Physical Activity in the City of Knoxville Parks: Findings and Recommendations for Public Health

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November 2019

This project is funded under a grant contract with the State of Tennessee

KNOX COUNTY HEALTH DEPARTMENT

TN Department of Health

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Acknowledgments

This report would not have been possible without the help of many individuals. The authors of this report acknowledge their contributions.

- We thank all of the participants (key informants, focus group participants, and telephone/Facebook survey responders) who shared their opinions and thoughts regarding parks and recreation in the City of Knoxville. Recruitment of participants is a challenge for all studies.
- We were fortunate to have had the assistance of supportive community partners; we thank Liliana Burbano Bonilla, Kelley Wilds, and Amber Ford from Knox County Health Department; Debbie Sharp, the Neighborhood Coordinator, from the City of Knoxville Office of Neighborhoods; and Aaron Browning, Deputy Director, City of Knoxville Parks and Recreation for their help with recruitment.
- We are also grateful to community partners for assisting in conducting the focus groups: Albert Nelson, Director of the CAC East Neighborhood Center; Jervece Steele, the Community Schools Resource Coordinator at Sarah Moore Greene Magnet Academy Community School; Rose Broyles of the Burlington Library; Shelby Kendall, the Visitor Services Coordinator at the MUSE Knoxville; Kristie Toby and Tiara Webb from Knoxville's Community Development Corporation; Olivier Muhire, the Community Schools Resource Coordinator at Green Magnet Academy Community School; and Sue Massengill from the John T. O'Connor Senior Center.
- We thank the interviewers and transcribers of the key informant and focus group interviews: Emoni Degon, Chloe Jones, Sarah Shaffer, Zeruiah V. Buchanan, Catherine Claire Holladay, Beatriz E. Satizabal, and Haylee Young.

The director observation of physical activity was conducted by 42 undergraduate Kinesiology students from the Department of Kinesiology, Recreation, and Sports Studies at the University of Knoxville, Tennessee. Central to this component of the project, thanks are extended to Margaret Rose Bailey, undergraduate coordinator for this project.

Funding Source: Project Diabetes grant from the Tennessee Department of Health.

Recommended citation

Fitzhugh, E.C, & Barroso C.S. (2019). Physical Activity in the City of Knoxville Parks: Findings and Recommendations for Public Health. Knox County Health Department; Knoxville, TN.

Executive Summary

Physical activity can provide wide-ranging benefits to health, including reduced risk for type 2 diabetes, hypertension, heart disease, and many cancers. In addition, physical activity can reduce the risk for obesity, a central risk factor for many diseases. The National Academy of Medicine in focusing on obesity prevention in the United States, recommends that communities increase access to places and opportunities for being physically active. Common places to be physically active in the City of Knoxville are neighborhood and community parks, located throughout the City.

The purpose of this report was to examine how residents of the City of Knoxville use their local park for physical activity. Do all residents have equal access to parks? And what features and amenities of the parks do people use? Finally, what are the factors that residents consider in deciding whether to use or not use their park? To answer these questions a variety of methods were used. First, a sample of parks were selected for two one-week observations of physical activity, including morning, lunch, and evening hours. Also, every park underwent an extensive audit of features, amenities, and aesthetics to establish a 'park quality score'. Next, surveys of residents across the city were collected to gather insights and feedback from residents about their physical activity and park use. Finally, a series of key informant interviews and focus groups were conducted among residents to gain neighborhood level insight into perceptions of their local parks.

After considering the data, both quantitative and qualitative, one overarching and six major conclusions are offered. The main conclusion was that the City of Knoxville Parks are well maintained, distributed equitably – but are underutilized by residents. Other conclusions were the following:

1. The larger the park, the more opportunities for being physically activity, especially for adults.
2. The park system is equitable in terms of access, features, aesthetics, and amenities.
3. Knoxville city residents, especially in the East Park planning sector, do not consider the park system to be equitable.
4. Parks are currently 'child centric' with very few features for physical activity among adults.
5. Safe access to a park using active transportation (i.e., walking/biking), and public transit is lacking.
6. Perceptions of safety traveling to, and while using a park, is greatest personal barrier to park use.

With the above in mind, five general recommendations were made to increase the visits of residents to their local neighborhood park, visits that would ideally involve health-enhancing physical activity. Key to these recommendations are community engagement and a partnership

between the City of Knoxville Parks and Recreation and the Knox County Health Department. The recommendations follow.

Recommendation One: Increase Park User Engagement and Programming

- Conduct 'Park Environment and Safety Audits' with local residents at their neighborhood park.
- Increase physical activity programming throughout the park system, with a focus on the existing 'Programs in the Park' and 'Adopt a Park' initiatives.

Recommendation Two: Increase Park and Physical Activity Community Awareness

- Increase park and physical activity awareness by implementing a mass-media campaign.

Recommendation Three: Renovate the Park Environment to Promote Park Visits and Physical Activity

- Create new park features that promote physical activity, especially walking, among adults by renovating existing parks.
- Retrofit under-utilized athletic fields in existing parks to new physical activity features using feedback from local residents.
- Install park wayfaring signage within neighborhood street networks and park maps that highlight features and amenities at all local neighborhood parks.
- Assure that all local neighborhood parks have water fountains, restrooms/porta-potties, and emergency call cylinders.
- Emphasize the linkage of new greenways with existing parks as destinations of physical activity.

Recommendation Four: Improve the Neighborhood Built Environment and Park Access

- Continue to emphasize the linkage of parks with greenways to create active transit routes to parks.
- Install safe street crossing at all street intersections adjacent to each park.
- Incorporate bus stops, adjacent to park entrances, within Knoxville Area Transit (KAT) routes

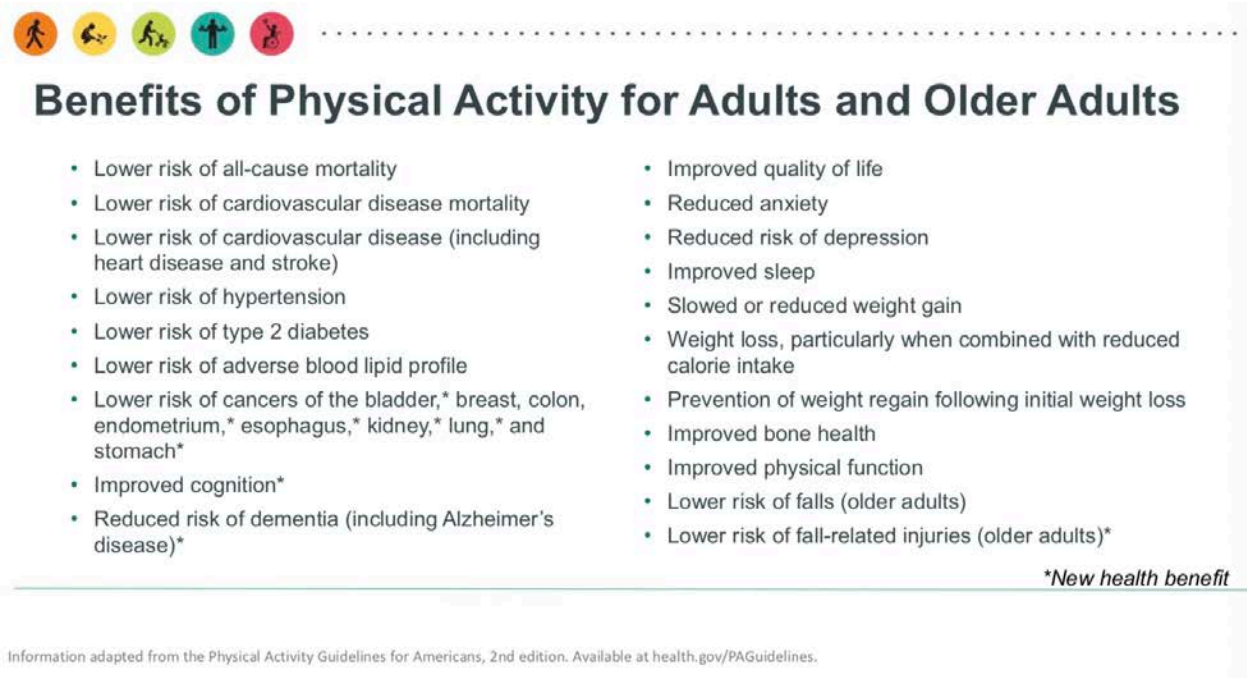
Recommendation Five: Enhance Partnerships for Promoting Physical Activity

- Formalize the partnership between the City of Knoxville Parks and Recreation Department and the Knox County Health Department – both whom are essential to promoting the public health of residents.
- Establish a physical activity coalition across a variety of sectors of the community (e.g., healthcare, faith-based groups, schools, etc.).

Introduction

Being physically active is perhaps the most important way a person can lower their risk for developing chronic disease. People who are active, or who become active, have much lower risk for hypertension, type 2 diabetes, heart disease, stroke, cancer, depression, and falls with injuries. Figure 1 provides a more complete list of the benefits of being physically active. In addition, physical activity can help people living with chronic health conditions (e.g., type 2 diabetes) to better manage and control their condition (U.S. Department of Health and Human Services, 2018).

Figure 1. Heath Benefits Associated with Being Physically Active



Just a single bout of moderate-to-vigorous physical activity (MVPA) can show immediate benefits in reducing blood pressure, improving insulin sensitivity, improving the quality of sleep, and leading to better cognitive function. Ideally, to maximize the benefit of physical activity, an adult would need to acquire an equivalent of 150 minutes of moderate-intensity physical activity per week. At that level a person can achieve 70% of the overall benefits associated with being active. More extensive health benefits can be achieved by increasing these minutes of physical activity. In addition to these aerobic physical activity guidelines, it's recommended that physical activity take the form of muscle-strengthening activities done at least twice per week. Of note, in 2017 only 1 out of 4 adults in the United States reported meeting both the aerobic and muscle-strengthening guidelines, a trend that has been gradually increasing (National Center for Health Statistics, 2019).

Physical Activity of Knoxville City Residents

Despite the widespread knowledge of the benefits associated with being physically active, in 2016, 34.0% of adults in the City of Knoxville reported being sedentary in their leisure-time (Centers for Disease Control and Prevention, 2019a). More alarmingly, in the City of Knoxville there are neighborhoods with even higher levels of sedentary adults. In fact, there are census tracts (Census tracts: 19, 20, 21, 67, and 68) in Southeast Knoxville where more than 45.8% of adults report being sedentary (Centers for Disease Control and Prevention, 2019a). Not surprisingly, the obesity prevalence rate for these census tracks is 41.2% compared to 27.7% for the county. The diabetes rate for these census tracts is 18.9% - double the prevalence for Knox County as a whole (Centers for Disease Control and Prevention, 2019a). Also, these same tracts tend to have a higher proportion of minority and low-income households (Metropolitan Planning Commission, 2010).

It is possible that these disparities in sedentary behavior and diabetes prevalence found across the City of Knoxville are related to inequities in the availability of places or facilities, both public and private, to be physically active (Taylor, Floyd, Whitt-GLover, & Brooks, 2007). Very simply put, perhaps adults living in these at-risk census tracts within Knoxville don't live in neighborhoods with nearby parks and fitness facilities. In the United States, neighborhoods composed of more low-income or minority households have been found to have smaller numbers of the types of places needed for health-enhancing physical activity (Dajun, 2011). Furthermore, fees for private fitness facilities may pose a significant cost barrier for people living in low-income neighborhoods. Thus, access to local parks and recreation facilities where people live may be the only opportunity to be active for these at-risk groups of people (Buchner & Gobster, 2007).

Local Parks and Physical Activity

Research shows that local parks are important spaces for physical activities (Buchner & Gobster, 2007; Kruger, Mowen, & Librett, 2007), and that the closer people live to a park the more likely they are to use the park to be active (Bancroft et al., 2015). The Trust for Public Land identified a 10-minute walk to have access to a quality park as a national goal for all people in the United States. Research finds that if a person lives beyond this distance they will be much less likely to use their local park (Harnik & Simms). Across the United States, 57% of adults are estimated to live within a 10-minute walk to a park. However, in the City of Knoxville only 48% of adults can walk to a local park within 10 minutes (The Trust for Public Land, 2019). With this in mind, it’s possible that people living in the at-risk areas of Knoxville mentioned above are 'park poor', with the proximity to a local park being a barrier to their being physically active (Sallis, Floyd, Rodriquez, & Saelens, 2012). Alternatively, they may live near a park, but perceive that they don't have easy access to the park (National Recreation and Park Association). Other barriers at the individual level that are reasons for not using parks may include concerns for safety, a lack of social support, time, and not being aware of park amenities and services (Cordell, McDonald, Teasley, & et al., 1999; Scott & Munson, 1994).

There clearly is a need to understand why people who live in the areas of Knoxville at risk for diabetes and obesity are sedentary. Are they sedentary because of individual factors, attributes of their neighborhood, including the proximity and access to local parks, or a combination of both? And if they do live near parks, do the environmental characteristics of the park promote or hinder active visits to the park? Local parks provide two opportunities to be active – first, the person in that neighborhood near the park can actively walk to the park and second, they can actively use the amenities found in the park (Buchner & Gobster, 2007).

There are five environmental characteristics of a local park described below that might possibly impact the active use of a park (Bedimo-Rung, Mowen, & Cohen, 2005).

- Park features. These include the types of amenities, facilities, and programming available to park users. Examples might include the types of activity areas (e.g., sports fields, paths or trails, playgrounds), organized recreation activities, and security lighting.
- Condition of park. This includes the conditions of the park features and amenities. Is the park properly maintained? Is the equipment perceived to be safe? Are the physical surroundings disorderly?
- Access to the park. Can people get to the park and can they easily move around in the park?
- Park aesthetics. This includes how the features of the park are designed, the size and topography of the park, shade provided by trees, visual appeal, and perceived attractiveness.
- Safety. This includes both objective and perceived safety of the park.

Certainly, local parks and recreation environments are key contributors to health (Librett, Henderson, Godbey, & Morrow, 2007; Sallis et al., 2006; Taylor et al., 2007). To address the local concerns in Knoxville specific to diabetes, obesity, and the underlying risk factor of sedentary behavior, a collaborative effort is needed to understand how people interact with their parks and recreation environment. The fields of public health and park recreation need to collaborate to allow everyone the opportunity to achieve the highest quality of life (Librett et al., 2007).

Purpose

A goal of the Knox County Health Department's Project Diabetes, a state-funded initiative from the Tennessee Department of Health, is to make physical activity an integral and routine part of life. In particular, this goal focuses on fostering supportive policies and environments to increase physical activity in all Knox County residents. With this goal in mind, the University of Tennessee at Knoxville (UTK) has prepared a report to better understand how parks and recreation relate to the health of the population with a specific focus on the City of Knoxville. This report has been prepared to provide both recreation and public health planners with insights into how City of Knoxville residents, particularly those living in high-risk areas, interact with their local neighborhood parks. These insights will focus on the following questions:

1. Who uses local neighborhood parks? Does this use vary by demographics?
2. What type of physical activities are people doing when they visit a local neighborhood park?
3. What portion of park visits can be considered to be 'active visits'?
4. What neighborhood park features and amenities attract the most people?
5. How equitable are geographic placement and facility quality across existing city parks?
6. How accessible are city parks to nearby residents?
7. What are the perceived park characteristics associated with promoting or hindering local neighborhood park use among residents living in at-risk areas?

Ideally, this report will aid in the development of a comprehensive plan to ensure all City of Knoxville residents have equal opportunities to be active and healthy using their local neighborhood park.

Methodology

The report is based upon a mixed-methods approach to examine how city residents interact with their neighborhood park. While more specific details of the methodology are located in the appendices, a brief description of the various methods follows.

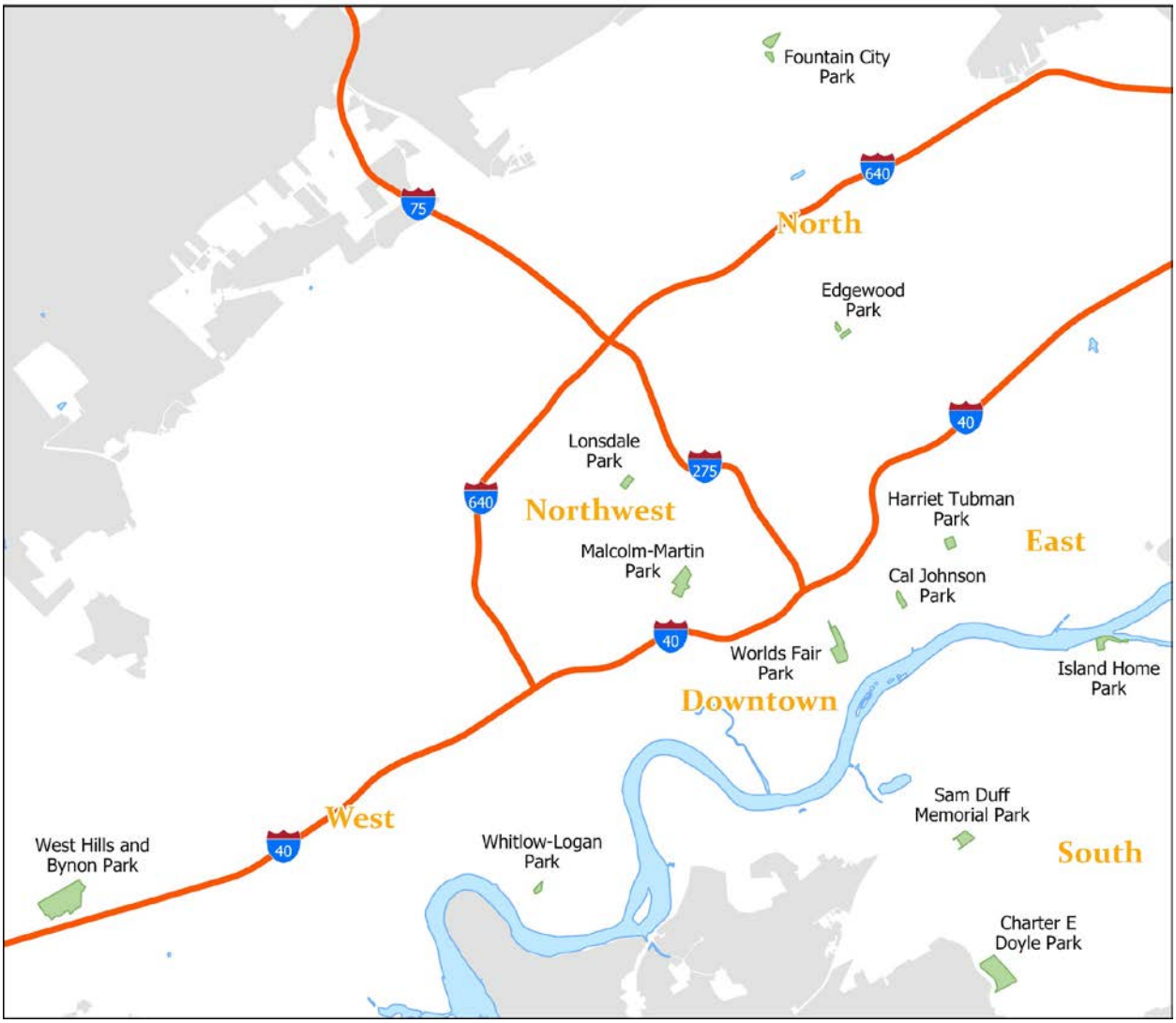
Quantitative Methods

Park Physical Environment Audit. An abbreviated version of the Environmental Assessment of Public Recreation Spaces (EAPRS) tool was used to measure three elements of each park of the City of Knoxville Parks and Recreation Department (COK Parks and Recreation) (Geremia, Cain, Conway, Sallis, & Saelens, 2019). The first element reflected the 'Physical Activity' potential of the park across 7 categories: trails, open spaces, pools, beaches, sidewalks, playsets, and athletic fields/courts. The element titled 'Amenities' captured data on quality items related to seating, restrooms, eating/drinking facilities, bike racks, parking, and signage, etc. Finally, the 'Aesthetics' measure of the park was based on items such as the presence of meadows, streams, landscaping. In total, 177 items were used to calculate the physical activity, amenity, and aesthetic elements. An overall 'Park Quality Score' for each park was used to estimate whether people would use that park for physical activity or not. Appendix A highlights the EAPRS methods and instrument.

Physical Activity Direct Observation. Physical activity, both active and passive, was assessed at 12 selected parks across Knoxville. Parks were selected based on the 7 City of Knoxville Parks and Recreation planning sectors. However, parks in two sectors, Downtown and Northeast, were not suitable for observation due to parks that were not designed for being physically active. Remaining sectors had two parks selected with the exception of the South sector, which because of a large acreage size had three parks. The following parks were selected for the direct observation of physical activity (Alphabetical Order) and are mapped in Figure 2 below.

- Cal Johnson
- Charter Doyle
- Edgewood
- Fountain City
- Harriet Tubman
- Island Home
- Lonsdale
- Malcolm-Martin
- Sam Duff
- West Hills
- Whitlow-Logan
- World's Fair

Figure 2. Map of Parks undergoing Direct Observation of Physical Activities.



The System for Observing Play and Recreation in Communities (SOPARC), a reliable and valid tool and process, was used to directly observe physical activity in the selected parks over two weeks, a week in October 2018 and a week in March 2019. Observed physical activity during each week covered 4 days of the week (Monday, Wednesday, Saturday, and Sunday) at three time points each day (7:30-8:30 AM; Noon-1:00 PM; and 5:30-6:30 PM). Each park was broken down into physical activity scan zones for the observations. These physical activity zones ranged from 3 zones at Whitlow-Logan to 18 zones at West Hills, the largest park. Undergraduate Kinesiology students, two for each park, were trained in SOPARC and collected the data.

Telephone/Facebook Survey. City of Knoxville residents were surveyed on use of their local park, including their physical activity behaviors. Residents were asked specifically about their perception of how their local neighborhood supports them being physically active, use of their local neighborhood park, and types of physical activities they had performed in the past month.

This survey was conducted via phone, both landline and cell. In addition, Facebook advertisements were used in order to assure adequate representation of all age groups. Appendix C contains specific information on this survey.

