Hispanic, and African descent had taken a bus to the park, while only 3% of Caucasians had done so. These statistics demonstrate that accessibility may be less of a barrier for Caucasians in comparison to the other groups.

Tinsley et al. (2002) also found the Caucasian group visited the park more frequently than any of the other groups. Caucasian respondents reported visiting the park more than once a week but less than three to four times a week. The Asian American respondents used the park once a week to once a month on average. Lastly, the Hispanic and African American respondents used the park on average once a month. The study also showed that visitors who visited the park on both weekdays and weekends accrued more benefits than those who just visited once a week or month. Finally, because the Hispanic and Asian American communities had to travel farther to get to Lincoln Park, they were more likely to visit their neighborhood park rather than utilize Lincoln Park's extensive amenities.

Environmental Justice

Together, the three case studies illustrated that Caucasian communities were the majority ethnic group of park visitors in large metropolitan cities. More frequent park access can be attributed to factors such as more parks per 1,000 residents (Wolch et al., 2005), closer proximity to parks and play spaces (Rigolon & Flohr, 2014; Tinsley et al., 2002), and a wider range of available play amenities (Rigolon & Flohr, 2014).

Even if someone lives within walking distance to a park, Rigolon and Flohr (2014) demonstrated that other barriers such as roads, presence of sidewalks, shade, transportation, and local traffic can prevent park access. Therefore, further considerations have to be taken by park visitors (especially parents of young children). These considerations can make planning a trip to a park more challenging, and therefore make the park less accessible.

The U.S. Environmental Protection Agency (2018) defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Communities that do not have access to the benefits of urban parks and green spaces are not fairly treated and involved when park development plans are being implemented. Distance is a barrier, and communities that are not within walking distance to parks are subject to an environmental justice issue (Holifield, 2001).

GIS and Park Proximity in Harrisonburg, VA

After researching the issue of park proximity in larger cities (Los Angeles, Denver, and Chicago), I wanted to conduct my own environmental justice study. As of July 2017, Harrisonburg had a population of approximately 54,215 individuals (U.S. Census Bureau, 2018), which is significantly smaller than the other analyzed cities. Having affirmed that Los Angeles, Denver, and Chicago all suffer from uneven access to urban parks and green spaces, I wanted to see if this was the case for smaller cities. I chose my current city of residence, Harrisonburg, Virginia, to complete this study.

Research Methods

I completed my analyses using ArcGIS Desktop "Analysis Tools." I chose to use a Multi-Ring Buffer in order to show the 0.25-mile and the 0.5-mile radius surrounding each park in Harrisonburg. This analysis demonstrated what residential communities were within and outside of the 0.25- and 0.5-mile buffers. Figure 1 shows the breakdown of residential areas in Harrisonburg. I then focused on those that were outside of the multi-ring buffer and determined what type of residential community they were using Zoning Information provided by the City of Harrisonburg (FIgure 2). Lastly, I used ArcGIS Desktop to calculate the percentage of Harrisonburg that was outside of a 0.25- or 0.5-mile distance to a park or green space.

Findings

After using Figure 1 and Figure 2, it appears that Harrisonburg does not have a low-density residential community. Typically, low-density residential communities are comprised of individual homes that have more open space and are meant for a smaller number of residents (Novinson, 2017). The only low-density area listed on the Harrisonburg zoning guidelines is a low-density mixed residential planned community. Provided this was a planned area, the zoning descriptions placed access to community green spaces as one of their priorities. When comparing Figure 1 and Figure 2, it appears that several residential areas are not within a 0.5-mile radius of an urban park or green space. However, the planned location of this residential community does not fall within a 0.5-mile radius of a park or green space, meaning that this community would have to have their own green space if residents were to be within walking distance.