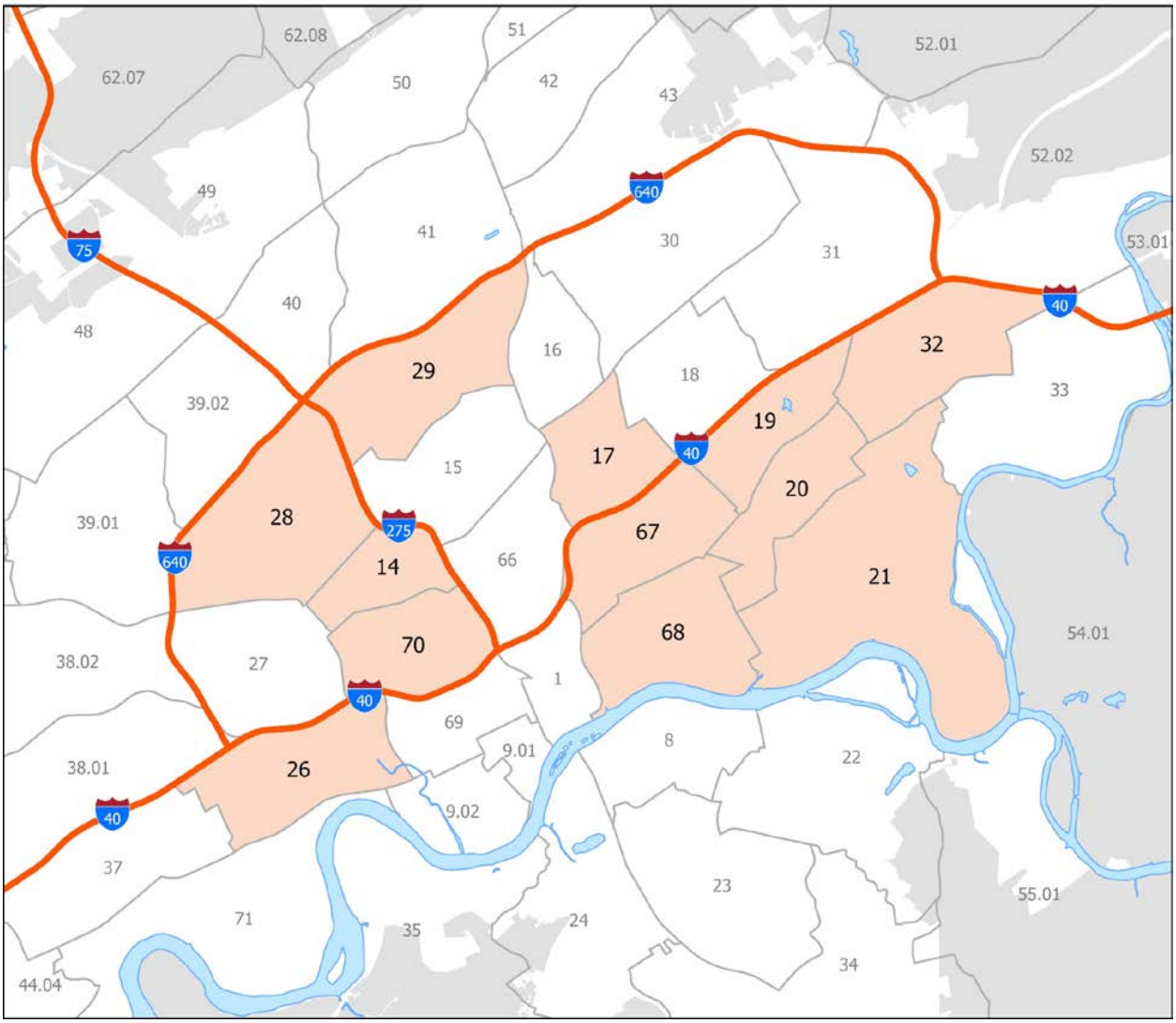
GIS Geocoded Data. Several data points were geocoded in ArcGIS to provide data to enhance the level of statistical analysis. These geocoded data included the following.

- Street Intersection. These data, gleaned from the telephone and web survey, allowed the team to calculate distance to the nearest park from the residence.
- WalkScore. The research team also purchased WalkScore data based upon the street intersection measure above. These data provided other distance and proximity measures to walking destinations (Walk Score, 2017). The WalkScore is also a marker of opportunities or barriers for active transport to the park.

Qualitative Methods

Key Informant Interviews. Using a semi-structured interview guide, key informant interviews were conducted regarding the physical environment of neighborhood parks, perceived accessibility to parks and recreation facilities, services offered at parks, the quality and condition of the recreation facilities, and local programming and policy initiatives for neighborhood parks. Key informants were identified as individuals who play a central role in the 12 high priority census tracts as identified by the Knox County Health Department. (See Figure 3 below for map of high priority census tracts.) Data from the 500 Cities project (Centers for Disease Control and Prevention, 2019a)(CDC, 2016) and local life expectancy estimates were used to prioritize census tracts in Knoxville, Tennessee. Because regular physical activity may decrease the risk of both coronary heart disease and type 2 diabetes, and may extend life expectancy (Moore et al., 2012), we used these health outcomes and no leisure-time physical activity to rank order the census tracts in Knoxville, Tennessee. The 12 census tracts with the highest estimates for coronary heart disease among adults aged ≥18 years and diagnosed diabetes among adults aged ≥18 years as well as the lowest estimates for no leisure-time physical activity among adults aged ≥18 years and life expectancy were selected (Centers for Disease Control and Prevention, 2019a). In total, 36 key informants were interviewed.

Figure 3. High Priority Census Tracts Identified for Key Informant Interviews.



Focus Group Interviews. Focus group methodology, as suggested by Krueger & Casey (2014) and Patton (2015), was utilized to conduct 6 focus groups in 6 low-income communities (one focus group in each low-income community). Six focus groups were held in the six census tracts with the most detrimental estimates for the health outcomes and no leisure-time physical activity; one in each census tract. These census tracts were 14, 19, 20, 21, 67, and 68. Focus group participants were recruited with the assistance of the Knox County Health Department and key informants in these areas. Focus groups consisted of 5-15 participants, with the intent to capture perceptions of their local park and its influence on their physical activity behaviors. The barriers and facilitators to park use, the impact of physical inactivity and obesity in their lives, and the likelihood of developing chronic disease outcomes related to excess weight were also themes of interest.

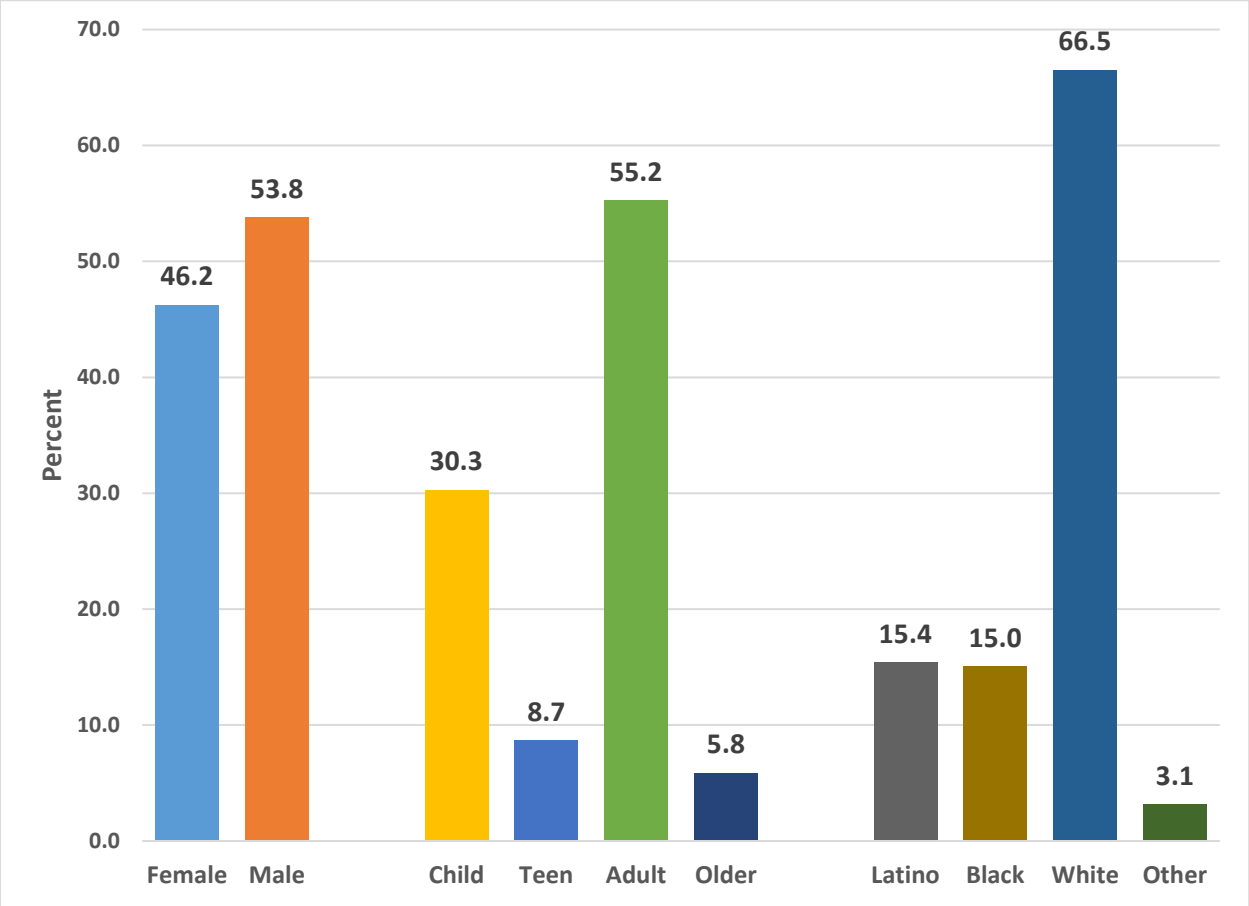
Findings

Based upon the variety of methods, both quantitative and qualitative, the following findings are offered.

Question 1: Who Uses Local Neighborhood Parks?

Introduction: Using SOPARC data from the selected 12 parks that included 1,548 activity zone scans, we observed 3,961 residents using the parks over the course of this study. Because of the sampling design, the profile of park users reflects the typical use across the entire park system. A national study conducted in 2016 provides a good frame of reference for comparing Knoxville to the United States (Cohen, Han, Nagel, 2016 – A). Figure 4 below shows a demographic profile of parks users in Knoxville.

Figure 4. Demographic Profile of Park Users in City of Knoxville Parks.



FINDING 1A: GENDER

Males are more likely to use the park than females (53.8% vs. 46.2%). This is not unexpected in that a national study using SOPARC found that 57% of park users were male (Cohen et al., 2016).

FINDING 1B: AGE

Based upon the four age categories of SOPARC, park users do not reflect national estimates. (Cohen et al., 2016)

- Compared to the nation, more adults (55% in Knoxville vs. 44% nationally) and older adults (6% in Knoxville vs. 4% nationally) in the City of Knoxville use parks.
- Fewer children (30% in Knoxville vs 38% nationally) and teenagers (9% in City vs 13% nationally) use local City of Knoxville parks.

FINDING 1C: RACE/ETHNICITY

Minority residents use the parks in a much higher proportion than reflected by the Knoxville census (33.5% minorities directly observed in this study vs. 24.8% minorities in surrounding census areas). The national survey of parks did not assess for race/ethnicity, so no direct comparisons are available.

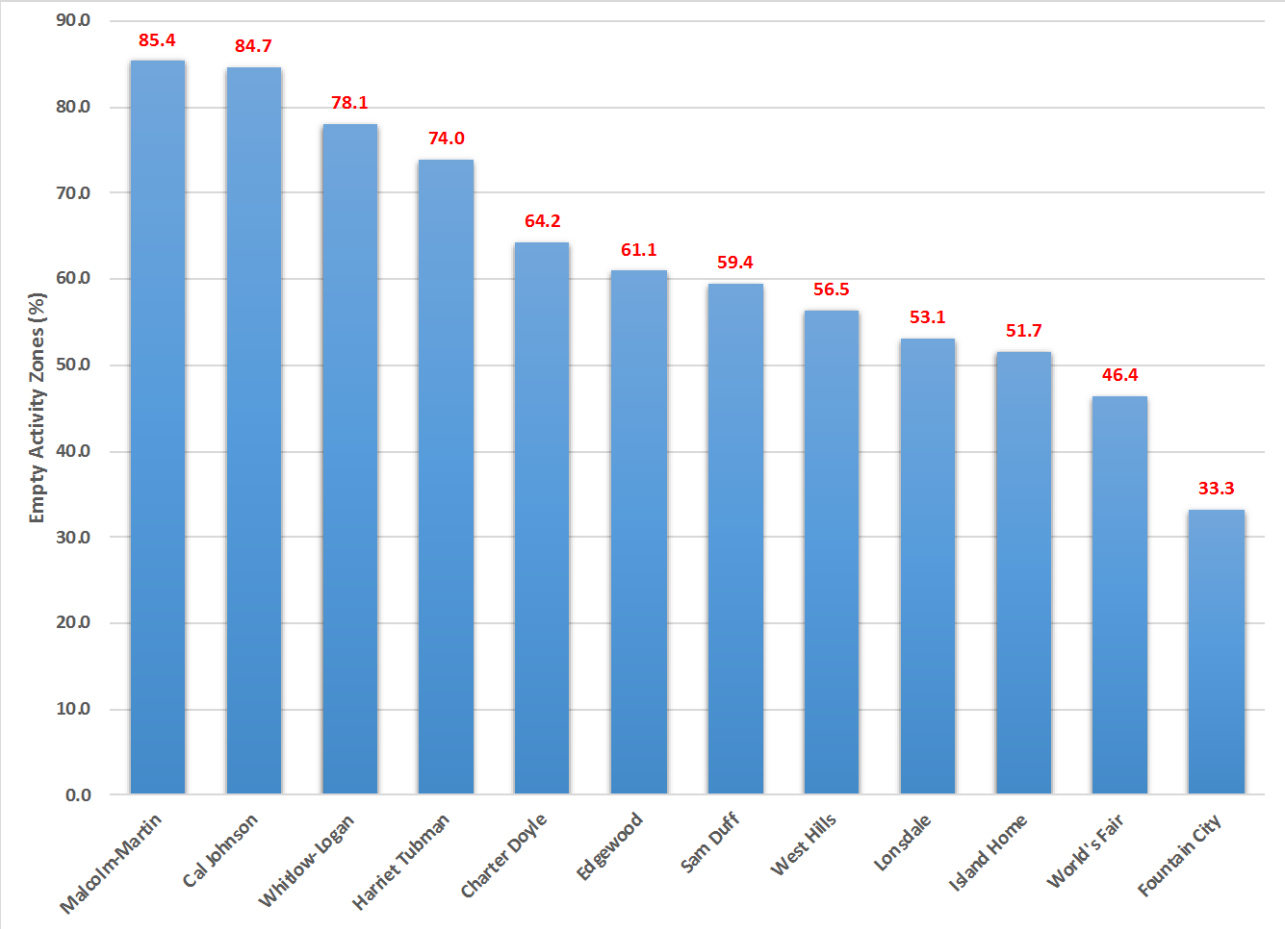
Key informants and focus group participants also reported that in various communities, immigrants from African and Latin American countries play soccer in parks.

> *"Which is even stranger because we have a big African population, we have a lot of immigrants from Africa in this area, soccer is a big thing. We have a lot of immigrants from Hispanic countries... Everybody plays soccer. It's like the universal language, why would you not... So, they're beginning to have it over here where we live!"* (Focus group participant)

Finding 1D: Overall Park Use

City of Knoxville Parks are underutilized by residents, especially in low-income areas. This finding is based upon the fact that 61.6% of all activity zones (e.g., courts, open space, playgrounds), across all observed parks, were found to be empty with no one using that area of the park. Also, the parks located in low-income census tracts (N=4) had significantly higher empty physical activity zone rates compared to parks in areas associated with higher incomes (74.9% vs. 56.4%; p=<0.0001). A profile of the percentage of empty activity zones by park is found below in Figure 5.

Figure 5. Empty Activity Zones (%) by Park



We also note the following findings that are highlighted in Table 1.

- Smaller neighborhood parks, which have fewer activity zones by design, have much lower use than larger community parks.
- Parks get significantly more use during the weekdays than the weekend. Not reported in Table 1, but Sunday is the day associated with the lowest level of use (68.0 of activity zones are empty).
- Park use is lowest in the morning hours (83.1% empty) and highest during evening hours, with 6 out 10 zones having people present.
- Athletics fields and courts are the most underutilized area of the observed 12 parks. The park activity zone with the greatest use across the 12 parks were the pavilions, regardless of their location in the park. And as noted later in the report, park users in pavilions use the park for more passive, sedentary activities.

Table 1. Empty Activity Zones by Observation and Park Characteristics.

		Empty (%)	P-value
Type of Park			p=0.0819
	Neighborhood [A]	63.2	
	Community[B]	58.1	
Day of Week			p<0.0448
	Weekday	59.1	
	Weekend	64.1	
Time of Day			p<0.0001
	Morning	83.1	
	Noon	58.1	
	Evening	43.6	
Type of Activity Zone			p<0.0001
	Athletic Field	75.0	
	Athletic Court	71.1	
	Playground	64.4	
	Open Space	55.2	
	Pavilion + Open Space	46.7	
	Pavilion + Athletics	36.1	

Notes:

[A]Neighborhood park is a close-to-home park within an easy walk or drive.

[B]Community park is a more regional park that has a wide range of activities and tends to be a larger park.

Data gleaned from key informant interviews substantiate the finding that City of Knoxville parks are underutilized, especially by low-income residents. Key informants reported their lack of park use (based on the results of the brief demographic survey they completed). In the last 30 days, the 36 key informants on average visited a park on only 4 days (range 0-25 days; mode = 0 days; median = 1 days). Several key informants mentioned that most people do not use parks as often as they could or should. Nevertheless, according to interviewees, parks are in fact used for a variety of reasons, including the following.

- Use for physical activity: activities mentioned included walking, dog walking, bike riding, tennis, soccer, basketball, baseball, fishing, skateboarding, disc golf, pickle ball, and organized sports.
- Use of playgrounds and other equipment.
- Use of pavilions, gazebos, or picnic tables to mingle, grill, and eat.
- Religious services: some churches hold an annual service in the parks.
- Community and family celebrations.

> *"Uh, well, the park in my neighborhood, well, it's actually not quite where I'm from, but it's the park that I visit the most often. It's Victor Ashe Park it's off of Pleasant Ridge road and the reason I go there is because of...I don't really use any of the facilities there other than just go for walking on the trails and usually picnics. But, sometimes I'll watch games, soccer games. You know, that go on over there, but I don't really, really, do anything active there other than just walk and enjoy setting...the setting."* (Key Informant)

Question 2: What Type of Physical Activities are Residents doing when they visit a Local Neighborhood Park?

Table 2 below provides an overview of the primary types of observed physical activity across physical activity zones by gender. It should be noted that of the 1,548 scans of physical activity zones over the course of this study, 70.5% of zones had no people present. Only 3 of 10 physical activity zones had at least one person observed. Of those occupied physical activity zones, here are the primary activities that were observed.

Table 2. Primary Observed Physical Activities by Gender

	Females			Males	
	Frequency	**%**		**Frequency**	**%**
Walking	124	29.3	Walking	128	26.2
Climbing/Sliding	69	16.3	Climbing/Sliding	69	14.1
Sitting	57	13.4	Sitting	60	12.3
Picnic	32	7.6	Basketball	45	9.2
Racquet Sport	31	7.3	Racquet Sport	36	7.4
Standing	30	7.1	Standing	28	5.7
Jogging/Running	19	4.5	Picnic	27	5.5
Cycling	15	3.5	Jogging/Running	26	5.3
Basketball	12	2.8	Cycling	5	3.8
Tag/Chasing	10	2.4	Soccer	9	1.8
Soccer	5	1.2	Tag/Chasing	9	1.8
Baseball	4	0.9	Baseball	8	1.6
Lying Down	4	0.9	Football	6	1.2
Aerobics	2	0.5	Other	6	1.2
Reading	2	0.5	Aerobics	4	0.8
Skate Boarding	2	0.5	Lying Down	4	0.8
Other	2	0.5	Child Racquet Play	3	0.6
Fitness Stations	1	0.2	Muscle Strengthening	1	0.2
Dance	1	0.2	Volleyball	1	0.2
Volleyball	1	0.2	Reading	1	0.2
Child Racquet Play	1	0.2	Skate Boarding	1	0.2

Both key informants and focus group participants mentioned a variety of physical activities done at the parks. None mentioned the type of physical activity by gender.

> *"Victor Ashe there's also frisbee golf. You can fish I believe. They have a stock pond there. Um, when I can get to the park, we normally ride bikes and things like that. There's also um like a volleyball, beach sand volleyball, whatever you wanna call it. I'm no good at it so I don't play it. Um, so things like that."* (Focus group participant)

> *"At Holston Park they have soccer. In the middle of Holston Park. You can walk the park. I walk the park. Dogs walk the park. They have lots of good things in that park."* (Focus group participant)

> *"Oh gosh, most of the time while I'm there it's disc golf and soccer. It's the two things that everybody...and then everybody's walking on the walking trail. Those are probably the three things that I see the most often out there."* (Focus group participant)

FINDING 2A: SEDENTARY ACTIVITIES

Sedentary-related activities (e.g., sitting, standing, lying down) are the most commonly observed activities for both females and males. As noted in the sedentary actives (i.e., sitting, lying down, reading, and picnicking) in table 2 above, for females, 29.5%, roughly 3 out of 10 visits to a park, involved sedentary behavior. For men, 24.3%, or 1 out of 4 visits, involved a sedentary behavior.

Focus group participants acknowledged engagement in sedentary activities at parks.

> *"Or you can go there to read, or just relax."*

> *"So, when I go to the park, I look for an open area, I look for a barbecue grill, and I look for a pavilion. Those three areas are important to me. I need the open area for my kids can play, I need the barbecue grill because I'm like king barbecue guy ever [laughs], and then I need the pavilion so that we can have shelter."* (Focus group participant)

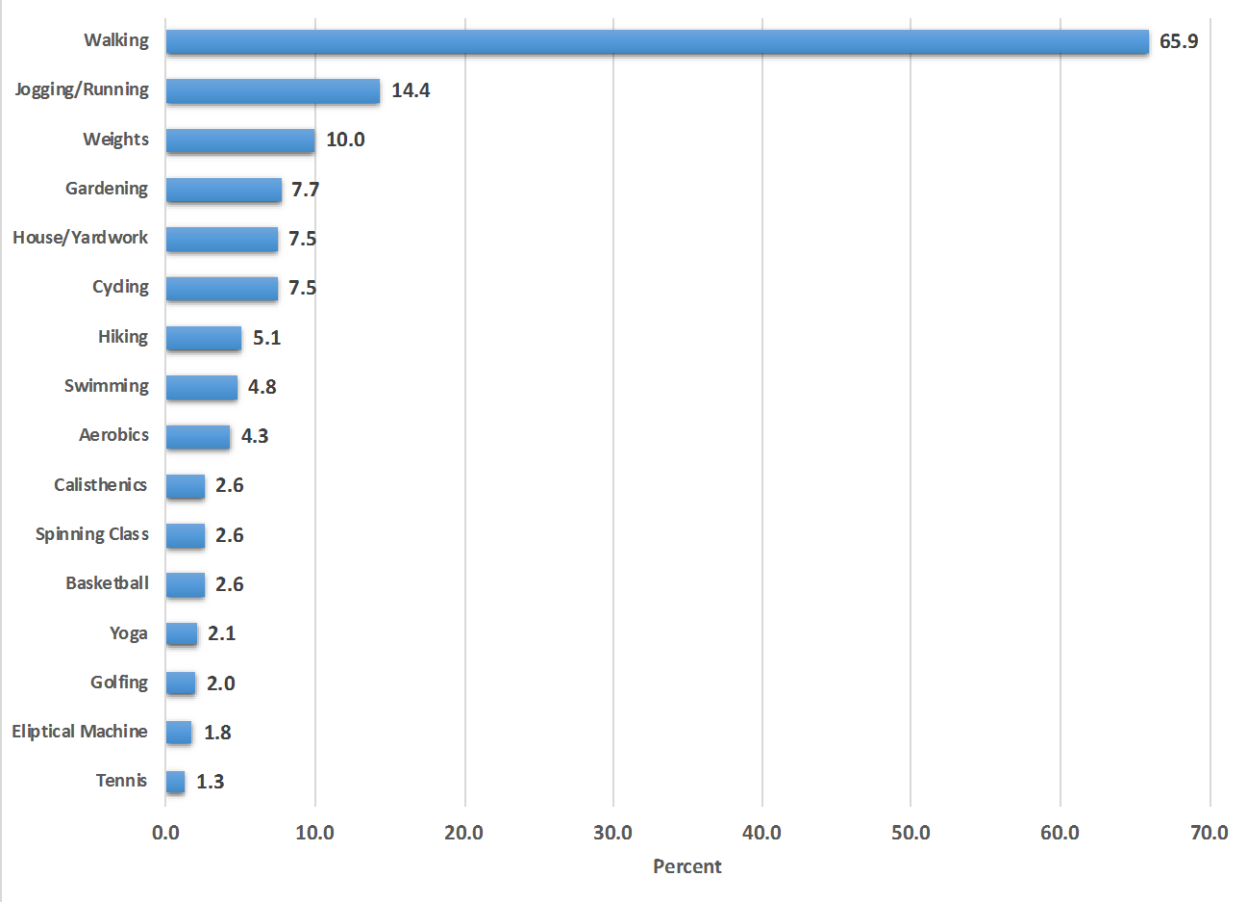
> *"Of course. It's a child who now has grew up in this neighborhood who is a teenager. So now, they go to the park just to use the plugs. They don't play at the park, they use the electricity. I thought, how sad is that? Now this is their new escape place to plug their phones up. So now, what used to be healthy social time, is now another place for them to isolate themselves to do whatever and to what now is destroying people's life. I mean, I didn't have phones growing up. Social time was gathering at parks. I had to go out my way to go meet my friends."* (Focus group participant)

FINDING 2B: MOST COMMON TYPE OF PHYSICAL ACTIVITY

Walking, a moderate-intensity physical activity, was the most commonly observed type of active physical activity for both females (29.3%) and males (26.2%), but levels were much lower than expected. This is interesting in that walking is the most common type of physical activity nationally, and at much higher levels than seen in the City of Knoxville parks. It is also interesting because 9 of the 12 observed parks included walking trails as a feature or allowed access to walking areas.

This discrepancy also was noted between this project's observed walking in the parks versus the self-reported walking obtained through a telephone survey of 851 adult residents across the City of Knoxville. In the City of Knoxville, 65.9% of adults reported that they had walked for LTPA in the past month, a level mirroring the prevalence of walking in the United States. In fact, Figure 6 below shows that walking was by far the most common form of LTPA among adults in the City. Jogging and running, a more vigorous intensity form of walking, was the 2nd most popular form of LTPA. The popularity of walking, jogging, and running for LTPA in the City of Knoxville demonstrates the need for safe areas for people to be active. However, it appears that many adults elect not to do these types of activities at their local park.

Figure 6. Self-Reported Physical Activity of City of Knoxville Adult Residents: Past 30 Days.



Although walking prevalence estimates from the telephone survey and SOPARC observations vary, participants from the six focus groups reported walking as their main physical activity. Other types of physical activity were soccer, baseball, basketball, and Frisbee golf. Additionally, focus group participants mentioned that concerns of safety reduced their willingness to walk in parks.

> *"We use it walking around. It's a nice walking trail there, shaded and there is a picnic pavilion that we've used once or twice."* (Focus group participant)

> *"Um Lakeshore is walking, baseball, soccer, lacrosse, sports, um, the play structure is what we use it for with our granddaughter."* (Focus group participant)

> *"You fall over the bushes and nobody sees you in the deep of the woods. They don't have life alert out there. Help I've fallen and I can't get back up isn't in there. I'm not going in there. Ain't nobody going in those bushes. It ain't safe."* (Focus group participant)

FINDING 2C: ATHLETIC ACTIVITIES

Very few physical activities, both directly observed and those self-reported, involved using an athletic field/court. Among the directly observed primary activities at parks for females, only 12.9% would be traditionally played on an athletic field/court. This percentage was slightly higher among men at 22.2%. The telephone data highlighted the possible low prevalence of adult LTPA in the city that might need an athletic field or court. Only 1% of the LTPAs of female adults in the City of Knoxville would require a court or field (i.e., basketball and tennis). And only 7.4% of LTPA among males would require a court or field. As noted in table one, athletic field/courts are the most common type of feature to be underutilized.

Despite this finding, focus group participants mentioned the lack of available athletic fields/courts. It was perceived that non-participants of organized sports could not use the athletic fields/courts because the sport leagues had priority. Many ballfields, in particular those located at local schools, are owned by Knox County Schools and perceived to be maintained by the City of Knoxville. These ballfields are open to the public unless there is a previously scheduled event for the facility.

> *"Uh, I have a question. Are there any basketball courts in east Knoxville?"* (Focus group participant)

"I would say, with what your question, parks are used when it's organized events going on as opposed to on your leisure. I'm saying they're not used as often as they should be. We speak of all these parks and walkers. Yeah, when you have organized events and football and sports that's going on. I'm talking about your everyday Joe. That's not as often. You don't see that as much." (Focus group participant)

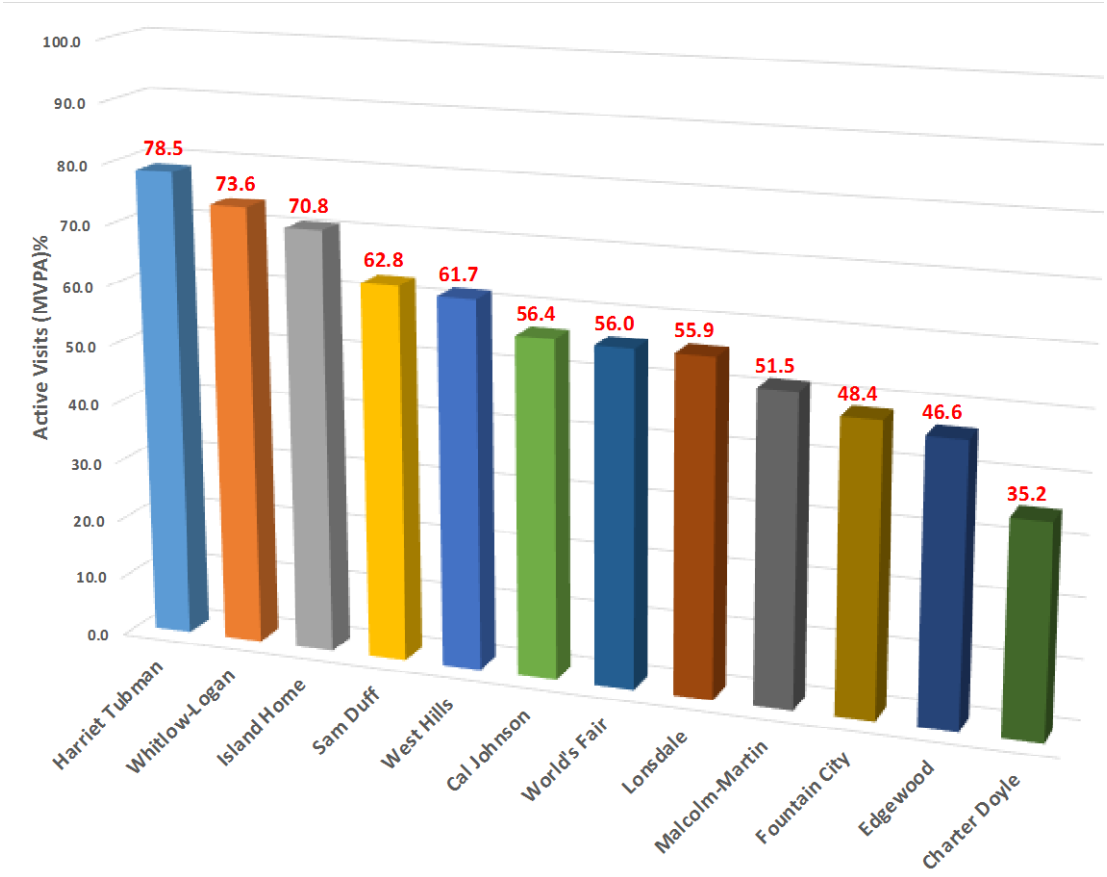
Question 3: What Portion of Park Visits to Local Neighborhood Parks are 'Active Park' Visits?

Active visits to a park involve a person being physically active at moderate- or vigorous-intensity levels when they are the park. Walking and similar activities are classified as moderate-intensity. Jogging, running, or activities like playing basketball are classified as vigorous-intensity. SOPARC methods, when observing people in activity zones in this study, classified these people into three categories: sedentary, moderate-intensity, or vigorous-intensity. Combined, observed moderate- and vigorous-intensity categories were classified as an 'active visit'. This is the type of activity that is considered 'health-enhancing' – the type of physical activity that provides the most health benefits.

Finding 3A: Percent Active Visits

Active visits, reflective of MVPA, vary a great deal across parks– a low of 35.2% (Charter Doyle Park) to a high of 78.5% (Harriet Tubman Park). For example, for every 10 people who visited Harriet Tubman Park, 8 of them were either walking, playing basketball, or jogging around the track. This compares to Charter Doyle where 6 out of 10 users were observed being sedentary, reflective of a passive visit. (See Figure 7 below.)

Figure 7. Percent Active Visits (MVPA) by Local Neighborhood Park.



Finding 3B: Physical Activity Intensity

Community Parks attract users who tend to be more sedentary. Smaller neighborhood parks attract fewer users, but they tend to do higher intensity activities.

Intensity is measured by metabolic equivalents of a person's resting metabolic rate or what is called a MET. We typically measure the intensity of an activity by multiples of resting energy expenditure. For instance, normal brisk walking, a moderate-intensity activity, might be reported to have a MET of 3.3 -- 3 times more energy expenditure than when that person is at-rest. Jogging, a vigorous-intensity activity (depending on the pace) might have a MET of 6.0 or higher.

Figure 8 below reports number of users by gender and park. The red line highlights the average intensity observed among the users of that park. For instance, Cal Johnson had the fewest number of park users (N= 39). However, on average the users were active at a moderate-intensity MET level (3.12 METs). On the other hand, Malcolm-Martin, which had 143 park users observed, saw these users performing physical activities at a MET of 1.92 which indicates that a great deal of sedentary behavior was observed in these users.

Figure 8. Park Use by Park: Gender and Intensity Average

	Harriet Tubman	Lonsdale	Sam Duff	Island Home	Whitlow-Logan	Edgewood	Cal Johnson	West Hills	Fountain City	World's Fair	Charter Doyle	Malcolm-Martin
Females	48	120	96	62	39	59	10	479	456	332	96	48
Males	159	140	225	68	33	68	29	496	400	324	79	95
MET	3.89	3.39	3.37	3.30	3.27	3.14	3.12	3.01	2.89	2.84	2.03	1.92

Focus group participants acknowledged their park visits to be inactive. They referenced the lack of physical activity features or programming to be the cause of inactive park visits.

> *"That's because they don't have anything to do at the parks so right now, they don't want to go because it's not nothing to do. Or if you take them to the park, the oldest one have something to do but the younger one don't. The younger one got something to do and the older one know they gonna have to go babysit the younger one climbing on the rock because it's too big for them. So they really just don't care to do that. I just sit in the house and not go to the park with them and not have nothing to do. I'm not going."* (Focus group participant)

> *"So, what are we doing? Just walking to the park and that's it?"* (Focus group participant)

> *"And nobody uses that tennis court. People don't know how to play tennis . And I hate to say it, or have the equipment to play tennis. So, there are things that exists at certain parks that look good, but would never be utilized. So maybe thinking about restructuring some of those things that are already there, those spaces that are already there and turning them into something a little more useful. Or if you're going to have a tennis court in a lower income area at least provide somebody that's going to do lessons or if you're going to do it and you got to make the space useful. So I guess I don't know if policymakers would do that. But it can go back to programs."* (Focus group participant)

Question 4: What Park Features and Amenities Attract the Most People?

This question is largely answered by looking at the EARPS ParkScore audit data. The possible maximum ParkScore is 65 total points. An overall 'ParkScore' was calculated by summing three Subscores – physical activity, amenities, and aesthetics.

Finding 4A: City of Knoxville Park Quality Score (PQS)

The average Park Quality Score (PQS) for City of Knoxville Parks is 15.5 (Standard Deviation = 7.0 points) out of a possible 65 points. The mean Park Quality Score (PAS) for the City of Knoxville is very similar to the San Diego park system, the park system used to validate the Abbreviated-EARPS. The means for 40 parks in San Diego ranged from 14.4 (10 small parks located in high-income areas) to 19.4 (10 large parks located in low-income areas). PQS and the associated physical activity, aesthetics, and amenity Subscores for each City of Knoxville park is found in Table 3 below.

Note that the physical activity subscore reflects the potential for physical activity using features found in that park. For example, parks that provide mountain biking opportunities (e.g., William Hastie Natural Area, Marie Myers) have lower physical activity scores because of fewer other options for being active.

Table 3. Park Quality Score (PQS) and Subscores by Park.

Rank	Park	PQS	Physical Activity	Aesthetics	Amenities
1	Victor Ashe	32.5	12.3	5.6	14.7
2	Morningside	31.0	9.8	6.5	14.7
3	Ijams Nature Center	30.1	5.5	8.9	15.7
4	Lakeshore	29.2	8.0	5.6	15.6
5	Tyson	28.4	11.7	4.2	12.5
6	Malcolm-Martin	28.3	11.3	5.3	11.6
7	World's Fair	28.2	7.9	7.7	12.6
8	Inskip	26.8	12.0	2.3	12.6
9	Sam Duff	26.4	8.6	5.4	12.5
10	Caswell	26.0	9.0	4.5	12.6
11	West Hills	24.9	8.1	4.3	12.5
12	Northwest Middle School	24.9	11.4	3.1	10.3
13	Suttree Landing	24.0	8.0	5.6	10.4
14	Holston River	23.6	7.8	3.3	12.5
15	Adair	23.4	6.2	4.5	12.6
16	Fountain City	22.6	7.7	5.5	9.5
17	Charter Doyle	22.3	9.6	2.1	10.5
18	Baker Creek	22.0	8.3	4.3	9.4
19	Sequoyah Hills	22.0	6.1	5.5	10.5
20	Lonsdale	22.0	8.4	2.0	11.5

Table 3. Park Quality Score (PQS) and Subscores by Park (Con't)

Rank	Park	PQS	Physical Activity	Aesthetics	Amenities
21	Westwood	21.3	8.5	3.4	9.4
22	Holston Chilhowee Ballpark	20.9	7.3	3.3	10.4
23	Harriet Tubman	20.8	7.2	2.2	11.4
24	Volunteer Landing	20.5	3.3	7.7	9.5
25	Mary Vestal	20.4	6.9	4.1	9.4
26	Island Home	20.1	8.4	3.3	8.5
27	Parkridge	19.1	7.1	4.5	7.5
28	Westview	18.8	6.3	3.1	9.4
29	Krutch	17.5	3.4	6.7	7.4
30	Dr. Walter Hardy	17.1	4.3	4.3	8.4
31	Forks of the River	17.1	3.3	6.5	7.3
32	Third Creek Greenway	16.5	4.9	4.1	7.4
33	Fourth & Gill	16.3	5.6	2.2	8.4
34	Gary Underwood	16.2	5.6	2.2	8.4
35	Fort Kid	16.1	5.4	4.3	6.3
36	Cal Johnson	16.0	5.7	2.1	8.2
37	Christenberry Ballfields	15.9	7.3	1.2	7.4
38	Scottish Pike	15.8	4.1	3.2	8.5
39	Old North Knoxville	15.7	6.1	2.3	7.3
40	Safety City	15.6	4.2	1.0	10.4
41	Edgewood	15.5	6.9	1.2	7.4
42	Alice Bell Ballfields	15.3	5.9	1.1	8.3
43	Mary James	15.1	5.6	3.3	6.3
44	Fort Dickerson	14.9	2.0	4.4	8.5
45	James Agee	14.9	4.3	4.3	6.3
46	Danny Mayfield	14.7	6.1	3.3	5.3
47	Cumberland Estates	14.7	4.1	2.2	8.4
48	North Hills	14.4	5.9	1.1	7.4
49	Happy Homes	13.9	5.6	1.0	7.2
50	William Powell (Linden Ave)	13.8	7.5	1.0	5.3
51	Deane Hill	13.8	5.3	2.3	6.2
52	Joe Foster	13.7	5.3	1.0	7.4
53	West Haven	13.4	3.9	3.2	6.2
54	Claude Walker	13.3	4.1	0.0	9.2
55	Skyline	13.2	5.8	1.1	6.3
56	Maynard Glenn Ballfields	13.0	2.4	1.2	9.4
57	Riverside Landing	12.9	2.6	3.0	7.3
58	Paul Hogue	12.7	5.3	0.0	7.4
59	James Smith	12.3	3.8	1.1	7.3
60	Everly Brothers	11.9	3.2	4.4	4.3
61	Fulton Bicentennial	11.9	3.7	3.1	5.1

Table 3. Park Quality Score (PQS) and Subscores by Park (Con't)

Rank	Park	PQS	Physical Activity	Aesthetics	Amenities
62	First Creek	11.9	3.5	3.2	5.2
63	Cecil Webb	11.8	4.3	3.3	4.2
64	Bearden MS Ballfields	11.8	6.5	1.1	4.2
65	Rock City Ballfield	11.3	2.8	2.1	6.3
66	Forest Heights	11.0	2.4	2.3	6.3
67	Inskip Ballfields	10.9	2.7	0.0	8.2
68	Fountain City Ballfields	10.8	2.4	1.1	7.3
69	Frajan Campbell	10.8	3.5	2.0	5.3
70	S&J Colquitt	10.7	4.4	2.2	4.2
71	Mont Castle	10.6	4.1	1.1	5.4
72	Cradle of Country Music	10.5	1.8	5.4	3.3
73	Sharp's Ridge	10.3	2.0	2.1	6.2
74	Rocky Hill Ballfields	10.0	2.6	1.1	6.3
75	Meadow Circle	9.8	3.6	0.0	6.2
76	Community Unity	9.7	5.6	0.0	4.1
77	Fountain City Skate	9.6	5.4	1.1	3.1
78	William Hastie Natural Area	9.1	1.7	2.2	5.2
79	Olde Mechanicsville	9.0	2.7	2.1	4.2
80	Whitlow-Logan	8.4	5.1	1.1	2.2
81	Babe Ruth	8.3	4.2	1.0	3.1
82	New Hope	8.2	2.8	2.2	3.2
83	Roseanne Wolf Picnic Area	7.9	2.6	2.2	3.1
84	Talahi	7.1	1.6	3.4	2.1
85	Ledgerwood	6.9	1.4	2.3	3.2
86	Baxter Avenue	6.9	4.7	0.1	2.2
87	Boright	6.3	4.0	0.1	2.2
88	Highland	6.0	1.6	3.3	1.1
89	Stanley Lippencott Ridge	5.7	2.5	2.2	1.0
90	River Bluff Wildlife Area	5.4	1.0	3.3	1.2
91	Williams Creek Urban Forest	5.2	2.9	2.3	0.0
92	Marie Myers	4.2	2.0	1.1	1.1
93	Reed & Baxter	2.3	1.2	1.0	0.0
94	Luxmore Drive Natural Area	1.1	0.0	1.1	0.0

Finding 4B: Park Quality Score by Park Type

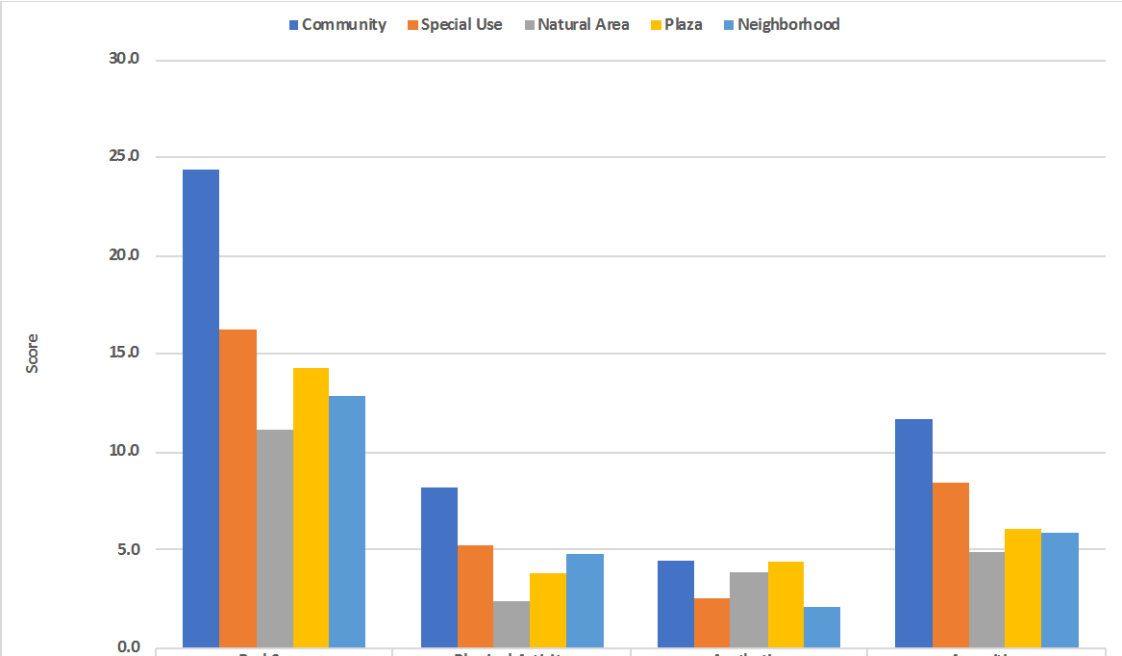
Community Parks (e.g., Victor Ashe, Morningside, Lakeshore, West Hills Parks), compared to all other types of Knoxville City Parks, offer the widest range of opportunities for active visits, have more attractive amenities, and are aesthetically pleasing to visit. This finding should not be surprising in that community parks have been designed to serve a 'broader purpose and community population' compared to neighborhood parks. (Knoxville-Knox County Metropolitan Planning Commission, 2011)

Using the 2009 Knoxville-Knox County Park, Recreation, and Greenway plan, this report classified the parks into 5 distinct categories for comparison.

- Community Park: Larger parks that serve people across greater geographical areas and that accommodate a wide range of activities.
- Special Use Park: Parks that accommodate special activities (e.g., World's Fair, Baker's Creek, Holston Chilhowee Ballpark)
- Natural Area: lands that are set aside for the preservation of natural resources, landscapes, and open spaces
- Plaza: opens spaces for passive recreation and civic purposes (e.g., Krutch Park)
- Neighborhood: Close-to-home parks within an easy walk or drive that includes spaces for active recreation (e.g., Edgewood, Cal Johnson, Scottish Pike Parks)

A comparison of Park Quality Scores (PQS) across these park categories is located in Figure 9.