After analyzing the two figures, while it's not clear how much of an environmental justice issue there is in Harrisonburg, it does appear there is a park accessibility

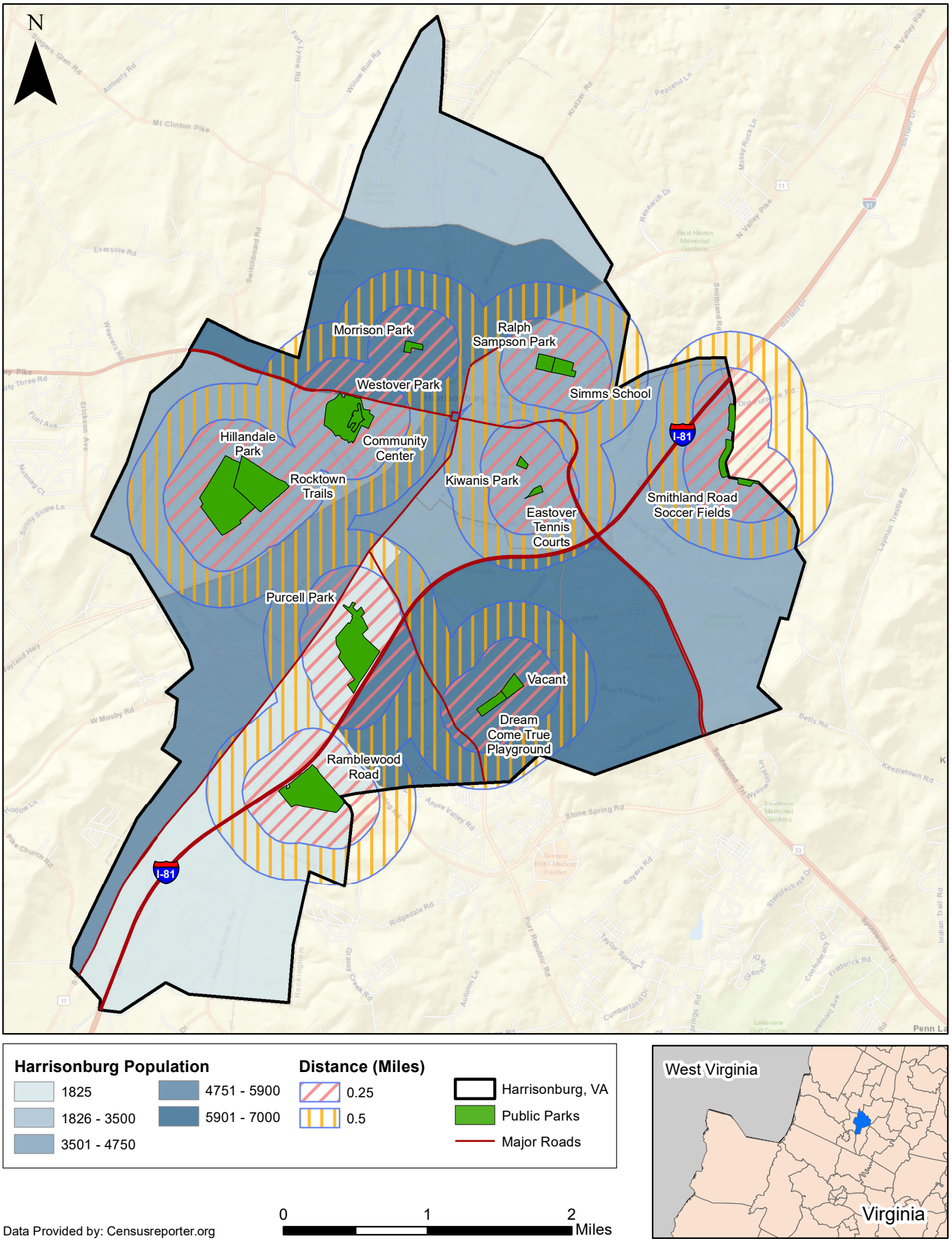

Figure 1. Park Proximity in Harrisonburg, VA.