Figure 9. Park Quality Scores and Subscores by Park Type.



	ParkScore	Physical Activity	Aesthetics	Amenities
Community	24.3	8.2	4.5	11.7
Special Use	16.2	5.2	2.6	8.4
Natural Area	11.1	2.4	3.9	4.9
Plaza	14.3	3.8	4.4	6.1
Neighborhood	12.8	4.8	2.2	5.9

Key informants and focus group participants could easily identify park type and the features and amenities offered by each.

Community Park: *"With Victor Ashe Park, I know my family we do soccer, volleyball, walking, we like to watch the dogs at the dog park, the play structure, and I guess as a way to fellowship because I know on Sundays there's food that's available and you can just hang out. You gotta pay for it though, but it's still like a nice community of people to just meet new people."*

Pocket Park: *"The Tank Strickland Park is a small area, about 3 acres of land. We call it a pocket park, it joins the Burlington Library. It lays between Asheville Highway and Holston Drive."*

Special Use Park: *"There are other events throughout the year like car shows, antique shows, art shows, concerts, dog and cat shows, gun shows, and of course the Tennessee Valley Fair which lasts for 10 days. While it is a multi-use park it does lack green space for the community."*

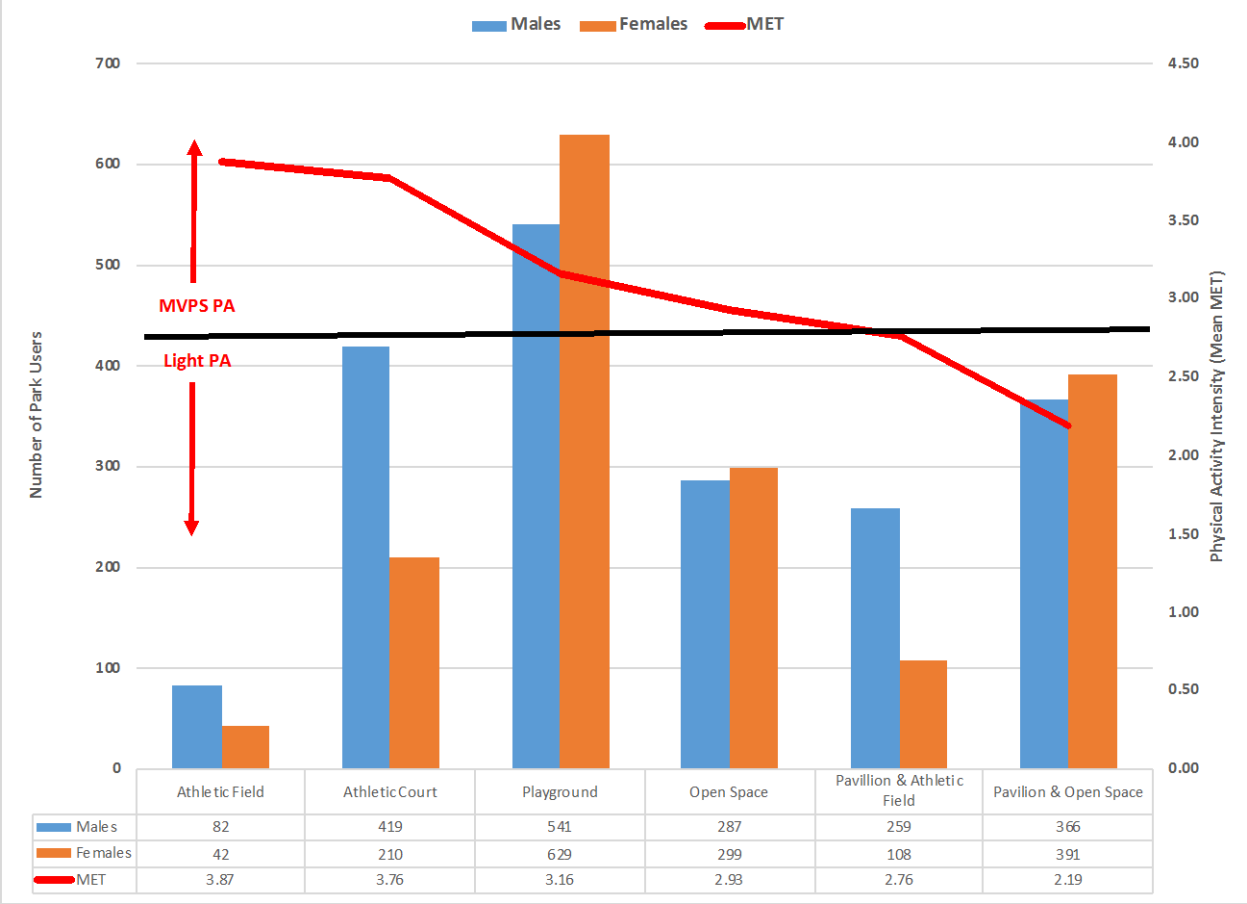
Natural Park: *"Adair Park has entrance kind of at both ends and it's quite a bit of playground equipment. Another thing's that the kids like is the pond that's got turtles and things like that so they get a little nature study going too."*

Neighborhood Park: *"Because of Parkridge, the good thing about it being a backyard, it's lovely and kind of feels safe. They can kind of look out the back window and watch the children still."*

Finding 4C: Physical Activity by Park Zones

Playgrounds are the most used activity zone, in addition to having high levels of MVPA equal to a MET average of 3.16. Clearly, playgrounds get used a great deal with over 1,170 users of the park observed in this physical activity zone (See Figure 10 below.) Still, as seen in Table 1, 64.4% were empty during the course of this study with athletic fields and courts had very fewest park users. With the exception of males using athletic courts, athletic facilities did indeed have low numbers of users, but they were associated with the highest intensity of physical activity (Athletic Fields MET mean = 3.87; Athletic Courts MET mean = 3.76).

Figure 10. Park Use by Gender, Physical Activity Zone, and Intensity Average.



	Athletic Field	Athletic Court	Playground	Open Space	Pavillion & Athletic Field	Pavilion & Open Space
Males	82	419	541	287	259	366
Females	42	210	629	299	108	391
MET	3.87	3.76	3.16	2.93	2.76	2.19

Key informants and focus group participants acknowledged frequent use of playgrounds. They also mentioned use of athletic fields and courts.

> *"The playground equipment is used a lot by people who come to the park with their kids."* (Focus group participant)

> *"We go to that little playground park right there and also Alex Haley Park."* (Focus group participant)

"So the parks that usually have a basketball court, they probably go almost every day, particularly when there is nicer weather. As far as Chestnut Park, um, because it's nested within homes, kinda surrounded, I think I see more kids playing there. Hardy Park, which is the one that I consider close to me doesn't really have a playground...playground features to it. It just has the picnic bench, um, it has kinda of like a stage and seating area for that. So, for me, it's good for cookouts or gatherings more so than recreation and play. Um, unless you just wanna go sit in the park." (Key informant)

Question 5: How Equitable are the City of Knoxville Parks by Location, Physical Activity Features, Aesthetics, and Amenities?

As mentioned in the introduction, we know that local parks are important spaces for physical activities, (Buchner & Gobster, 2007; Kruger et al., 2007) and that the closer people live to a park the more likely they are to use the park to be active (Bancroft et al., 2015). Local parks provide two opportunities to be active – first, the person in that neighborhood near the park can actively walk to the park and second, they can actively use the amenities found in the park (Buchner & Gobster, 2007).

This question sought to determine if people at-risk for diabetes and obesity are 'park poor' (i.e. no parks near where they live), with the proximity to a local park being a barrier to their being physically active (Sallis et al., 2012)? To answer this question we classified five Knoxville census tracts (19, 20, 21, 67, and 68) with the highest prevalence of diabetes and obesity as at-risk areas to examine whether park inequities existed for these census tracts. We also looked at inequities across the five park and recreation planning sectors.

Finally, in the telephone survey of adults in the City of Knoxville (N=851) participants were asked if they perceived that local neighborhood recreation facilities received equal resources. Also, we asked if they thought that people in their neighborhood had equal access to public recreation facilities.

Finding 5A: Park Equity by Park Location

There is park equity throughout neighborhood and community park location in the City of Knoxville. The number and size of parks, across both at-risk census and planning sectors, had no significant differences. Table 4 below highlights the size of parks according to planning sector and at-risk census areas.

Table 4. Park Size by At-Risk Census and Park Planning Sectors.

		Parks (N)	Park Size (Acres)		
At-Risk Census (Health)			Median	(IQR)	p-value
	Yes	15	4.4	(2.1-15.6)	0.3558
	No	79	6.3	(1.2-18.4)	
Park Sectors					
	Downtown	6	1.5	(0.4-12.5)	0.1054
	East	19	4.6	(2.1-14.0)	
	Northwest	16	4.3	(0.4-13.1)	
	North	16	4.7	(0.8-16.7)	
	South	21	7.6	(4.5-68.7)	
	West	15	5.5	(1.3-39.2)	

Note: IQR= Inter Quartile Range (25^{th}—75^{th} percentiles)

This finding was also noted among adults across the City of Knoxville who were asked via telephone survey if they felt that all people in their community had equal access to public recreation facilities. Overall, 80.1% of adults felt all people had equal access to public recreation facilities. When this question was examined by income of the household -- above or below median City of Knoxville income of 35K, there were no significant differences, 82.3% for below median income, and 81.0% above median income. People who did no leisure-time physical activities (LTPA) in the past month, compared to active people, also had similar perceptions of equal access – 83.1% inactive versus 80.8% of active residents.

Still, roughly 2 out of 10 adults felt there was not equal access. Key informants and focus group participants from census tract 14, located in the Northwest park planning sector, vehemently believed their community lacked parks (park location inequity). These community members also perceived their community as lacking in other social determinants of health (economic and social conditions that influence the places where people live, learn, work, and play). Residents reported the use of playgrounds at the local school and at a local religious center. Residents also used other community resources, such as the Boys and Girls Club, for recreational purposes.

> *"Okay. Umm, parks in our neighborhood… um there isn't really any parks in our neighborhood. Um, basically, the school has now an open playground policy where it is basically open all the time to anybody. That would be considered um the neighborhood park per se…um, there is one up close at Baptist Center that's kind of like a park-ish area for people to be at. Um, but that's the only thing around this facility that people would use as a park."* (Key informant)

> Participant 1: *"We don't have one. There's nothing to use."*
> Participant 2: *"Exactly. There's nothing, nothing here. I don't even know where the closest park is besides the Baptist center if you want to call that a park. It's tiny. I mean, that's so tiny."* (Focus group participants)

Finding 5B: Park Equity by Park Quality

There is equity in park quality associated with physical activity features, aesthetics, and amenities. This finding is based on Table 5 below using the ParkScore and Subscores, which were compared by at-risk census tracks and park planning sectors. With one exception, there were no significant differences in the comparisons. The lone exception was with aesthetics in which the downtown parks had significantly greater levels compared to all other park planning sectors ($F_{5,87} = 5.37$; $p<0.0001$)

Table 5. ParkScore and Subscores by At-Risk Census and Park Sectors.

	Park (N)	Park Quality Score Mean (SD)	Physical Activity Mean (SD)	Aesthetics Mean (SD)	Amenities Mean (SD)
At-Risk Census (Health)					
Yes	15	16.3 (6.8)	5.8 (2.2)	2.5 (1.9)	8.1 (3.8)
No	79	15.1 (7.0)	5.1 (2.8)	3.0 (1.9)	7.1 (3.6)
Planning Sectors					
Downtown	6	17.9 (6.0)	4.3 (2.1)	6.0 (1.6)	7.6 (3.2)
East	19	16.1 (6.3)	5.6 (2.2)	2.4 (1.7)	8.1 (3.5)
Northwest	16	15.7 (8.6)	6.2 (3.7)	2.3 (1.6)	7.2 (4.1)
North	16	13.0 (5.4)	4.4 (2.1)	2.2 (1.4)	6.4 (3.2)
South	21	15.5 (7.1)	5.0 (2.6)	3.3 (2.2)	7.2 (3.7)
West	15	15.8 (8.2)	5.4 (3.1)	3.1 (1.6)	7.3 (4.4)

Finding 5C: Perceived Park Quality Inequity

There is a perception of park quality inequity among adults in the City of Knoxville. In the telephone survey 55.5% of adults across the City of Knoxville felt that their neighborhood seldom or never gets its fair share of public money allocated to public recreation facilities. This level of perceived inequality is particularly higher among people who are physically inactive (66.5%) and those who live in households below the median income of 35K (57.8%).

Also, in contrast to the Park Quality Scores, key informants and focus group participants from low-income communities (census tracts 19, 20, 21, 67, and 68), who are at greater risk for type 2 diabetes than those from affluent communities, perceived park inequity related to features, aesthetics, and amenities in parks. Although these participants reported that they did live within walking distance to a park, they believed that the physical activity features, aesthetics, and amenities of their neighborhood parks were of lower quality compared to parks in higher-income neighborhoods which are less at-risk for type2 diabetes. Participants reported broken playground equipment, damaged athletic courts, and a lack of other physical activity features, as well as a lack of amenities such as water fountains, restrooms, benches, and areas with shade.

> *"Run down. I mean, when I say run down, I mean it needs to be upgraded. I'm in walking distance of Linden Avenue Park, but there's nothing there. The basketball goals are…the goals are there, but where's the… I'm gonna say net, it's gone. There's no sprinkler system. The equipment there is so old, it's about as old as me. It just needs to be upgraded."* (Focus group participant)

> *"They're not created equal. Some of the parks have those nice cushy mats. This one has like woodchips and holes that have been dug in and my son tripped because his foot got stuck in the hole. Like they don't smooth it out."* (Focus group participant)

> *"So, um, there are a lot of concerns about basic structural amenities that the communities feels are lacking from the park. So the big one is bathrooms."* (Key informant)

> *"Because it's so hot. I've heard people say it's so hot down there because it's no shade, no water or nothing. People go there I think to sit and read, but very seldom do you see kids on the play equipment because it's so hot during the summer."* (Focus group participant)

Finding 5D: Community Pride and Park Assets in Low-Income Communities that may Counter Perceptions of Park Quality Inequity

Although there is a perception of park quality inequity in low-income at-risk census tracts, focus group participants expressed community pride, including the contributions of historical figures, neighborhood associations, and other community groups to parks and the community. Participants attributed recent park renovations to a community organization. They identified community celebrations and church services at parks as sources of community unity. They also voiced the importance of increasing awareness of historical figures from their communities to Greater Knoxville.

> *"This park has brought a lot of pride in the community. And actually increased property values in that area. Because it's been cleaned up, I can't think of any better use for that area. It wasn't large enough really to develop, but the park is something for the community and it helps the community. And yes, I actually saw attitudes change and a lot of people came to work on it [the park]. And a lot of the new people now, don't have any idea of what it used to look like. If I'm talking about the park one of the first things I ask is 'show of hands is who remembers what it was before' and it's getting less and less. Which is a good thing."* (Focus group participant)

> *"They have the Kuumba fest too in Morningside Park. They have that over a lot. And I think Mount Olive [Church] occasionally they have had their church service over in Morningside Park too where it was open to the public and they serve food."* (Focus group participant)

> *"You got Alex Haley park right there. You know, we already have some information about him right there. But you know, you can make a biking tour or a walking tour and get to know your city and learn and bring…Let people be proud…."* (Focus group participant)

Finding 5E: The Potential Role of Ethnic/Racial Tensions in Perceptions of Park Quality Inequity

Socio-cultural factors may also have influenced perceptions of park quality and park use. Multiple African-American focus group participants mentioned that socio-cultural issues influence how they interact with other ethnic/racial minority community members as well as influencing how they use their parks and recreation environment. Although focus group participants perceived their neighborhood parks to be of poor quality, they also saw themselves as being displaced from these parks. African-American participants disclosed feelings of being discouraged from park use, and reported resentment toward Latino-American park users, who use the parks heavily.

> *"It's by Linden Park but the goals don't have nets. It's just the goals that's been up there for 20-30 years. It's not been updated at all. Ain't no lines on the court you know. You imagining the 3 point, you know where you at. So it's really maybe a goal on one side but not over here. So you can't really play team to team. You can just play one shot, and everybody is going to the same goal. But it's like 3 or 4 of them but you can't really like have a game, versus, you know It's more like for them to just shoot. Then it's one down by Austin Homes but the Mexicans have really taken that park over."* (Focus group participant)

> *"And they do like to have cookouts. I know Cinco de Mayo that's really big down there. I'm talking about, what's going on down there? Oh that's not for us."* (Focus group participant)

These feelings of being displaced from historically Black neighborhoods by other ethnic/racial minorities may be conflated with gang tensions. African American focus group participants were primarily older adult women, and not likely to be involved in gang activities, but they provided observations of gang activities in their neighborhood parks. These gang activities impact interactions between all community members regardless of their affiliations with gangs.

> *"You know the one where I see Hispanics there all the time. Honestly I've never been there. When I drive past there I get intimidated. I know that's horrible because of who I see over there. Because you know some of the gangs here are Hispanics and they're fighting the black gangs too. But um, I don't know what goes on over there. I don't know."* (Focus group participant)

Question 6 -- How Accessible are City of Knoxville Parks to Nearby Residents?

A major barrier limiting the use of local parks relates to the accessibility, either real or perceived (Sallis, Floyd, et al. 2012). People may live within a 10-minute walk to a local park, but may not be able to safely walk or bike on the route leading to the park. For instance, if a park is bordered by roads with high-volume automobile traffic that lack sidewalks, bike lanes, or safe crossings, they may not feel safe walking or biking to the park. And if that person lacks access to a car or if public transit is not linked to their local park, the person may just not attempt to visit their park.

Finding 6A: Knoxville Residents and Park Proximity

One in every two people living in Knoxville live within a 10-minute (0.5 mile) walk to a park. In Knoxville, ParkServe, a database of The Trust for Public Land (2019), reports that 49.9% of Knoxville residents, compared to 54% of people in the United States, live within a 10-minute walk (0.5 miles) to a local park. Beyond this distance of a half-mile most people will skip a trip to the park or will elect to drive to a park (Harnik & Simms). In terms of visual observation, 86.2% of City of Knoxville Parks have neighborhoods located near them. Using local data available from the 2016 Knox County Behavior Risk Factor Survey (KCHD, 2016), 44.9% of residents living in the City of Knoxville live within a 10-minute walk to a local park. For all Knoxville residents it takes 14.9 (SD = 13.3) minutes to walk to their nearest park.

In this same survey, 12.9% of the City of Knoxville residents reported that they have diabetes. Also, 27.4% of Knoxville residents were found to be physically inactive in their leisure-time. However, in terms of access to parks, there were not significant differences between diabetics and non-diabetics or active versus sedentary residents.

Live within a 10-minute walk to local parks

- 46.6% diabetics vs. 44.9% non-diabetics (p=0.7578)
- 45.3% sedentary vs. 44.8% physically active (p=0.9063)

Data from the key informant interviews and focus groups also show that participants live within walking distance to neighborhood parks. However, participants did not report diabetes status.

> *"I know Paul Hogue Park is right in a residential area. So it's very easy for a lot of people to walk there, bring their kids, their families there. It's not a, it's not really a parking area there. So it's, I guess, more geared towards people that live there."* (Focus group participant)

> *"I mean, it's probably right at a mile from our neighborhood, umm… because the one in ours is really, really small geographically, but uh we regularly walk to Tyson Park from my house along Third Creek Greenway, so people driving, or biking, or walking and it's relatively accessible."* (Key informant)

Finding 6B: Parks and the Built Environment

The built environment near a park relates to its potential for physical activity. This finding relates to the presence of sidewalks and greenways linked to the park. Also, the walkability, bikeability, and availability of public transit for residents near the park reflect the likelihood that a nearby resident can access the park. Here are the factors:

Sidewalks

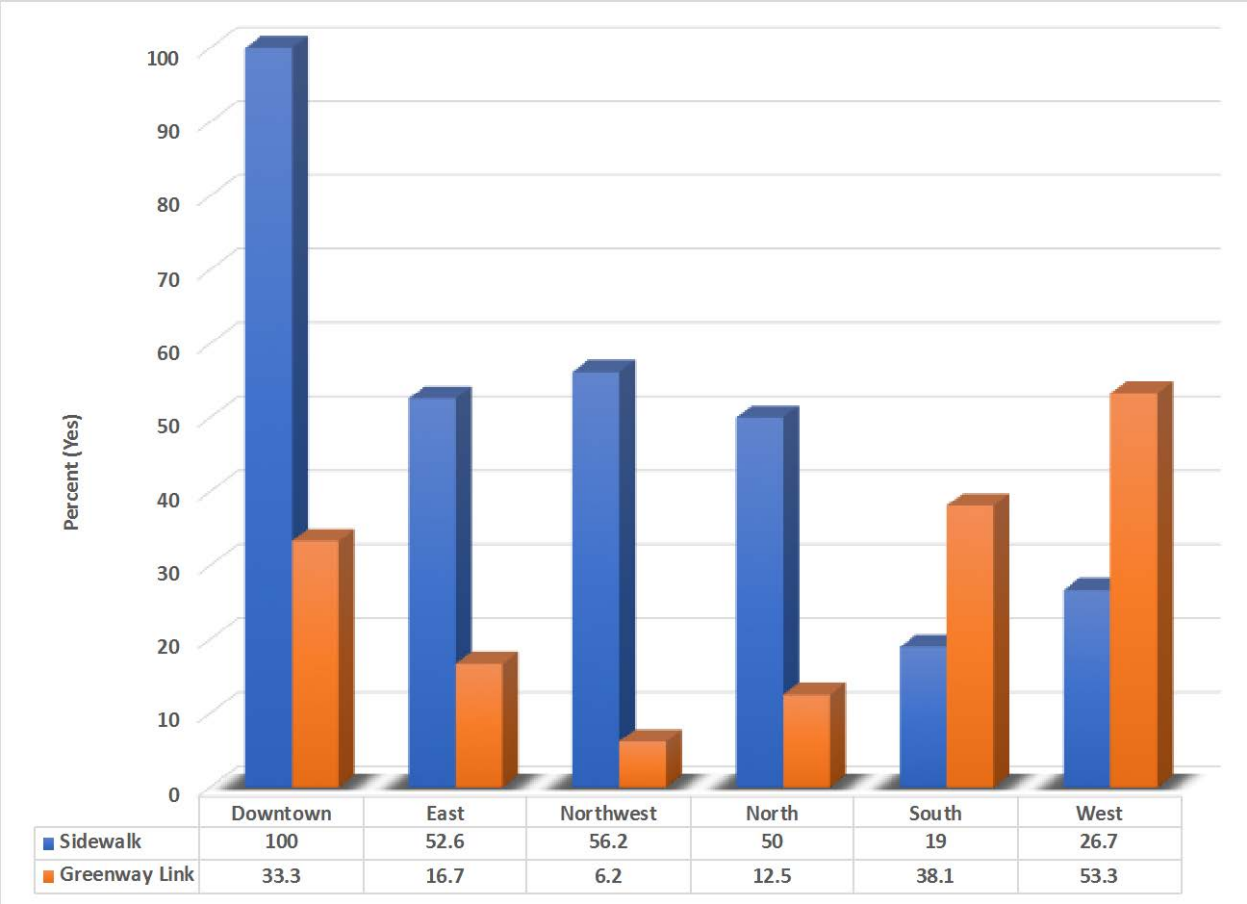
- 44.7% (N=42) of parks in the City of Knoxville have sidewalks present along the boundary of the park perimeter.
- Parks with sidewalks have a significantly higher potential for physical activity than parks without sidewalks (5.9 vs. 4.7, $F_{1,92} = 5.26$; p=0.0240)

Greenways

- 25.8% (N=24) of the Knoxville parks are linked to greenways.
- Parks that are linked to a greenway have the following positive attributes:
  - Higher ParkScores (20.9 vs. 13.4, p<0.0001)
  - More potential for physical activity (6.6 vs. 4.7, p=0.0039)
  - Better aesthetics (4.5 vs. 2.3, p<0.0001)
  - More amenities (9.9 vs. 6.3, p<0.0001)

Where a previous finding found no inequities across the park system, the existence of sidewalks and greenway links does vary by planning sector (See Figure 11 below). Related to the presence of sidewalks, there are significant differences ($X_2 = 16.5$; p=0.0054) across park planning sectors with the South and West sectors having the lower presence. Greenway linkage also shows significant differences by planning sector ($X_2 = 13.1$; p=0.0221). The North, Northwest, and East sectors have many fewer connections to greenways.

Figure 11. Sidewalk Presence and Greenway Linkage by Park Planning Sector.



	Downtown	East	Northwest	North	South	West
Sidewalk	100	52.6	56.2	50	19	26.7
Greenway Link	33.3	16.7	6.2	12.5	38.1	53.3

Data from the key informant interviews and focus groups corroborated the finding that the existence of sidewalks and greenway links differed by planning sector. Key informants and focus group respondents reported that sidewalks in neighborhoods, sidewalks leading to parks, and sidewalks at parks varied.

> *"It's a hit or miss. Hit or miss. Yes. Hit or miss. The street that I live on doesn't have sidewalks.... it's kind of secluded so you actually can walk if I come out my driveway and go to the left, there are no sidewalks. If I come out and go right, there's some sidewalk to a certain point on this side. So it's really truly hit or miss."* (Key informant)

> *"There's not always sidewalks to get to things like gazebos. For those in wheelchairs, I remember we had our voting party at Paul Hogue, and one our teammates has cerebral palsy so she was in a wheelchair. It was really difficult trying to get from the sidewalk to where the event was happening. And if it rains, that's even worse."* (Focus group participant)

Discussion on greenways also varied. Participants acknowledged that some parks are connected to greenways. Participants also considered greenways to be parks or places for leisure-time physical activity.

> *"Victor Ashe is pretty accessible in several ways you can get there. There's a greenway that attaches to it so yeah, it's pretty accessible."* (Focus group participant)

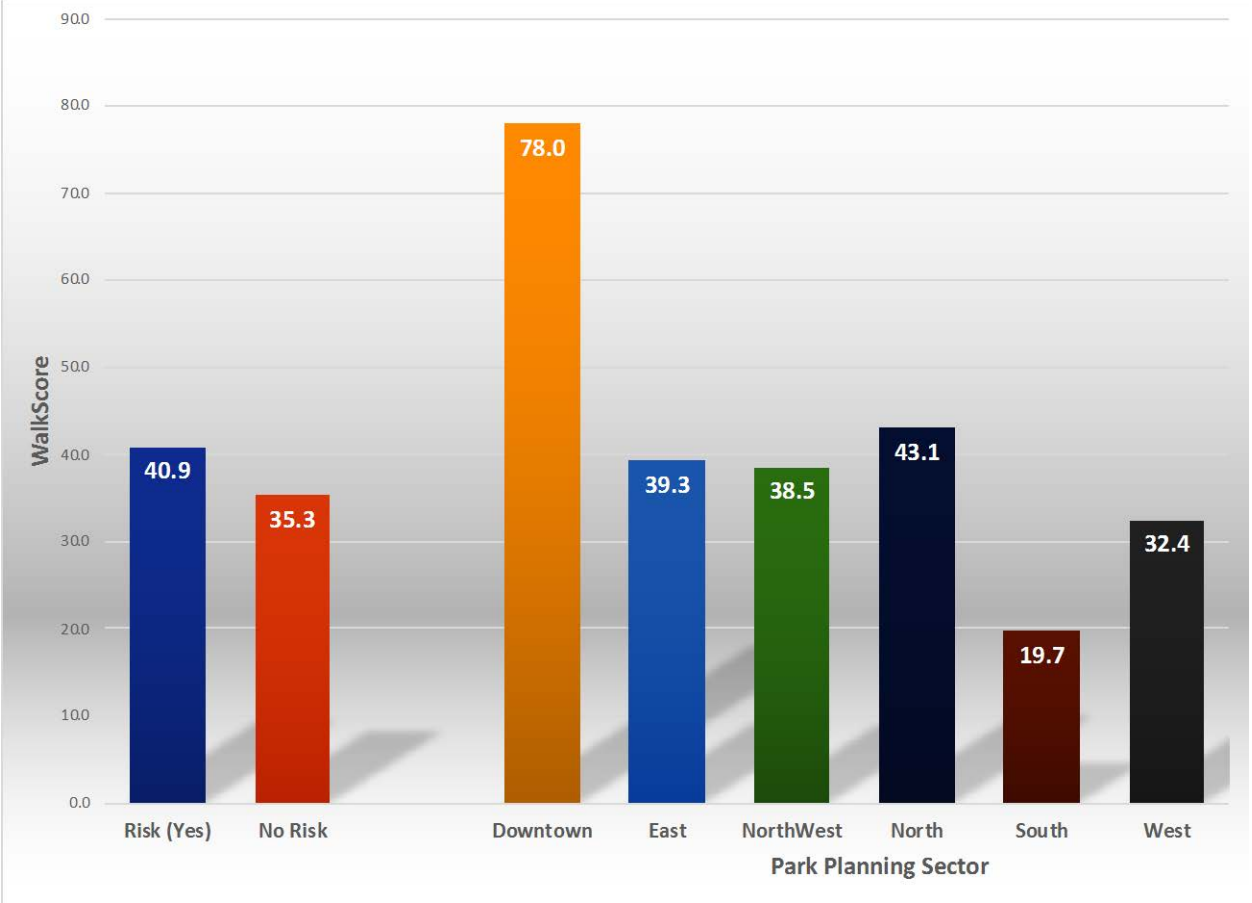
> *"But there was a program going on once upon a time where they were trying to get all of the greenways to connect. You can leave one and go to the other one. Where you could walk and they were going to put lights up. I think the closest one over here would be off Chestnut. It was going to be a nice thing if they did it, but it's a nice walking trail where seniors go out and walk. Walk, sit. Something like that. We ain't trying to do a whole lot."* (Focus group participant)

> *"Then there's a greenway a mile the other way, which I consider that a park… They're easily accessible to where I live."* (Focus group participant)

Finding 6C: Walkability, Bikeability, and Available Public Transit

Potential park users will be challenged to use active transport (walking/biking) or using public transit to access their local park. Across all parks, Knoxville residents living within a 10-minute walk of a park have a walkability score of 36.7 (SD=24.7), a WalkScore reflective of people living in an area deemed car-dependent. However, there are significant differences across park planning sectors ($F_{5,87}$ = 7.82; p<0.0001) (See Figure 12). Downtown residents live in an area with a walkability index of 78.0, which means they should be able to walk/bike to a local park. Conversely, residents living in the South planning sector have a walkability index of 19.7, which means they would almost always need to take a car to go to a local park. There was no difference of walkability by census tracts, at-risk versus no-risk tract ($F_{5,87}$ = 0.5; p<0.4798).

Figure 12. Walkability (WalkScore) by At-Risk Census and Park Planning Sectors.



A more detailed profile of walkability, bikeability, and available public transit is found in Table 6 below.

BikeScore: The bikeability (BikeScore) scores reflected 'bikeable' areas for the downtown and East planning sectors. However, all areas near the parks were similar with one exception – the bikeability of the downtown sector is significantly higher than the South planning sector.

Public Transit: Downtown residents have very good access to parks via public transit (TransitScore = 61.7). Residents in the remaining sectors have some access to public transit around the park areas. The only significant difference was between the downtown and South planning sectors, with the South having the lowest public transit access near parks. When examining the walk-time between Knoxville Area Transit stops at the top-20 parks according to park quality scores (See table 3), a resident wanting to visit these parks has an average walk of 8.6 minutes to reach the park, a time and distance on the very edge of where a person will elect not to visit the park.

Finally, it is interesting to note that as the size of a park increases, the walkability and access to public transportation decreases. As parks get larger, fewer people may be able to access them by walking/biking or public transportation.

Table 6. WalkScore, BikeScore, and TransitScore of Areas Near Local Knoxville Parks.

		Park (N)	**WalkScore** Mean (SD)	**BikeScore** Mean (SD)	**TransitScore** Mean (SD)
At-Risk Census (Health)					
	Yes	15	40.9 (21.8)	47.9 (18.0)	41.3 (15.0)
	No	79	35.3 (25.3)	38.1 (17.4)	30.6 (14.2)
Planning Sectors					
	Downtown	6	78.0 (14.7)	55.1 (11.1)	61.7 (3.9)
	East	19	39.3 (21.6)	44.7 (17.8)	37.1 (16.8)
	Northwest	16	38.5 (26.5)	35.1 (18.6)	28.8 (11.7)
	North	16	43.1 (22.2)	33.8 (6.1)	33.8 (6.1)
	South	21	19.7 (15.4)	25.2 (13.1)	25.2 (13.1)
	West	15	32.4 (21.7)	26.9 (9.9)	26.9 (9.9)

Key informants and focus group participants typically reported that parks were walkable and bikeable. However, a concern for several participants was the lack of transportation to and from parks. Several participants voiced the need for city bus routes to include stops at parks.

> *"I don't know, some people that live nearby will ride their bikes over to the trail, some people actually come and park and drive from near-by areas and ride the trails."* (Focus group participant)

"I don't think there's a bus that goes to a whole lot of those parks. I always drive to get to where I'm going. If you don't drive I imagine it would be a real issue. That's probably the biggest thing I would probably vote for is to put walkways and bike paths you can go from one park to another. There's some people would go quite a ways if they didn't have to worry about traffic. Traffic is a big problem." (Focus group participant)

"A lot of people are choosing to be able to connect to the things they want to do through public transportation whether that's a KAT bus or whether that's a greenway or bicycle or walking or you know some kind of private transportation service or something like that. But I think that's increasingly going to be more important as we move forward because there's a great resurgence of people who want to live in you know, the downtown, and everything." (Key informant)

Finding 6D: Ideas about Park Policies and the Built Environment

Focus group participants provided suggestions on how to improve park use with changes to the built and policy environments. Although focus group participants, in general, wanted changes that impacted the built environment of the entire community, many suggested environmental policy changes that would help increase visibility of parks, park features, and the City of Knoxville Parks and Recreation Department.

> *"And I mean in underrepresented communities it'd be great to have a library, community center and a park right there. Because that activity, positive activity is going to be getting more positive activity and people who are like here at the park are gonna see what's going on at the library, community services, oh, there's a meeting here about something that's positive or productive or helpful to the community and they would be more aware of it."* (Focus group participant)

> *"They're not. They're not. They're doing ADA [American Disability Act] stuff because they have to. They're putting in wheel-chair ramps and new sidewalks and crossing places, but they're not putting up signs that's in multiple languages. They're not advertising the parks for being safe for everybody no matter where you come from or what your belief is."* (Focus group participant)

> *"More visibility from someone. I mean, I don't know who visits these parks. I mean, most parks I go to I see these people that come to visit or bring their families but someone could show up and they could be the recreational director and I would not know that from Adam. So even if somebody was checking on a weekly or the maintenance or just seeing somebody walking by and okay that person works for parks and recreation whatever you want to call it. If you go to the Smoky Mountains, you see rangers. You know who they are. Same thing with parks. I do think that they will make a huge difference because some areas, people probably do feel unsafe. But I do think visibility would play a huge role in it."* (Focus group participant)

Question 7: What are the Perceived Park Characteristics associated with Promoting or Hindering Park Use among At-Risk Populations?

Two methods were central to answering this question on perceived park characteristics that relate to park use: a telephone survey of adults (N=851) across the City of Knoxville and a series of focus group and key informant interviews.

Several at-risk populations were identified to gain insight into how people interact with their local parks. Data on the at-risk group obtained from the telephone survey comprised a first group, and were physically inactive residents, or people who had done no leisure-time physical activity (LTPA) in the past month. Second, residents who reported living in a household below the median income (35K) of the City of Knoxville from the telephone survey were considered to be a second group comprising an at-risk population. Finally, insights from those persons living in at-risk census tracks were obtained using feedback from residents who participated in the key informant and focus group interviews.

Finding 7A: Awareness of Public and Community Recreation Facilities

The public awareness of public recreation facilities in the City of Knoxville is high. In general, 80 to 90 percent of adults in the City of Knoxville were aware that public recreation facilities exist in the broader Knoxville area (See Figure 11 below). This level of awareness extended to other community facilities outside of public parks and recreation facilities – malls, churches, and schools. However, when asked if there were public recreation facilities in their specific neighborhood, only 56.0% of adults said 'yes'.

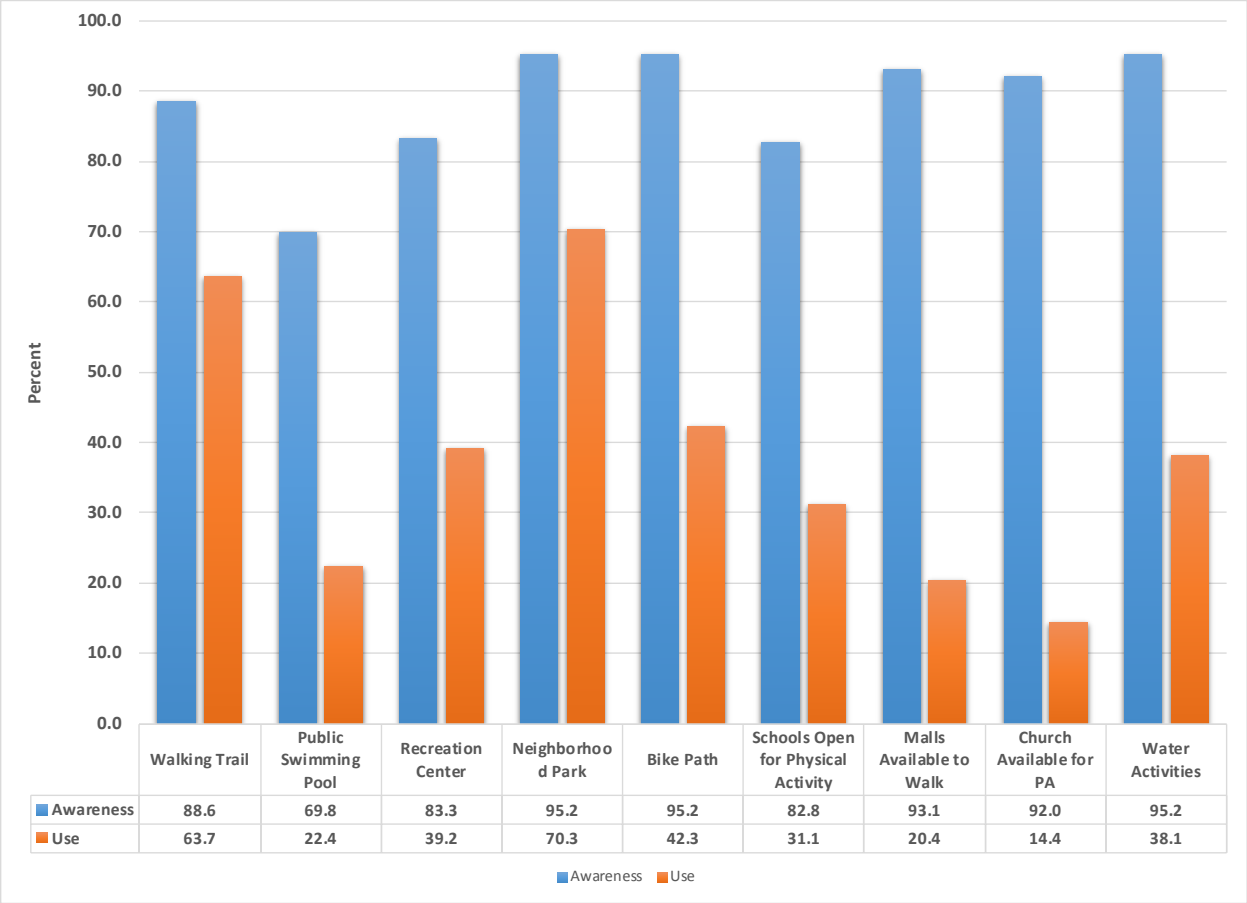
Focus group participants believed only some community members were aware of community recreation facilities.

> *"Out where I live at by Victor Ashe on Pleasant Ridge. The one I know of is attached to West Haven but I don't know the name of it because it's not really advertised as a community center. And it's beside the school so a bunch of people don't know it's there unless you go up to the school."* (Focus group participant)

Finding 7B: Use of Public and Community Recreation Facilities

City of Knoxville parks and walking trails have been visited by the majority of residents over their lifetime. When asked if they have ever visited a neighborhood park, 7 out of 10 adult residents in the City of Knoxville responded 'yes' (See Figure 13 below). 64% said that they had visited a walking trail in their lifetime. The least used public recreation facility were city pools (22.4%).

Figure 13. Awareness and Use of Public and Community Recreation Facilities among Adults in the City of Knoxville.

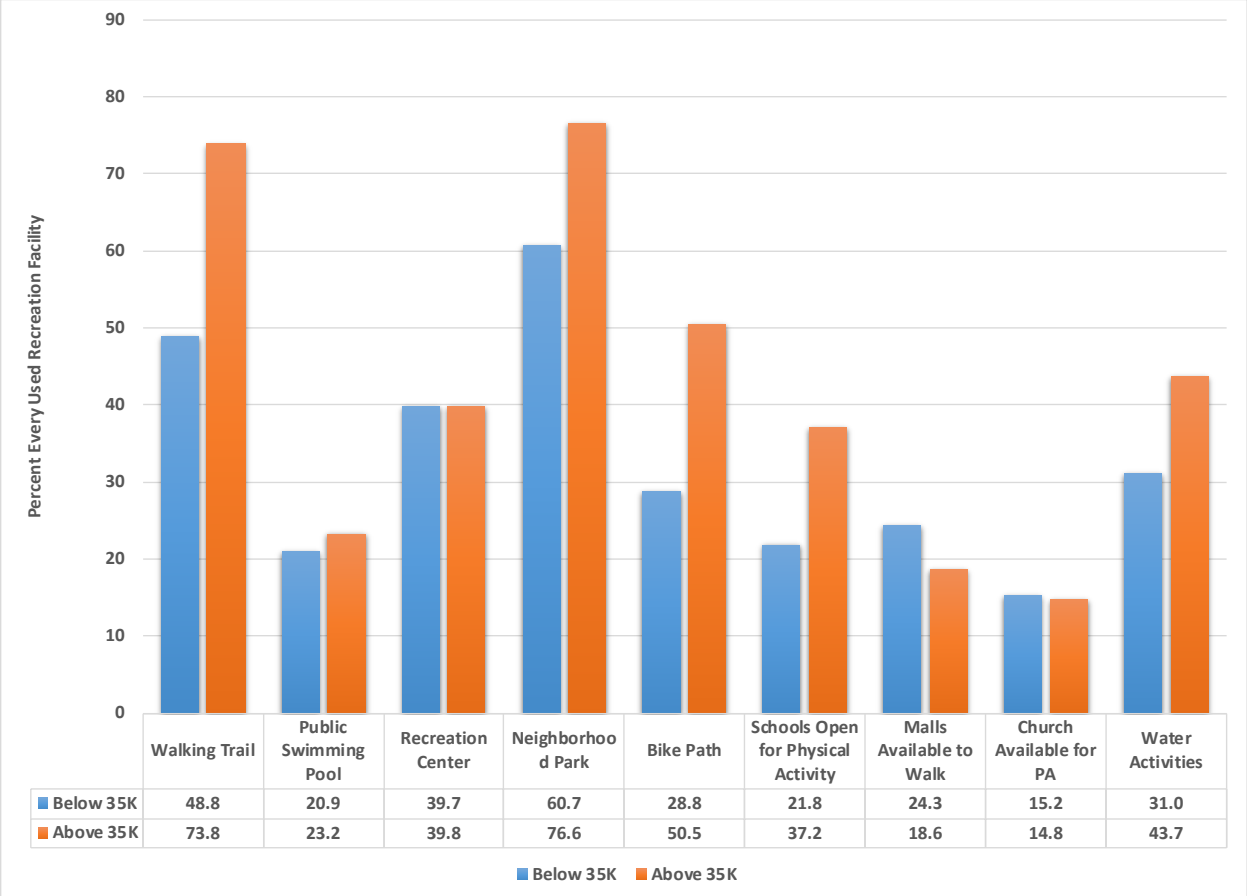


	Walking Trail	Public Swimming Pool	Recreation Center	Neighborhood Park	Bike Path	Schools Open for Physical Activity	Malls Available to Walk	Church Available for PA	Water Activities
Awareness	88.6	69.8	83.3	95.2	95.2	82.8	93.1	92.0	95.2
Use	63.7	22.4	39.2	70.3	42.3	31.1	20.4	14.4	38.1

Finding 7C: Income and Use of Public and Community Recreation Facilities.

City of Knoxville residents in low-income households are much less likely to have used recreation facilities, both inside and outdoors, located in their neighborhood. Residents from below median income households (35K) had significantly less use of walking trails, neighborhood parks and bike paths. (See Figure 14 below.) This lack of use also extended to schools that allowed access for recreation, and for waterway activities (use of lakes, streams, etc.). The only exception related to using malls for walking. Low-income residents, compared to high-income households had significantly higher use of malls to walk (24.3% vs. 18.6%, respectively).

Figure 14. Use of Public and Community Recreation Facilities by Median Household Income (35K).



	Walking Trail	Public Swimming Pool	Recreation Center	Neighborhood Park	Bike Path	Schools Open for Physical Activity	Malls Available to Walk	Church Available for PA	Water Activities
Below 35K	48.8	20.9	39.7	60.7	28.8	21.8	24.3	15.2	31.0
Above 35K	73.8	23.2	39.8	76.6	50.5	37.2	18.6	14.8	43.7

Finding 7D: Neighborhood Factors Promoting/Hindering Physical Activity

A variety of neighborhood factors increased the odds that a person will be physically inactive or sedentary. Compared to active residents, sedentary residents in the City of Knoxville are much more likely report the following barriers to being active, with an emphasis on those related to walking in the neighborhood (See table 7 below).