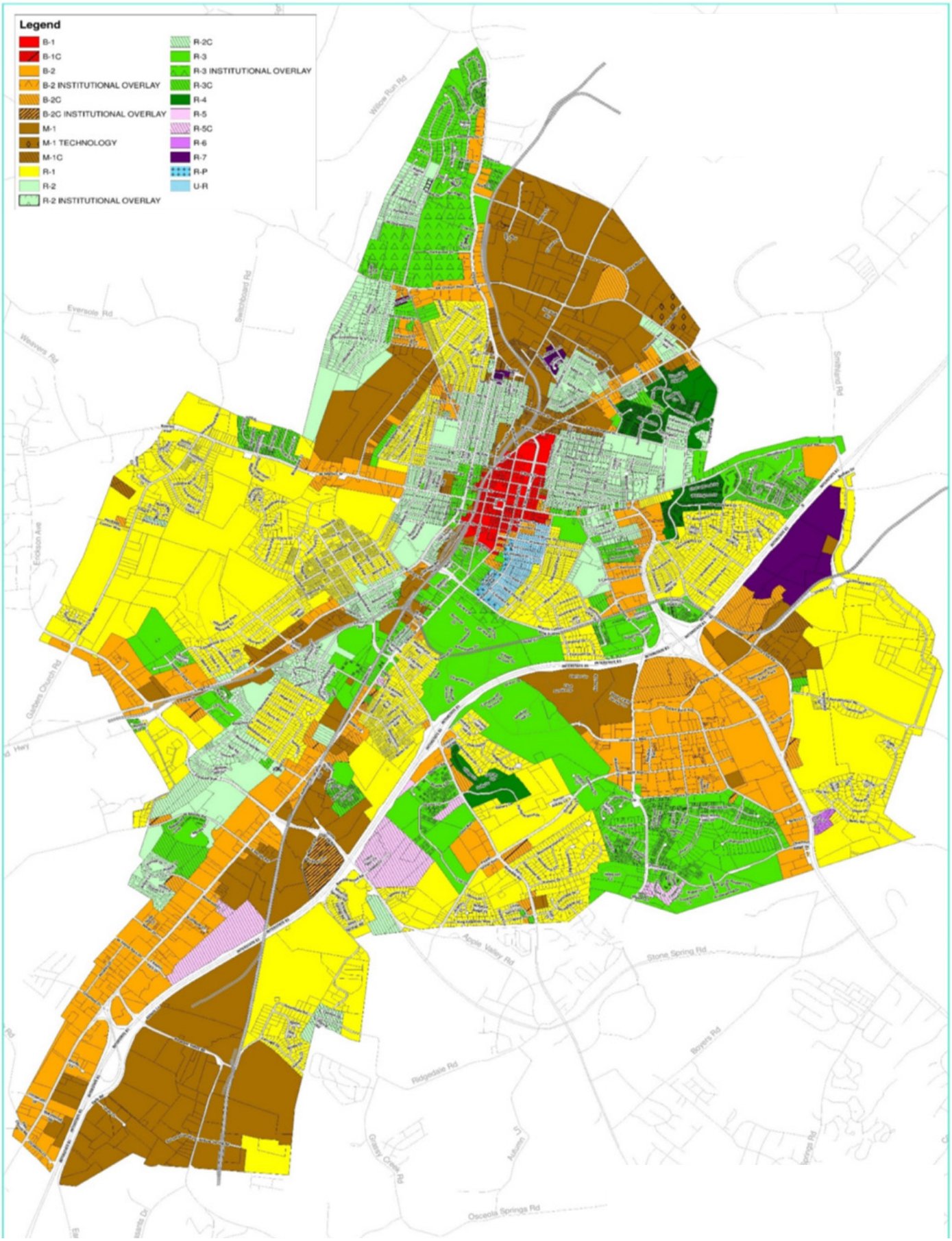

Figure 2. City of Harrisonburg, Virginia, Zoning 2017. Adapted from "Existing Zoning Comprehensive Plan: City of Harrisonburg, VA, A Shared Vision for the Future," 2017. (https://www.harrisonburgva.gov/zoning#Zoning-Districts)

walking distance (less than half a mile) of a park, which does not account for other potential barriers to park access, such as major highways and roads. Among the 63%, high, medium, and low-density communities all faced disproportionate access to green spaces. However, those who reside in high-density neighborhoods may have better means to access parks and green spaces. It is also important to consider that in Figure 2, there is no differentiation between the type of green space as stated by Rigolon and Flohr (formal, informal, intimate; 2014). Therefore, each residential community may be within walking distance to one type of park but not another. This data illustrates that although the environmental justice issue may not be as big of an issue in less populated cities, low and medium density communities still are at a disadvantage, especially if they do not have access to personal or public transportation.