- Lack of sidewalks
- Fewer recreational facilities present
- Greater perceptions that their neighborhood
    - Is not a pleasant place to walk
    - That unattended dogs are a problem for walking
- Lower levels of trust of neighbors

Table 7. Self-Reported Neighborhood Factors Hindering/Promoting Park Use.

	Overall	Active	Inactive		Below 35K	Above 35K	
Access	%	%	%	p-value	%	%	p-value
Sidewalks Present (Yes)	37.2	39.5	31.5	0.0316	45.7	32.3	0.0002
Public Recreation Facility Present in Neighborhood? (Yes)	56.0	58.2	50.2	0.0400	54.1	59.7	0.1328
Characteristics							
How Pleasant is your Neighborhood to Walk?							
Very/Somewhat Pleasant	79.0	81.0	73.8	0.0207	69.3	85.6	<0.0001
Not Very/Not at all Pleasant	21.0	19.0	26.2		30.7	14.4	
How Well are Sidewalks Maintained?							
Very Well/Somewhat Maintained	79.4	80.6	75.7	0.3613	76.3	81.2	0.3185
Not Very/Not at all Maintained	20.6	19.4	24.3		23.7	18.8	
Are Unattended Dogs a Problem for Walking?							
Big/Somewhat of a Problem	14.7	13.1	19.1	0.0286	18.4	11.8	0.0115
Not Very Much/Not a Problem	85.3	86.9	80.9		81.6	88.2	
Condition of Public Recreation Facilities?							
Excellent	24.6	25.4	22.2	0.4729	18.1	29.1	0.2650
Good	50.8	51.5	49.1		52.1	49.2	
Fair/Poor	24.6	23.1	28.7		29.8	21.6	
Street lighting for Walking at Night?							
Very Good/Good	39.5	40.8	36.3	0.0578	38.2	39.0	0.8469
Fair	34.3	35.2	31.6		34.4	35.6	
Poor/Very Poor	26.2	24.0	32.0		27.4	25.5	
Barriers							
Is Neighborhood Safe from Crime?							
Extremely/Quite Safe	63.2	64.8	59.3	0.1402	53.5	70.6	<0.0001
Slightly/Not at all Safe	36.8	35.2	40.7		46.5	29.0	
Motorized Traffic in Your Neighborhood is?							
Heavy	23.8	22.3	27.3	0.2948	31.5	19.0	<0.0001
Moderate	43.4	44.4	40.8		43.2	43.7	
Light	32.8	33.3	31.9		25.3	37.3	
Social Issues							
How Physically Active are People in your Neighborhood?							
Very/Somewhat Active	74.2	77.3	66.2	0.0012	71.2	76.1	0.1411
Not Very/Not at all Active	25.8	22.7	33.8		28.8	23.9	
Most People in Your Neighborhood can be Trusted? (Yes)	85.8	87.6	81.6	0.0356	75.9	90.6	<0.0001
Public Monies for Recreation Facilities in your Neighborhood?							
Always/Often Gets Fair Share	44.5	48.8	33.5	0.0004	42.2	46.6	0.3061
Seldom/Never	55.5	51.2	66.5		57.8	53.4	
Do you use Private Recreation Facilities? (Yes)	38.3	44.6	22.1	<0.0001	24.8	47.4	<0.0001

Finding 7E: Low-Income Household Barriers to Being Active

People living in low-income households perceive many more neighborhood barriers to physical activity, including safety and traffic. (See table 7 above). With the exception of sidewalks and facilities (in contrast to the findings of 7D), the perceived neighborhood barriers to being active which were reported at high levels by residents in low-income households are as follows:

- 30.7% feel that that their neighborhood is not a pleasant place to walk.
- 18.4% feel unattended dogs are a problem with walking in the neighborhood.
- 31.5% feel that there is a high volume of traffic impacting safe walking
- 46.5% feel that their neighborhood is not safe for walking.
- Only 75.9% feel they can trust their neighbors versus 90.6% for residents in above-median households.

Finding 7F: Reliance on Public and Community Recreation Facilities

Residents from low-income households are much more reliant on access to public and community recreational facilities to be physically active. 75.2% of low-income residents report not accessing private recreational facilities (e.g., fitness centers) for their health-enhancing physical activity. This compares to 52.6% of those from higher than median income (35K) households who do go to private facilities. Clearly, City of Knoxville residents in these low-income households are reliant on public and community facilities.

Focus group participants identified several environmental supports that influence park use among low-income at-risk populations. Park renovations were a top influencer. Specifically, participants believed park renovations should be done in low-income parks, targeting all age groups in low-income communities.

> *"Update them. Clean it up. Give us one good park with the basketball goals, sprinkler system, the new equipment, the soft whatever tires, whatever they do, the mulch ground, and just a soft place for the younger kids."* (Focus group participant)

> *"More for the adults just to play."* (Focus group participant)

> *"I'd like to, me personally, would like to see more for older, elderly."* (Focus group participant)

Participant 1: *"And put it in the black neighborhoods instead of just out west."*
Participant 2: *"Put it in the heart of the community."*
Participant 1: *"Put it where we can get to it."* (Focus group participants)

Participants also identified parks that received recent renovations. However, they mentioned that they would have preferred for another park to have been renovated because gang activity is often seen at the renovated park.

"Well we have a park in our neighborhood, the Chestnut Park, but um... we don't feel safe to go there sometimes. You see what I'm saying. They upgraded it and put new stuff, but I don't have time to be going over there and worrying about gun shots and stuff. I'm worrying and my kids are out there playing. So I really don't feel safe to that park so I really don't go to that park. And the parks that I feel like they should have upgraded, they don't do anything to them. Where we feel like we can go there, it's in walking distance, where we can take our kids there and we can play safely. Where I don't have to worry about the next street over being a gun zone or constant shootings all the time. So I feel like those parks should have been eliminated due to the fact that it's not a safe environment." (Focus group participant)

Participants mentioned specific park renovations. Specifically, participants believed park renovations should be done in low-income parks, targeting all age groups in low-income communities. Although certain amenities like splash pads are only available at special use parks (such as World's Fair Park), participants believed that these amenities were (recently made) available in community and neighborhood in affluent communities. The participants wanted similar amenities installed in their neighborhood parks.

"Some parks don't have enough playground equipment. Like on free days you have to fight for your kids to play on the equipment. Like you will have a lot of open land, but the playground part, you'll have one little tower that they can climb up or there's no swings. That's really it. There's a boat that they can rock back and forth in." (Focus group participant)

"Put in a sprinkler system. Give us the splash pad." (Focus group participant)

"I was gonna say clean restrooms." (Focus group participant)

Transportation to and from parks and lack of parking at parks were other barriers to park use.

> *"No, I mean we are fairly socially, not socially, but uh like economically disadvantaged neighborhood, so you know, transportation could be an issue for a lot of people I would think, especially if they have a disability and things like that may be more difficult to get to a place like that."* (Focus group participant)

> *"Not within walking distance because I don't have a car. That's one of my barriers. And most of the parks that I would like to go to are not on the bus line."* (Focus group participant)

Participants emphatically declared safety concerns as a barrier to park use. They also mentioned that litter and vandalism were obstacles to park use. Specifically, participants were very concerned about homeless individuals using the parks, especially at night.

> *"And a lot of people are using the park. The homeless. They go there and live. They lay on the tables. They bring the bed bugs there. They eat the food. The latex wrappers are laying around and nobody cleans it up. It's been 20 days and the same latex wrapper laying there. Who's gonna clean it up? We don't wanna touch it."* (Focus group participant)

To combat safety concerns, participants believed security guards, police officers, or the neighborhood watch could patrol the parks to help promote park use.

> *"Park officers that patrol the parks or make a presence in the park when there are children there? When there are people there? Do you have anybody there or officers there to come in and patrol? Can that be arranged if it's not done already?"* (Focus group participant)

> *"I mean security... if they hire security...Whatever, whatever. You know, see it could be a volunteer. It could be a neighborhood watch maybe, but it don't have to necessarily be the police."* (Focus group participant)

Focus group participants recommended increasing awareness of City of Knoxville parks (location of and amenities offered) to increase park use.

> *"You how they could do that where's Waldo thing? You could have a go and explore the parks week. And, you know get a sheet of paper [with information on City of Knoxville parks] and you go and explore… you know find different parks. It could be an event."* (Focus group participant)

Conclusions

Based upon the study findings, one overarching and six specific conclusions are offered.

Overarching Conclusion: City of Knoxville parks are well maintained, and are distributed equitably, but are underutilized by residents.

This report has outlined a variety of reasons that can explain the low level of park use of residents. These factors include the experience of potential park user, the built environment of the neighborhood in which they live, the quality of their local park, and modes of access to the park. It should be noted that the underutilization of parks might be a national trend that reflects the sedentary nature of our society (Han, Cohen, & McKenzie, 2013) – a trend that also is present in the City of Knoxville.

More specific conclusions of the report are below.

Conclusion One: Community parks, the larger parks in the Knoxville system, offer many more opportunities for 'active visits' across a variety of potential physical activity options.

1. This conclusion is not entirely unexpected. The 2009 Knoxville-Knox County Park, Recreation Greenways Plan (2009) highlighted the goal of designing a system with a variety of facilities that serve different users and functions.
2. Community parks appeal to more users because of the diverse range of possible physical activities, more amenities, and enhanced aesthetics.
3. However, these parks are very car-dependent in terms of accessing them, which limits access for many residents across the City of Knoxville. For example, Holston River Park, a high scoring park in East Knoxville, would require a person to take a KAT bus followed by a 24-minute walk from the nearest stop to the park on a 2-lane road with no shoulders or sidewalk. The odds of a person without a car using that park would be very low.
4. Those community parks linked with the greenway system have maximal positive impact across Knoxville by allowing multiple modes of access to the park.

Conclusion Two: There is equity for all quality metrics of the City of Knoxville park system including: park features, aesthetics, and amenities.

1. There is one exception to this conclusion – the presence of greenways linking parks in the North, Northwest, and East park planning sectors are fewer than other sectors.
2. While there are parks that have low scores for park features, aesthetics, and amenities – those low-scoring parks are equally located across all areas of the city.

Conclusion Three: Perceptions of park equity, especially in the East park planning sector, do not align with conclusion two: objective equity.

1. People living in the East city sector, despite having equal resources, perceive that inequalities do exist for parks in their neighborhoods. Certainly, research has noted that in the United States, low-SES and high-minority groups have access to fewer public recreation facilities (Taylor et al., 2007). However, there appears to be a misalignment between perception and reality in the East city sector that needs to be addressed.
2. This perception of inequality was noted in telephone surveys, and in key informant and focus group interviews.

Conclusion Four: The current design of physical activity features across the vast majority of local neighborhood parks are 'child centric' and provide limited opportunities for adults to be active.

1. Children, especially at playground activity zones, are very likely to get health-enhancing physical activity. However, their adult guardian is likely to be sedentary.
2. The lack of features targeting the types of physical activity among adults, especially middle- and older adults, may account for low levels of use at smaller parks.
3. There is an abundance of athletic fields that are designed for very specific seasonal types of activities, typically for use by youth athletic leagues. This may explain the low levels of use observed during the months of October and April.
4. Walking is the most common health-enhancing type of physical activity among adults in Knoxville. However, the proportion of adult walkers observed in the City of Knoxville park system, while a common activity, was very low. Few parks, especially local neighborhood parks, actually have features that promote walking such as walking paths/trails and lighting. Nationally, walking is the common leisure-time mode of physical activity – and this is true for both genders, all ages, races and ethnicities, and income groups.
5. Very few adults in the City of Knoxville report doing leisure-time physical activities that require an athletic court or field. This may also explain the low level of use of athletic features in the observed parks.
6. While few in numbers, adult park users at smaller neighborhood parks, especially in at-risk areas, are very active when they visit the park.

Conclusion Five: Many people, both children and adults, who live within a 10-minute walk to a park may not be able to safely walk or bike to that park.

1. Many parks and their surrounding street network may be 'unwalkable' due to the lack of sidewalks, high volumes of cars, and the lack of safe street crossings. This may deprive residents of opportunities for two types of physical activity at their local park: actively walking to the park and being active at the park (Blanck et al., 2012).
2. This lack of access will impact households without cars at even greater levels. They can't walk to their park safely, they have no car to access the park, and public transportation may have bus stops far from the park entrances that still require one to walk more than 10 minutes in an area without sidewalks.

Conclusion Six: Perceptions of safety are a major personal barrier to the use of local parks.

1. In total, 4 out of 10 adult residents in the City of Knoxville say that concerns of safety impact their use of public recreation facilities.
2. 2 out 10 residents in the City of Knoxville feel that their neighborhood is not a pleasant place to walk. In residents living in households making less than 35K, the median household income for the City of Knoxville, 3 out of 10 feel that walking in their neighborhood is not pleasant.
3. The reasons for low park use and unpleasant feelings for walking include:
    a. Feeling that their neighborhood is not safe from crime
    b. Neighborhood has heavy traffic with few sidewalks
    c. Unattended dogs

Recommendations

Active use of a park can provide immediate physical and psychological benefits to individuals, while communities and neighborhoods benefit socially, economically, and environmentally. (Bedimo-Rung et al., 2005) Access to outdoor parks is free and ideally close to home while providing a variety of opportunities for pleasurable physical activity. The National Recreation and Park Association (NRPA) hopes that by 2020, next year, every person in America will have convenient access to safe and affordable public parks and recreation services (Godbey & Mowen, 2010). They have identified three major strategies to achieve this goal.

1. Create new parks
2. Increase access to existing parks
3. Modify existing park opportunities to promote more widespread and active use.

These NRPA strategies could also help accelerate the progress towards solving the problem of obesity in the City of Knoxville by meeting a key recommendation of obesity prevention: promote physical activity by substantially increasing access to places and opportunities to be active (Glickman, Parker, Sim, Del Valle Cook, & Miller, 2012). Of note, obesity prevention is a key focus of the Knox County Health Department (Knox County Health Department, 2015).

The mission of the City of Knoxville Parks and Recreation Department is to provide a safe and fun environment for all citizens to recreate and enjoy their leisure time (Knoxville-Knox County Metropolitan Planning Commission, 2011). Similarly, the Knox County Health Department (KCHD) strives to encourage, promote and assure the development of an active, healthy community through innovative public health practices (Knox County Health Department, 2019; Knoxville-Knox County Metropolitan Planning Commission, 2011). Together, both Departments have a vested interest in promoting active visits to City of Knoxville parks (Buchner & Gobster, 2007).

By promoting more visits to local parks that are considered active, the City of Knoxville Parks and Recreation Department can help to fulfill their mission for providing leisure-time recreation to all residents of Knoxville. And by promoting active visits to parks, KCHD can help citizens get health-enhancing physical activity, including the people living with diabetes and other chronic diseases. While the Physical Activity Guidelines for Americans (U.S. Department of Health and Human Services, 2018) recommends that all adults get an equivalent of 150 minutes of moderate-intensity physical activity a week and two-days of muscle-strengthening activities to promote health and prevent disease, the health benefits of exercise start immediately for all adults. The benefits of regular exercise are many, and at this time, well established.

The conclusions of this report are based upon visits to every park in the city, observations of residents using the 12 selected City of Knoxville parks, and dialogues with residents about their perceptions of their local park. While this work was limited to only outdoor parks and recreation facilities, the City of Knoxville Parks and Recreation Department does provide indoor

opportunities for recreation, including senior citizen centers, for city residents to be physically active. Additionally, there are many potential new recreation-related resources that could be available to City of Knoxville residents. Central to these potential resources are school playgrounds and other school related open spaces that could provide new opportunities for physical activity and recreation (National Physical Activity Plan Alliance, 2010; Spengler, 2012). However, in conducting audits for this report, many of those school-based locations were determined not to be accessible to the local neighborhood on weekdays during after-school hours or on weekends. It should be noted that in 2011, the Knoxville-Knox County Park and Recreation and Greenway plan recognized that it would be mutually beneficial for schools and parks to open these resources for recreation purposes (Knoxville-Knox County Metropolitan Planning Commission, 2011).

Outdoor parks in the City of Knoxville range in size from small pocket parks to large community parks. This report does conclude that the opportunities for physical activity and active visits during a visit to a park are closely related to the size of the park. Related to maintenance, there are well-maintained parks, and there are parks in need of attention. Still, there is general equity among parks and recreation across the city of Knoxville in terms of numbers of parks, park size, and maintenance.

Nevertheless, this report also concluded that many parks are underutilized by local residents. Also, the design of a park may largely determine the amount and level of physical activity of people who do visit their local park. In Knoxville, almost all of the parks provide opportunities for children to be active – a positive factor that can be used to help prevent childhood obesity. However, current park designs, especially in neighborhood parks, provide few opportunities for adults to walk or recreate at health-enhancing levels.

Furthermore, many residents in the City of Knoxville perceive that their local neighborhood park does not meet their needs. And many residents, particularly in the East Knoxville planning district, do perceive inequities in the quality of their local park. This report recognizes that there is a misalignment between perception and reality among residents that needs to be addressed. People's perceptions are their realities, realities based upon their lived experiences over time. Feedback from local residents does give insight on how they interact with their neighborhood and their local park. Feedback collected for this report provides reasons why parks may have low-utilization and ways that park utilization can be increased.

With this in mind, the following recommendations and strategies are offered to achieve two park and public health goals that can improve the health and well-being of people living in the City of Knoxville.

1. Increase park visits, among all groups of people, across all areas of the City of Knoxville.
2. Increase the proportion of 'active' visits – health-enhancing physical activity – throughout the City of Knoxville parks.

Recommendation One: Increase Park User Engagement & Programming

- Conduct community 'Park Environment and Safety Audits' at local neighborhood parks, in conjunction with neighborhood associations and community groups (National Recreation and Park Association, 2012). Involving community groups in the design selection, installation, and maintenance of local neighborhood parks leads to greater park use and more active visits (Slater, Pugach, Lin, & Bontu, 2016).
    - Audits can determine maintenance and safety needs, desired park features of people living near the park, and identify assets and resources within existing parks (e.g., Alex Haley Heritage Square at Morningside Park).
    - The City of Knoxville Parks and Recreation Department, in conjunction with the Knox County Health Department, should focus on community engagement of residents with their local park (National Recreation and Park Association, 2019).
    - Current partners, such as the City of Knoxville Office of Neighborhoods and the CAC Knoxville – Knox County Neighborhood Centers, can assist with the engagement of community advocates.

- Provide physical activity programming throughout the park system, with a focus on neighborhood parks.
    - A study in Southern California parks found that park size and number of organized physical activities were the best predictor of park use and physical activity (Cohen, Marsh, Williamson, Derose, & Martinez, 2010). Indeed, in the City of Knoxville park use was strongly associated with park size. However, since park size is fixed across existing parks, a strong emphasis should be placed on in-park programming to increase use, especially those visits considered to be active visits.
    - This programming should be based upon community park audits and neighborhood feedback that helps to identify needs and resources. Examples of programming could be:
        - Walking groups
        - Pickleball orientation lesson in parks with tennis courts.
        - Tai Chi (The Knoxville Parks recognize a provider for this activity in the parks.)
    - Encourage community groups (e.g., churches, Boys and Girls Club, etc.) who currently offer physical activity programming to utilize park facilities and space.

- Increase the visibility of the current City of Knoxville Parks and Recreation's 'Programs in the Parks' initiative that seeks to partner with commercial and non-profit entities in promoting physical activity.
    - This program has the potential to be an excellent resource for providing in-park physical activity programs. While current partners recognized on the Knoxville City Parks and Recreation website mainly target youth, locating partners focusing

on adult programming should be a priority (Parks and Recreation Department, 2019b).
    - As noted by the Centers for Disease Control and Prevention (CDC) (Centers for Disease Control and Prevention, 2009), the Knox County Health Department (KCHD) can assist in identifying potential partners, especially programs that target at-risk populations, including people living with diabetes and other chronic diseases. This could best be achieved by creating a 'Physical Activity Community Coalition' supported by the KCHD (see recommendation five below).

- Increase the promotion of 'Adopt a Park', a new program of the City of Knoxville Parks and Recreation.
    - The aim of this program is to improve the environmental and aesthetic quality of local parks by allowing neighborhood associations and organizations to develop a strong sense of ownership and responsibility for their local park. (Parks and Recreation Department, 2019a)

Recommendation Two: Increase Park & Physical Activity Community Awareness

- Implement a mass-media physical activity campaign revolving around the benefits of being active at your local park (Glickman et al., 2012).
    - The KCHD, the City of Knoxville Parks and Recreation, and mass media professionals should collaborate to develop consistent mass communication messages that promote physical activity in local parks. (Bauman & Chau, 2009; Reger-Nash et al., 2011)
    - The mass-media campaign should target adults at-risk or living with chronic diseases, including diabetes, hypertension, and coronary heart disease. The central message towards these individuals should convey the immediate benefits of becoming active, especially using local parks near where they live. (Bauman, Walker, McLean, Shilton, & Bellew, 2014)
    - Infographics and messaging from the mass media campaign should be shared with neighborhood associations and community groups so that they may post these messages via social media groups (e.g., Facebook). Messages should be in multiple languages; reflecting the languages spoken in the communities.
    - Hospitals and other medical organizations may be potential partners in implementing such a campaign. The Physical Activity Community Coalition would be best facilitator for engaging these partners.

Recommendation Three: Renovate the Park Environment to Promote Park Visits and Physical Activity

- Within existing parks, install new physical activity zones, with an emphasis on walking, that promote park use and adult physical activity.
    - A national study found that walking loops generated the most health-enhancing physical activity for adults and seniors. Parks with walking loops were found to have 80% more users than parks without loops. (Cohen et al., 2016; Cohen & Leuschner, 2018)
        - Create new walking trails in existing parks. (Adair Park and West View Park are excellent examples of walking trails in smaller parks.)
        - Create walking trails around athletic fields. (This would allow parents to walk while their child practices/competes in youth sports.)
    - By expanding the number of amenities and physical activity zones at existing parks, local residents are likely to perceive the park as being safe. Also, increased park facilities and amenities, combined with organized park programming resulting (see recommendation one above), will encourage physical activity among targeted at-risk groups (Lapham et al., 2016).
    - In order to increase active visits for the entire family, develop physical activity zones near playgrounds that promote physical activity for supervising adults. (e.g., Fitness Zone equipment).

- In existing parks, convert under-utilized athletic fields to new physical activity zones. (e.g., skate park, pickleball/tennis courts, walking trail) (Godbey & Mowen, 2010; National Physical Activity Plan Alliance, 2010).
    - In 2011, the Knoxville-Knox County Parks and Recreation plan recognized that many existing parks had been developed for particular field sports, and whose space does not lend itself to other types of physical activity (Knoxville-Knox County Metropolitan Planning Commission, 2011).
    - This retrofitting approach can lead to a greater variety of physical activity zones that are appealing to a wider cross-section of people.
    - Again, involvement of neighborhood groups and associations in conducting 'Park Environment and Safety Audits' will help direct that renovation.