For the future, I believe using the GIS approach may benefit the environmental justice issue of access to urban parks and green spaces. Park planners could use online data sources to determine park proximity (Ussery et al., 2016). This data could then assist park and recreation departments and urban planners identify areas that have a greater need for a new park (Ussery et al., 2016).

Policy Recommendations

As the country continues to urbanize rapidly, many communities find it hard to justify the allocation of land in order to create more parks and green spaces. However, different measures can be taken to provide greater access to these resources that would ensure the same benefits.

The first recommendation would be adding increased transportation and corresponding efficiency. According to Broome, Nalder, Worrall, and Boldy (2010), "The inability to utilise transportation can lead to depression, reduced out of home activities, result in increased social isolation, reduced self-esteem, and contributes to poorer quality of life" (p. 33). Broome et al. interviewed 301 individuals from two cities on what discouraged them from using public transportation. The most common barriers to utilizing public transportation were unsuitable bus times, lack of connecting buses, bus shelters, bus stops and routes, and lack of knowledge on available bus services. Given that most cities have access to some sort of public transportation, the focus needs to be on making transportation more accessible. If transportation were more accessible to communities that did not live within proximity to an urban park or green space, these individuals may be more motivated to use transportation services to access parks and their benefits.

The second recommendation is the implementation of school gardening programs for students. As metropolitan areas are increasing across the United States, school gardening programs are increasingly being added to state school curriculums because of their benefits. School gardens not only create an increased understanding of nature, they also provide children "academic, behavioral, recreational, social, political, and environmental" benefits (Blair, 2009, p. 16).

Gardens are miniature environments that students would have frequent access to (Demas, 1979). By planning their own mini environment, students would be involved with experiential learning in predator-prey relations, pollination, carbon cycles, soil morphology, and several other simple and complex systems (Blair, 2009). This helps to form positive connections between students and nature and the environment, which is shown to result in environmentally sensitive and active attitudes as adults (Chawla, 1998). Also, several studies have revealed a positive difference in test scores (especially science scores) between students who gardened and those who did not (Blair, 2009).

Gardens could become a successful alternative to urban parks and green spaces because they would give students firsthand experience in several of the ecosystem functions that urban parks employ. As mentioned in the literature review, gardens also help children adopt healthier diets and strengthen their relationships with the local community. Gardening helps children gain a broader understanding of plant growth and local sustainable food systems by allowing them to eat their own produce, compost cafeteria food waste, and connect with adult gardeners in their community (Blair, 2009). Planning a garden would typically take place during recess, which may even give children more exposure to nature and the environment than they would if they lived near a park. In addition to health, gardens are part of the natural world which has often proven to be interesting to children. This helps stimulate ideas and information retention since it is a fascinating topic for them (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956).

Conclusion

The three case studies conducted by Wolch et al. (2005), Rigolon and Flohr (2014), and Tinsley et al. (2002) were examined to analyze the relationship between park usage and access between different groups of socioeconomic status in larger U.S cities. The cumulative results showed that there are several regions that are not within walking distance (0.5 miles) to an urban park or green space. Further analysis showed that these regions are often comprised of groups of low-socioeconomic status who are not predominantly caucasian (Tinsley et al., 2002; Rigolon & Flohr, 2014; Wolch et al., 2005) After analyzing these findings, I conducted my own case study of Harrisonburg, Virginia, to research the issue of park proximity in a less

populated community. The initial claim developed was that disproportionate placement of urban parks and green spaces was an environmental justice issue because of the unequal access to park benefits. The three case studies analyzed showed that many large metropolitan areas had parks that were easily accessible for Caucasian groups but challenging for other ethnic groups. The results were not yet so clear for Harrisonburg along racial or socioeconomic lines, although several groups may face disproportionate access to urban parks. By implementing the provided practical solutions of offering more transportation to urban parks and green spaces and integrating environmental education into school curriculums to provide students with daily exposure to nature, access could then be increased.

Author's Note

Victoria Holmes ('19) is an environmental scientist from Virginia Beach. She graduated from JMU with a BS in Geographic Science and recently began working at Kimley-Horn, a planning, engineering, and design consulting firm. She is passionate about environmental and biological conservation.

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