- Install park signage, including routing to neighborhood parks in surrounding neighborhood street networks (National Physical Activity Plan Alliance, 2010).
    - In focus group interviews, many community members could not recall the name of their local park.
    - This recommendation of specific street network park signage is intended to increase awareness, name recognition, and routing or wayfaring information. It is noted that some neighborhoods do have existing park signage. However, this signage was found to be limited in size and scope throughout the street network.

- Provide park mapping and wayfaring signage at all entrances for all parks to promote first-time park use, engaging current park users, and promote feelings of safety (National Recreation and Park Association, 2012).
    - Park mapping can identify physical activity zones and provide health-related messages for being active. A large randomized control-trial in the City of Los Angeles found that signage provided environmental clues that contributed to increases in park users and MVPA (Cohen et al., 2013).
    - A national study found that posting community events and park programming in and around a park was associated with a 62% increase in park users and increased physical activity compared to parks without marketing materials (Cohen et al., 2016).
    - Existing and new walking trails should have distance signage similar to Knoxville Track Club signs installed on the city greenways.

- Install three essential park features in all parks --water fountains, restrooms/porta potties, and emergency call cylinders.
    - Using similar methods to this report, a large study found that drinking fountains, picnic facilities, and signage were the strongest park features related to park use (Geremia et al., 2019).
    - Currently, only 28% of Knoxville parks allow users to have access to a water fountain.
    - Access to restrooms or porta-potties can only be found in 40% of Knoxville parks.
    - Emergency call cylinders will increase feelings of safety in the park, a major factor for people using their local park.

Recommendation Four: Improve the Neighborhood Built Environment and Park Access

- Continue to emphasize the linkage of parks with greenways to create active transit routes to parks (City of Knoxville, 2016; National Physical Activity Plan Alliance, 2010; National Recreation and Park Association, 2016).
    - Parks can, and should be, activity-friendly destinations, and greenways can provide safe active-friendly routes to get to the park (Centers for Disease Control and Prevention, 2019b).
    - This strategy will promote the #No. 1 type of physical activity for adults and seniors – walking.
    - In 2011, it was noted that greenway connections were the greatest need within the park system (Knoxville-Knox County Metropolitan Planning Commission, 2011).
    - An excellent example of this type of promotion of park use while creating safe routes to park destinations is the First Creek Greenway project completed in 2018. This project provided safe connections from Woodland Avenue to

Edgewood Park, a neighborhood park observed in developing this report (Engineering Department, 2019).

- Increase safe access to local parks by installing safe street crossings adjacent to parks (National Recreation and Park Association, 2016).
    - This will increase the level of safety for park users who walk or bike to the park, while also increasing park awareness among local residents navigating in car.

- Incorporate bus stops, adjacent to park entrances, within Knoxville Area Transit (KAT) routes (Centers for Disease Control and Prevention, 2019b).
    - This will facilitate park use for residents who lack transportation and/or who do not live within a 10-minute walk to a local park.
    - Park destinations on Knoxville Area Transit but routes should be highlighted on the KAT and Park and Recreation websites.

Recommendation Five: Enhance Partnerships for Promoting Physical Activity

- Formalize the current working partnership between the City of Knoxville Parks and Recreation Department and the Knox County Health Department – both essential to promoting the public health of residents in the City of Knoxville. (Buchner & Gobster, 2007)
    - Many, if not all, of the recommendations in this report will necessitate collaboration of both agencies.

- Establish a physical activity community coalition to formalize the linkage between public health and parks and recreation. The expertise to create this coalition resides with the Knox County Health Department's Community Health section. This coalition should identify agencies across the following sectors (National Physical Activity Plan Alliance, 2010):
    - Business and Industry
    - Schools
    - Faith-Based Settings
    - Healthcare
    - Mass Media
    - Sport
    - Transportation, Land Use and Community Design.

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Appendix A
Park Physical Environment Audit Methodology

Central to this study and final report are the physical environmental audits for each of the 94 parks across the city of Knoxville. These park audits, conducted by Dr. Fitzhugh, utilized an abbreviated version of the validated instrument 'Environmental Assessment of Public Recreation Spaces' (EAPRS). (Saelens et al., 2006) The abbreviated-EARPS are strongly correlated with park use and physical activity. The appendix presents the abbreviated EAPRS, a 17-page audit instrument containing 117 items.

EARPS allows for a comprehensive assessment of the physical environment of the park that captures 7 possible facility components related to the 'physical activity' potential of the park. This physical activity related facilities or areas measured by the EARPS include the following areas – trails (paved and unpaved), open spaces, pools, beaches, sidewalks, playsets and athletic courts/fields, all places in the park where a person could be active. A physical activity subscore for each park was calculated using 70 items that, when coded, could achieve a maximum of 18 points. The higher the score, the more potential for of that park for a person be physically active. Lower scores reflect fewer opportunities or areas in the park to be active.

An 'amenity' subscore was calculated using 76-items that could achieve a maximum of 23 points. The following amenities were assessed at each park: seating, paths, restrooms, eating/drinking facilities, trash cans, wildlife areas, entrances, bike racks, parking, signage, and safety features. The amenity subscore was based on the presence and quality of each amenity. These amenities reflect the aspects of the park that increase the user's experience with the park

Finally, the EARPS calculates a 'aesthetic' subscore for each park using 31-items that could reach a maximum of 24 points. The presence and quality of meadows, woods, ponds, streams, fountains, views, historical markers, landscaping, and art were assessed at each park. The greater the score, the more physically attractive the park which also impacts the user experience.

An overall 'ParkScore' was calculated by summing the three sub-scores – physical activity, amenities, and aesthetics. The possible maximum ParkScore was 65 total points.

Environmental Assessment of Public Recreation Spaces (EAPRS)

Direct Observation, Abbreviated Tool

Draft: **March 7, 2017**

Entry 1 _____
Date _____
Entry 2 _____
Date _____

EAPRS Park/playground ID number: _____

Park/playground name: _____

Access to park/playground: Free Pay ($ _____) include parking fees
Indicate fee for pool, skate park, etc. in 'notes' section.

Observer Name/ID: _____

Observation Date: ____ / ____ / ____

Observation Start Time: _____ am/pm

Observation End Time: _____ am/pm

Total Amount of Observation Time: _____ minutes

Does the park exist in the given location? Yes No
No = there is not a park at the given location or anywhere in the near vicinity. Refer to Thomas Guide, online sites, and parks department to confirm.

Was the Park Ratable? Yes No
Yes = The space could be accessed. Area could be used for active play.
No = The space was not accessible, i.e., fenced off, filled with overgrown vegetation, swamp, etc. Area not useable for active play or activity.

Miscellaneous Notes:

SECTION 1: PHYSICAL ACTIVITY ELEMENTS

A. Trails

Aspect	Rating	Scaling	Considerations	Picture
1. Paved trail presence	Yes No		Must be > 200 ft in length; **see guidebook for full definition. If no, skip to A5.**	
2. Condition	1 2 3	PEX	Refer to guidebook; dealing with the surface of the trail; consider holes, cracks, etc. A trail where a person must be overly mindful of where they are walking would receive a "poor" rating.	A1.4-a,b,c
3. Cleanliness	1 2 3	NATE	Refer to guidebook; consider man-made litter, **not** mud, rocks, twigs, etc.	A1.6-a,b
4. Total paved trails length	Length _____		Estimate to the nearest .5 mile, with .5 being minimum if present at all	A1.7-a,b
5. Sit/rest places present on paved trail	Yes No		Must be <25 feet from trail; **If no, skip to A9**	
6. Condition	1 2 3	PEX	Refer to guidebook; do not consider graffiti	A3.5-a,b
7. Cleanliness	1 2 3	NATE	Refer to guidebook; consider underneath tables and benches as well	A3.8-a,b
8. Coverage/shade	1 2 3	PER	Refer to guidebook; % of places to sit/rest that are covered	A3.10-a,b; A3.6b
9. Unpaved trail presence	Yes No		Must be > 200 ft in length; if trail has signage that clearly states that it is "closed" do not count: **if no, skip to Section B.**	
10. Condition	1 2 3	PEX	Refer to guidebook; dealing with surface of the trail; consider holes, etc.; consider ease of seeing and ability to follow trail	A7.4-a,b
11. Cleanliness	1 2 3	NATE	Refer to guidebook; consider man-made litter, but **not** mud, rocks, sticks, etc.	A7.6-a,b
12. Total unpaved trails length	Length _____		Estimate to the nearest .5 mile, with .5 being minimum if present at all	
13. Sit/rest places present on paved trail	Yes No		Must be <25 feet from trail; **If no, skip to Section B.**	
14. Condition	1 2 3	PEX	Refer to guidebook; do not consider graffiti	A3.5-a,b
15. Cleanliness	1 2 3	NATE	Refer to guidebook; consider underneath tables and benches as well	A3.8-a,b
16. Coverage/shade	1 2 3	PER	Refer to guidebook; % of places to sit/rest that are covered	A3.10-a,b; A3.6b

B. Open space

Aspect	Rating	Scaling	Considerations	Pictures
1. Open space presence	Yes No		Refer to guidebook; **if none present, go to section C**	C1.1-a,b
2. Number	1 2 3 4		Circle a number based on the following ranges: 1=1, 2=(2-5), 3=(6-10), 4= (>10)	
3. Average size	1 2 3	SIZE	1: <50 ft X <50 ft; 2: 50-100 ft X 50-100 ft; 3: >100 ft X >100 ft	
4. Surface	Grass Dirt Other		Circle predominant material (circle only one response); base evaluation across all open spaces	
5. Condition	1 2 3	PEX	◦ Standard condition, plus consider ditches, holes, etc ◦ Consider each open space individually and then average the ratings from each open space to come up with the average condition rating. ◦ Consider: - **condition of ground surface**; obstructions/leaves/rocks, continuity of surface, harness of surface ◦ 1= Poor quality; uneven/treacherous ground surface, lots of spots where could twist ankles ◦ 2= adequate quality; some imperfections in ground surface(e.g., few uneven aspects) ◦ 3= excellent condition	C1.1-a,b & P2.3 for condition 2.

C. Swimming/wading pools

In this section only: If pool area cannot be accessed because it is closed or admission is required, rate as many questions as accurately as possible based on viewing. For the items that cannot be assessed, use CBD (cannot be determined). Use this rating for this section **only** and only when necessary; no excessive use.

Aspect	Rating	Scaling	Considerations	Picture
1. Pool presence	Yes No		**If no, skip to section D**	
2. Operational	Yes No		**If no, skip to section D**	
3. Cleanliness	1 2 3	NATE	Refer to guidebook	
4. Condition	1 2 3	PEX	Refer to guidebook	

D. Beach areas

Aspect	Rating	Scaling	Considerations	Picture
1. Beach presence	Yes No		**If none present, go to section E**	
2. Cleanliness	1 2 3	NATE	Refer to guidebook; focus on man-made litter.	
3. Total size	1 2 3	SIZE	Consider size of beach, not water; 1=<50 ft X <50 ft; 2 = 50-100 ft X 50-100 ft; 3 = >100 ft X >100 ft (if size does not correspond, calculate total sq. footage)	
4. Accessibility	1 2 3		1: Not readily accessible or somewhat dangerous to access for a child. If man-made infrastructure to access beach exists, it is not functionally sound or dangerous for a child to use. 2: Requires stairs, crosswalks, or some other man-made infrastructure to access. Structure is functionally sound and easily used. 3: Easily accessed from parking/park entrance	5.3a

E. Sidewalks (adjacent to park; not in park)

Aspect	Rating	Scaling	Considerations	Pictures
1. Sidewalks present	Yes No		**If none present, skip to Section F.**	
2. Cleanliness	1 2 3	NATE	◦ Refer to guidebook for general "cleanliness" definition. ◦ Consider man-made litter, **not** mud, rocks, twigs, etc.	A1.6-a,b
3. Condition	1 2 3	PEX	◦ Refer to guidebook for general "condition" definition. ◦ Dealing with the surface and functionality of the sidewalk; consider holes, cracks, tree branches under the surface. ◦A sidewalk where a person must be overly mindful of where they are walking in order to avoid tripping or falling would receive a "poor" rating.	A1.4 – a,b,c
4. Width	1 2 3		<2 ft (1 adult); 2-5 ft (2 adults; sidewalk width); >5 ft (>3 adults)	
5. Linkage to path or trail in park	Yes No N/A			
6. Any crosswalks across streets in parks	Yes No			

F. Play equipment features

Aspect	Considerations	Presence	Condition	Cleanliness
1. Playset or structure	The combination of 2 or more distinct pieces of playground equipment (e.g., attached slide and swings).	Yes No	**1 2 3**	**1 2 3**
2. Things to hang from (part of playset)	Any element that children grasp with their hands and results in the rest of their bodies dangling above the ground (e.g., monkey bars, bars, moveable track handle).	Yes No	**1 2 3**	**1 2 3**
3. Things to hang from (non-playset)	See above	Yes No	**1 2 3**	**1 2 3**
3. Things to slide down (part of playset)	Includes slides, tube slides, pole slides (two adjacent poles that a child is meant to slide down at the same time).	Yes No	**1 2 3**	**1 2 3**
4. Things to slide down (non-playset)	See above	Yes No	**1 2 3**	**1 2 3**
5. <u>Functional</u> stairs, ladders & ramps	◦ The purpose of "functional" steps, ladders & ramps are to help a child get from one part of the play set to the other. ◦ **Steps and ladders <u>should not</u> be counted in both "functional" and "fun" categories**	Yes No	**1 2 3**	**1 2 3**
6. <u>FUN</u> things to climb on/up/through	◦ A "fun" ladder and stairs have 2 purposes - a) to help the child get to other parts of the play set AND b) to be fun to climb in and of itself. ◦ Examples: spiral and curved ladder, spiral staircase, stairs and ladders that are incorporated into imaginary play parts of play set (e.g., stairs that are scales on a dragon).	Yes No	**1 2 3**	**1 2 3**

Aspect	Considerations	Presence	Condition	Cleanliness
7. Things to stand or walk on	Includes bridges, ramps and platforms (flat or non-flat, stationary or moveable), which serve to connect play set elements	Yes No	1 2 3	1 2 3
8. Swings	Includes baby swings, strap swings, bench swings, chair swings, and tire swings	Yes No	1 2 3	1 2 3
9. Things to climb on (non-playset)	Includes jungle gyms, rock walls, balance beams, turning poles, and fun steps	Yes No	1 2 3	1 2 3
10. Blacktop games	For cleanliness, rate striping/lines condition	Yes No	1 2 3	1 2 3
11. Spring toy or teeter totter		Yes No	1 2 3	1 2 3
12. Imaginary play structure	◦ A structure with a component for imaginative play (e.g., playhouse, play vehicle, animal, sandbox). ◦ "Yes" can be rated if structure is part of play set or even is a defined space underneath the play set. The structure must be a 3 or more sided, enclosed structure	Yes No	1 2 3	1 2 3

G. 1. Athletic fields

Aspect	Rating	Scaling	Considerations	Pictures
1. Athletic field presence	Yes No		May include badminton, baseball/softball fields, BMX track, bocce ball, football/rugby fields, Frisbee golf course, golf course, ropes courses, or soccer fields. **If none present, skip to G2.**	
2. Ground condition	1 2 3	PEX	◦ Consider: -- weeds and patches of grass where dirt should be OR dirt where grass should be -- piles of leaves or rocks that inhibit playing, -- continuous surface or easy to trip on, -- hard-packed and uncomfortable to fall on ◦ 1= Poor quality; dirt/grass not where it should be; uneven/treacherous ground surface, lots of spots in which ankles could be twisted, lack of necessary components. ◦ 2= adequate quality; components are present; some imperfections in ground surface(e.g., few uneven aspects, weeds in less used parts of fields) ◦ 3= excellent condition	P2.1-a,b,c
3. Cleanliness	1 2 3	NATE	◦ Refer to the guidebook for the general "cleanliness" definition. ◦ In this category, do not take dirt and graffiti into consideration. ◦ Consider **man-made litter** - any debris or litter that is on the field.	
4. **Most** (> 50%) striped/lined	Yes No N/A		◦ To be rated "yes," the field does not have to be freshly and cleanly marked. ◦ This is not a rating of quality but a rating of existence. ◦ "**Yes**" = partially lined or shows that it has been lined recently (e.g., remnants of lines). ◦ **"No"** =field is not partially lined. There are no remnants of a line there.	P2.6
5. Components present?	Yes No		◦ To rate as "yes" the following must be present on the respective fields: - **Soccer fields:** soccer nets - **Baseball/Softball fields:** home plate and a backstop (note: other bases do not have to be present for this rating) - **Football fields:** goal posts For N/A: e.g. bocce ball, handball – where play items are reasonably brought by the players. Only use if not rating soccer, baseball or football fields.	

G. 2. Athletic courts

Aspect	Rating	Scaling	Considerations	Pictures
1. Athletic court presence	Yes No		May include batting cages, basketball courts, corn hole (Bean bag toss game), driving range, handball court, horseshoe pits, mini golf, shooting ranges, shuffleboard, tennis courts, volleyball courts, athletic track. **If none present, skip to G3.**	
2. Surface condition	1 2 3	PEX	◦ Refer to the guidebook for the general "condition" definition. ◦ Do not rate the surface material as being in good or bad condition – consider if it is in **functionally good or bad condition**. (i.e., a basketball court with good quality cement squares but uneven separation does not rate well functionally as a continuous basketball court surface). ◦ 1= non-functional (e.g., cracked asphalt and/or raised ridges; anything that makes a surface uneven), children are not able to play on surface without fear of tripping or twisting an ankle. ◦ 2= some cracks etc but still functional ◦ 3= excellent condition, very few cracks	P3.1-a,b,c,d
3. **Most** (> 50%) striped/lined	Yes No		◦ To be rated "yes," the court does not have to be perfectly marked. ◦ This is not a rating of quality but a rating of existence. ◦ **"Yes"** = partially lined or there are remnants of lines ◦ **"No"** = indicates that the court has zero lines/marks on it.	
4. **All** components present?	Yes No		◦ Basketball hoops, tennis courts, and volleyball courts must have functional nets. ◦ Note **"no"** should be rated if nets are present but damaged **enough to hinder their function**.	P3.12

G. 3. Designated Skate Areas (Don't rate if signs prohibit children <12 years old)

Aspect	Rating	Scaling	Considerations	Pictures
1. Skate park presence	Yes No		**If none present, skip to H1.**	
1. Surface condition	1 2 3	PEX	Standard condition	
2. Cleanliness	1 2 3	NATE	Consider ALL debris on surface or on features, whether man-made or natural.	

SECTION 2: AESTHETICS

H. Aesthetics

1. Meadows

Aspect	Rating	Scaling	Considerations	Pictures
1. Meadow presence	Yes No		Refer to guidebook for definition. If none present, go to H2	C2.1
2. Average size	1 2 3		<25 X 25ft, 25-50 X 25-50ft, >50 X 50ft	
3. Any adjacent water area?	Yes No		Adjacent water areas include both natural and man-made water features.	

H2. Wooded areas

Aspect	Rating	Scaling	Considerations	Pictures
1. Wooded area presence	Yes No		Refer to guidebook. If none present, go to section H3	C3.1
2. Cleanliness	1 2 3	NATE	Refer to guidebook; consider man-made litter, not mud, rocks, twigs, etc.	
3. Any adjacent water area	Yes No **If no skip next question.**		Adjacent water areas include both natural and man-made water features.	C3.1

H3. Existence and ponds/lakes

Aspect	Rating	Scaling	Considerations	Picture
1. Ponds/lakes presence	Yes No		If none present, go to H4	D1.2
2. Number	_____			
3. Cleanliness	1 2 3	NATE	Refer to guidebook ; Consider man-made litter.	D1.2
4. Bordering aesthetics	1 2 3	PEX	Refer to guidebook: consider overall aesthetic of area surrounding the water	

H4. Streams/creeks

Aspect	Rating	Scaling	Considerations	Picture
1. Creeks/streams presence	Yes No		If none present, go to H5	D2.1
2. Cleanliness	1 2 3	NATE	Refer to guidebook: include banks of stream/creek	D2.1
3. Water quality	1 2 3	PEX	Consider algae, water weeds, clearness of water	D2.1 & D1.7-a,b

H5. Fountains

Aspect	Rating	Scaling	Considerations	Picture
1. Fountain presence	Yes No		If none present, go to H6	D1.2
2. Operational	Yes No		If none operation, go to H6	
3. Condition	1 2 3	PEX	Refer to guidebook	

H6. Historical markers or monuments

Aspect	Rating	Scaling	Considerations	Picture
1. Historical markers or monuments presence	Yes No		If none present, go to H7	G1.1 – a,b,c,d,
2. Cleanliness	1 2 3	NATE	Refer to guidebook; consider man-made litter, graffiti	G1.1-c,d
3. Condition	1 2 3	PEX	Refer to guidebook: consider defacement, legibility (consider graffiti here if it affects an individual's ability to read information on marker/monument).	G1.1-c,d

H7. Landscaping

Aspect	Rating	Scaling	Considerations	Picture
1. Flowers present	Yes No		Rate only landscaped flowers (not meadows or wooded areas); if none present, skip to H7 #3	I1.1-a,b
2. Flower variety	1 2 3	NATE	3 or more different flower types?	I1.1b
3. Shrubs/bushes present	Yes No		Rate only landscaped shrubs/bushes (not wooded areas); if none present, skip to H7 #5	I2.1
4. Condition	1 2 3	PEX	Refer to guidebook; Alive? Consider whether appear pruned.	I2.1
5. Landscaping beds present	Yes No		If none present, skip to H8	I3.1-a, b; I1.1, I2.1
6. Cleanliness	1 2 3	NATE	Refer to guidebook; consider man-made litter.	I3.1-a,b
7. Condition	1 2 3	PEX	Refer to guidebook: mulched? weeded?	I3.1-a,b

H8. Views of outside park

Aspect	Rating	Scaling	Considerations	Pictures
1. Views outside park present	Yes No		◦ If none present, skip to H9. ◦ Rate only if there is elevation in the park relative to visible areas outside of park. ◦ Rate only if the "view" is outside the park boundaries. ◦ A "view" exhibits an appealing subject/location. For example, it would NOT be considered a "view" to be able to look at a water treatment plant.	J1.1
2. Cleanliness of viewing area	1 2 3	NATE	◦ Refer to the guidebook for the general "cleanliness" definition. ◦ 1= Deal breakers, poorly maintained (e.g., large piles of decomposing leaves), large amount of debris/litter left behind or very unclean ◦ 2= less severe transgressions, lack of maintenance, moderate amount of litter/debris, and innocent graffiti ◦ 3= mostly or the entire ground surface is free of litter/debris and in good aesthetic condition.	A1.6-a,b
3. Visibility to farthest point	1 2 3		◦ 1 = < 1,000 feet (1,000 ft = 333 yards = approx. 3 football fields) ◦ 2 = > 1,000 - < 5,000 feet (5,000 ft = .95 mile = approx. ONE mile) ◦ 3 = > 5,000 ft	

H9. Sculpture or other art

Aspect	Rating	Considerations	Pictures
1. Sculpture/art present	Yes No	If none present, skip to H10	J2.1
2. Sculptures/ art pieces	Number _____	Enter total number.	
3. Functional	Yes No	e.g., part of a fountain, can be played on, used as seating	J2.1

H10. Area/neighborhood immediately surrounding park

Aspect	Rating	Scaling	Considerations	Pictures
1. Cleanliness	1 2 3	NATE	◦ Refer to the guidebook for the general "cleanliness" definition. ◦ 1= Deal breakers, poorly maintained, large amount of debris/litter or very unclean ◦ 2= less severe transgressions, lack of maintenance, moderate amount of litter/debris, and innocent graffiti ◦ 3= mostly or the entire area is free of litter/debris and in good aesthetic condition.	
2. Condition	1 2 3	PEX	Consider quality of buildings and maintenance of natural areas	

SECTION 3: AMENITIES

I. Amenities

I1. Paths

Aspect	Rating	Scaling	Considerations	Picture
1. Path presence	Yes No		Distinct and designated walking area/route with the primary function of linking elements within the park; may be paved or unpaved. Paths can lead to trails. **If no, skip to I2**	B1.1
2. Condition	1 2 3	PEX	Refer to guidebook; consider condition of path surface, including holes, cracks, etc.	B1.4
3. Cleanliness	1 2 3	NATE	Refer to guidebook; consider man-made litter, but not mud, rocks, twigs, etc.	A7.6a
4. Coverage/shade	1 2 3	PER	Refer to guidebook; consider the entire length of the path, but not width	A1.10-a,b

I2. Drinking water fountains

Aspect	Rating	Scaling	Considerations	Picture
1. Drinking fountains presence	Yes No		If none present, go to I3	E1.1; E1.4-a,b
2. Condition	1 2 3	PEX	◦ Refer to guidebook ◦ Consider consistency and height of water flow, if water is contained within the fountain & if leftover water drains or pools in water fountain after use. ◦ 3= completely functional; water flows consistently and at proper drinking height (not too high, not too low), water flow contained within the fountain & leftover water drains away ◦ 2= functional but may have some flaws (i.e, not flow consistently, water height being too low or too high, water flows outside of fountain, leftover water pools in fountain instead of draining away ◦ 1=not functional or has an extreme flaw that makes the water fountain difficult to function properly and thus use (i.e., water flow so low that it is not possible to use).	E1.4 – a,b,c
3. Child height or Handicap accessible	Yes No		Any fountains at a young child's height or handicap accessible?	E1.1
4. Paved surfacing	Yes No		Is there a paved surface around the fountain that one can stand on to drink?	

I3. Grills/fire pits

Aspect	Rating	Scaling	Considerations	Picture
1. Grills/fire pits presence	Yes No		If none present, go to I4	E2.1
2. Cleanliness	1 2 3	NATE	◦ Refer to guidebook; does not have to be and will not be sparkling clean. ◦ 3= Can use grill immediately; does not have to be cleaned before use. ◦ 2= Have to clean before using. ◦ 1= Unable to clean; individuals would not be comfortable using the grill.	E2.3; E2.1
3. Condition	1 2 3	PEX	◦ Refer to guidebook; expect a certain amount of wear. ◦ Consider if the grill is broken, rusted & if it has necessary components (i.e., the grill surface itself).	E2.1 & E2.3

I4. Picnic area

Aspect	Rating	Scaling	Considerations	Picture
1. Picnic area presence	Yes No		◦ **Must have** 2 or more adjacent picnic tables and a trash can; ◦ If none present, go to I5	E3.1
2. Cleanliness	1 2 3	NATE	Refer to guidebook; consider man-made litter.	
3. Coverage/shade	Yes No		Any of the eating areas covered?	E3.1

I5. Vending

Aspect	Rating	Scaling	Considerations	Picture
1. Vending presence	Yes No		If none present, go to I6	
2. Operational	Yes No			
3. Food/drink selection variety	Yes No		◦ Consider across all vending in park ◦ "No" = only food or only drinks available in the entire park.	

I6. Restrooms

Aspect	Rating	Scaling	Considerations	Picture
1. Restroom presence	Yes No		◦Must be publicly accessible (e.g., can be in municipal buildings), but not part of a commercial establishment; ◦If none present, go to I7	
2. Cleanliness	1 2 3	NATE	◦Refer to guidebook. ◦ Is it sanitary? Consider man-made litter, water etc on the floor, sink, and toilets.	F1.4-a,b
3. Condition	1 2 3	PEX	◦Refer to guidebook. ◦Consider whether sinks and toilets are all operational; if sinks & toilet seats are damaged etc.	F1.4-a,b

I7. Shelters/pavilions/gazebos

Aspect	Rating	Scaling	Considerations	Picture
1. Shelter/pavilion/ gazebo presence	Yes No		If none present, go to I8 See guidebook for definition; do not double-count covered picnic areas.	F2.1; a,c
2. Cleanliness	1 2 3	NATE	◦ Refer to guidebook. ◦ Consider man-made litter, deal breakers, excessive spider webs, leaves or other natural debris.	F2.1c
3. Condition	1 2 3	PEX	◦ Refer to guidebook; consider structural condition (i.e., damaged roof, support beams)	F2.1c

I8. Entertainment venues/stages

Aspect	Rating	Scaling	Considerations	Picture
1. Entertainment venues/ stages present	Yes No		If none present, go to I9	
2. Cleanliness	1 2 3	NATE	Refer to guidebook; consider man-made litter on stage and within seating area	
3. Condition	1 2 3	PEX	Refer to guidebook; consider stage and seating area	

I9. Benches

Aspect	Rating	Scaling	Considerations	Picture
1. Benches present	Yes No		If none present, skip to I10	
2. Condition	1 2 3	PEX	Refer to guidebook	A3.5a
3. Cleanliness	1 2 3	NATE	Refer to guidebook: include underneath benches	H1.6; A3.8a
4. Coverage/shade	1 2 3	PER	Refer to guidebook: consider coverage across all benches	A3.10a

I10. Tables

Aspect	Rating	Scaling	Considerations	Picture
1. Tables present	Yes No		If none present, skip to I11	
2. Cleanliness	1 2 3	NATE	Refer to guidebook: include underneath tables	H2.5 – a; A3.8a
3. Condition	1 2 3	PEX	Refer to guidebook	H2.6
4. Coverage/shade	1 2 3	PER	Refer to guidebook	A3.10b

I11. Seat walls

Aspect	Rating	Scaling	Considerations	Picture
1. Seat wall present	Yes No		If none present, skip to I12	H3.1-b
2. Cleanliness	1 2 3	NATE	◦ Refer to guidebook; include area immediately surrounding seat wall. ◦ Consider man-made litter.	H3.1-b
3. Condition	1 2 3	PEX	Refer to guidebook	H3.1-b
4. Coverage/shade	1 2 3	PER	Refer to guidebook	A3.10b

I12. Bleachers

Aspect	Rating	Scaling	Considerations	Picture
1. Bleachers present	Yes No		If none present, go to I13	H4.1-a,b
2. Cleanliness	1 2 3	NATE	◦ Refer to guidebook; include underneath bleachers ◦ Consider man-made litter, paint condition (if applicable), graffiti, & dealbreakers	H4.3 – a,b
3. Condition	1 2 3	PEX	Refer to guidebook	H4.1a, H4.3b
4. Coverage/shade	Yes No		Refer to guidebook	

I13. Area/neighborhood immediately surrounding park

Aspect	Rating	Scaling	Considerations	Pictures
1. Visibility from park into surrounding area/ neighborhood	Yes No		Is it possible to see the surrounding neighborhood from the park? Can you see them?	
2. Visibility from surrounding neighborhood into park	Yes No		◦ Your perception of how visible the park is from residences in the neighborhood surrounding the park. ◦ Could people see/watch/check on you if you were in the park?	

I14. Trash cans

Aspect	Rating	Scaling	Considerations	Pictures
1. Trash cans present	Yes No		If none present, skip to I15	J4.1; b,c
2. Cleanliness	1 2 3	NATE	◦ Consider the type of debris/litter that is left behind in the area immediately around the trash can. Is the trash can over-flowing? ◦ 1= Deal breakers on ground surrounding trash cans, poorly maintained or very unclean; trash over-flowing and unable to properly dispose of trash; residue left behind on the lid of the trash can that makes it difficult to dispose of trash without becoming dirty yourself ◦ 2 = not severe transgressions; a lack of maintenance, moderate amount of litter/debris, and innocent graffiti ◦ 3= mostly or all of the ground surface is free of litter/debris & in good aesthetic condition; able to dispose of litter without getting leftover residue on your hands & trash pick-up is well-maintained	J4.1; b,c; J4.6
3. Condition	1 2 3	PEX	◦ Focus on the functionality of the trash can - Consider if the trash can is standing up, how hard/easy it is to dispose of trash (not due to the amount of trash already in the can - consider this in "cleanliness") but due the can structure. ◦ 1 = if there is no possible way the can would hold and retain the trash or if it is extremely difficult to dispose of trash.	J4.1-b,c; J4.6
4. Covered	Yes No		◦ Do **more than half** of the trash cans have a cover? Covers include any top, lid, or individually covered containers that house trash cans. ◦ **Do not** rate as "yes" if the can is only "covered" by its placement underneath a pavilion or other physical structure that provides coverage for humans.	J4.1-b & J4.6
5. Separate recycling	Yes No		Are there any containers marked for recycling?	J4.9

I15. Wildlife areas/structures

Aspect	Rating	Scaling	Considerations	Pictures
1. Wildlife areas present	Yes No		◦ Consider only if it is a specific, designated areas for wildlife; if none present, skip to I16 ◦ One requirement - if noted as a "wildlife area" must be actually be able to see the respective animal - take season into consideration. ◦ Do not rate bird feeders as "yes." To rate "yes" animals will be put there by park personnel versus being there on their own volition.	
2. Seating availability	Yes No			

I16. Entrances

Aspect	Rating	Scaling	Considerations	Pictures
1. Cleanliness	1 2 3	NATE	◦ 1= Deal breakers, broken glass, poorly maintained (e.g., large piles of decomposing leaves), or very unclean ◦ 2= less severe transgressions, lack of maintenance, moderate amount of litter/debris, and innocent graffiti ◦ 3= mostly or the entire entrance is free of litter/debris and in good aesthetic condition.	K1.1-a,b,c

I17. Bike racks

Aspect	Rating	Scaling	Considerations	Pictures
1. Bike racks present	Yes No		If none present, skip to I18	K2.1
2. Number of bike racks	Number _____		Individual racks or a cluster of racks is counted as 1. A rack or cluster must be at least 25 feet apart to count as separate.	
3. Secured to ground	Yes No			K2.1

I18. Parking lots

Aspect	Rating	Scaling	Considerations	Pictures
1. Parking lots present	Yes No		Need to be part of or owned by park; if none present, skip to I19; street parking does not count	
2. Cleanliness	1 2 3	NATE	◦ Refer to the guidebook for the general "cleanliness" definition. ◦ 1= Deal breakers, broken glass, poorly maintained (e.g., large piles of decomposing leaves), or very unclean ◦ 2= less severe transgressions, lack of maintenance, moderate amount of litter/debris, and innocent graffiti ◦ 3= mostly or the entire parking lot is free of litter/debris and in good aesthetic condition.	K3.3
3. Condition	1 2 3	PEX	◦ Refer to guidebook for general "condition" definition. ◦ Consider flatness ◦ 1= steep incline/decline making it difficult to park; non-continuous material with many potholes ◦ 2= moderate incline/decline making the parking lot still functional to use; moderate amount of small potholes and a few larger potholes ◦ 3= mostly to extremely flat; continuous material without or only with a few small potholes.	K3.3

I19. Rules/regulation signs

Aspect	Rating	Scaling	Considerations	Pictures
1. Rules/regulation signs present	Yes No		If none present, skip to I20.	K1.4
2. Cleanliness	1 2 3	NATE	◦ Refer to guidebook; ◦ **DO NOT** consider graffiti as sign cleanliness; in this case graffiti affects the function of the sign & is assessed under "condition"	K1.4
3. Condition	1 2 3	PEX	Refer to guidebook; consider legibility, vandalism (i.e., is sign broken?) & **graffiti**	A2.3-a,b & K1.4

I20. Maps

Aspect	Rating	Scaling	Considerations	Pictures
1. Maps present	Yes No		If none present, skip to I21.	K1.6
2. Condition	1 2 3	PEX	Refer to guidebook; consider print size (read from 20 feet back?), vandalism (i.e., is map broken?)	K1.6

I21. Event postings

Aspect	Rating	Scaling	Considerations	Pictures
1. Event postings present	Yes No		◦ Event(s) posted, but not necessarily held at park (e.g., community) ◦ If none present, go to I22.	L3.1
2. Up to date	Yes No		Has the event date passed?	

I22. Telephones

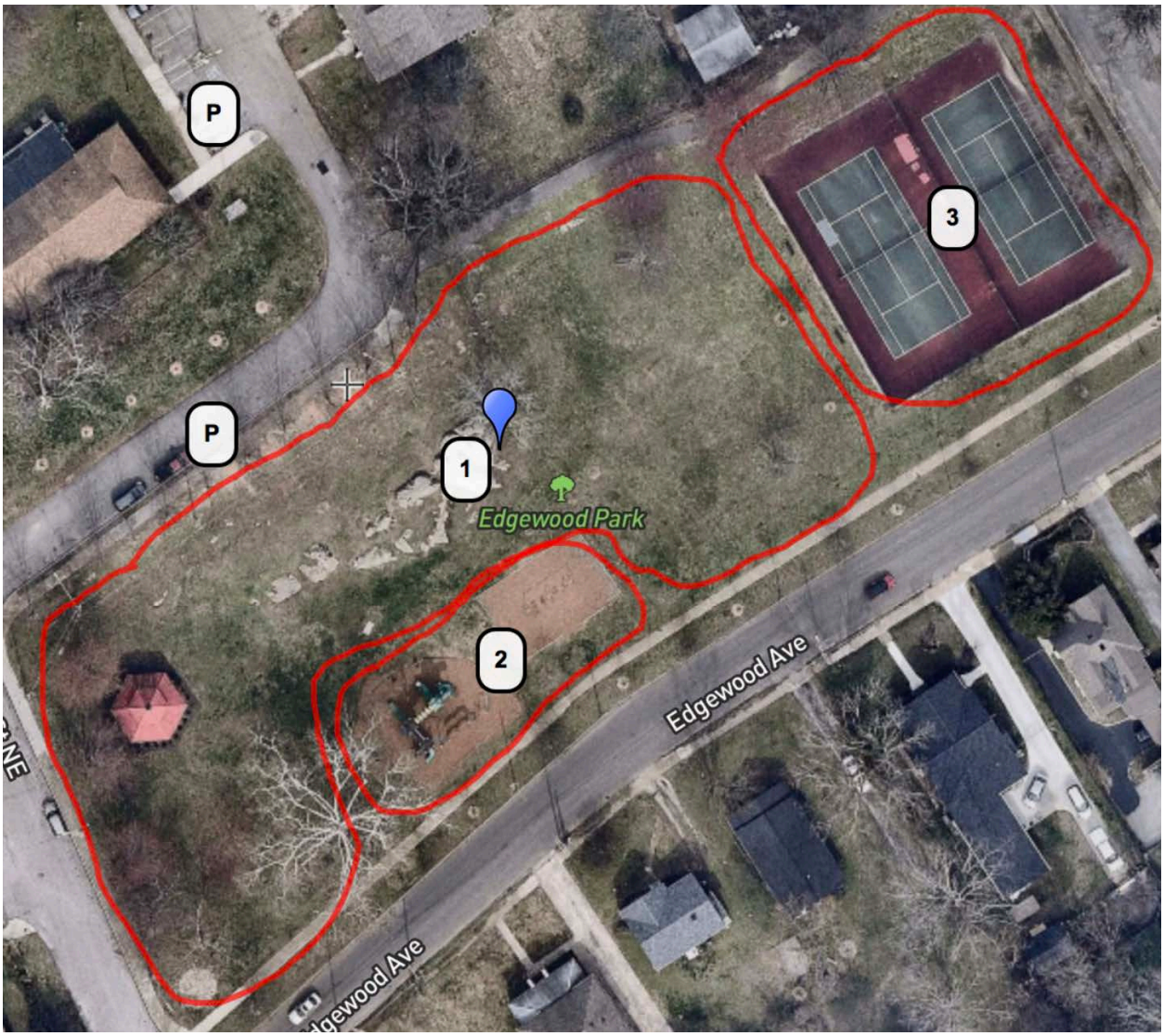
Aspect	Rating	Scaling	Considerations	Pictures
1. Functional phones present	Yes No		◦ Consider **functional** public phones in and adjacent to park. ◦ Pick up each phone and listen for a dial tone to determine if the phone is functional. ◦ If none present, skip next two questions.	
2. Cleanliness	1 2 3	NATE	Consider all things left by or on the phone that would affect the cleanliness of the phone (e.g., litter, graffiti, bird droppings, gum). 1= any dealbreakers or whenever you must come into contact with any uncleanly item to use phone (i.e., gum on ear/mouth piece, bird droppings on phone handle) 2 = uncleanly items that do not affect one's use of the phone (e.g., litter left in the phone booth, innocent graffiti on phone or booth) 3 = mostly clean; can use phone with zero contact with uncleanly items	
3. Free to use	Yes No		e.g., emergency phone, phone inside municipal building that is staffed	

Appendix B
Park Physical Activity Direct Observation Methodology

An objective measure for quantifying physical activity in the parks was obtained using direct observation. Trained observers, who were undergraduate Kinesiology students, used the System for Observing Play and Recreation in Communities (SOPARC) approach for direct observation of physical activity in the park setting.(McKenzie, Cohen, Sehgal, Williamson, & Golinelli, 2006; Ward et al., 2014) SOPARC provides a generalizable picture of park use related to being active, especially at the moderate-to-vigorous intensity levels. It also relates this physical activity to the park facilities and amenities. SOPARC data has been combined with the EAPRS data regarding identified facilities and amenities to examine how people interact with the park.

SOPARC is based upon a momentary time sampling approach that involved collecting data at each park across 4 days of the week (Monday, Wednesday, Saturday, and Sunday) at 3 times per day (morning, midday, and evening) between 7 AM and 8 PM. Data collection occurred during one week in the fall 2018 (October) and one week in the spring 2019 (April).

SOPARC first entailed mapping the park into activity zones which dictated the systematic observation protocol of SOPARC. The number of activity zones varied by the specific park. The smaller parks (e.g., Whitlow-Logan, Edgewood, and Cal Johnson) had 3 activity zones and the largest park, West Hills, had 18 activity zones. The subsequent direct observation using SOPARC followed an exact order of observation across the activity zones by each study team. Across the two-week time periods there were 24 total observations for each physical activity zone in each of the selected parks. An example of a park scan zone plan for Edgewood Park is below.



Each study team was composed of two Kinesiology undergraduate students who had undergone extensive SOPARC observer training. This training involved both classroom and field related reliability exercises in using the SOPARC instrument and protocol. After the training, each team was assigned a specific park for study data collection in the field. In total, 12 parks were purposefully selected to be SOPARC parks. Selected SOPARC parks included the following.

- Cal Johnson
- Charter Doyle
- Edgewood
- Fountain City
- Harriet Tubman
- Island Home
- Lonsdale
- Malcolm-Martin

- Sam Duff
- West Hills
- Whitlow-Logan
- World's Fair

The SOPARC instrument, seen below, allows trained observers to measure park use at each activity zone and classifies use by apparent gender (male and female), age (child, teen, adult, and elder), race/ethnicity (black, Hispanic, white, and other), and physical activity levels (sedentary, walking, and vigorous). In total, 42 undergraduate students were trained on SOPARC protocol, including how to classify people into categories mentioned above.

In addition, each zone is assessed for accessibility, usability, supervision, and organization. These counts of users are aggregated by zone, day of the week, and season.

DATE _____PARK ID # _____OBSERVER ID # _____PERIOD: □ Morning □ Lunch □ Afternoon □ Evening
TARGET AREA _____ _____ START TIME _____
Target Area # Subtarget Area #

CONDITIONS OF TARGET AREA

Accessible (e.g., not locked or rented to others) □ Yes □ No
Usable (e.g., is not excessively wet or windy) □ Yes □ No
Equipped (e.g., removable balls available) □ Yes □ No
Supervised (e.g., not locked or rented to others) □ Yes □ No
Organized (e.g., team sporting event) □ Yes □ No

Dark (e.g., insufficiently lit) □ Yes □ No
Empty (i.e., scan area is empty) □ Yes □ No

Comments:

PEOPLE	ACTIVITY	AGE GROUP				ETHNICITY				ACTIVITY LEVEL		
		Child	Teen	Adult	Old	L	B	W	O	S	W	V
Participants	**Primary Activity**											
Female												
Male												
Participants	**Secondary Activity**											
Female												
Male												
Spectators	**Organized Activity**											
Female												
Male												

Fitness Related Codes:
aerobics (dance/step aerobics)
fitness stations
jogging/running
strengthening exercises (pull ups)
walking

Sport Related Codes:
baseball
basketball
cheer leading
dance
football
gymnastics
handball
horseshoes
soccer
tennis/racquet
tetherball
volleyball

Active Game Related Codes:
climbing/sliding
jumping (rope, hop scotch)
manipulatives/racquet
tag/chasing games

Sedentary Related Codes:
chess/checkers/cards
lying down
picnic (food involved)
reading
standing
sitting

Appendix C
Telephone Survey Methodology

The project team, in conjunction with the UT College of Social Work Office of Research and Public Service's Center for Applied Research and Evaluation (CARE), conducted a public opinion survey between January and May 2019 to measure the relation between parks and physical activity behaviors of residents in the city of Knoxville. The following aspects of the survey, including the actual instruments are described below.

Perceived Environmental Supports for Physical Activity Questionnaire. This 27-item survey was developed and validated by the University of South Carolina in 2000 (Ainsworth et al., 2000; SIP 4-99 Research Group, 2002). This survey has previously been used in a local research study focusing on the impact of the Bearden Greenway (Fitzhugh, Bassett, & Evans, 2010). The survey measures the perceptions of both the social and physical environments of the respondent. At the neighborhood level, defined as a 10-minute walk from home, measures include observed physical activity as a norm, walkability, traffic, feelings of safety, and places where people can go to be physically active in the neighborhood. The survey was slightly modified to place a greater emphasis on park use.

Physical Activity Behavior. The physical activity of each respondent was assessed using the 6-item 2015 physical activity questionnaire obtained from the CDC Behavior Risk Factor Survey (BRFS) (Centers for Disease Control and Prevention, 2018). This report estimates the prevalence of people meeting the 2018 Physical Activity Guidelines for Americans. Respondents were asked details on the top two leisure-time physical activities they had done in the past month. In addition, the survey asked if any of the two LTPAs were done in a park setting. These questions also allowed the report to identify the most common leisure-time physical activities of Knoxville adults with information on frequency, duration, and intensity, and whether those activities took place in a park.

Park Awareness and Proximity. Respondents were asked to name the park nearest to their home, and were also asked to identify the nearest cross street intersection near their home. These data allowed the measurement of park awareness, and can be geocoded to provide an objective proximity measure to both the park and at-risk census tracts.

Demographic Measures. Standard BRFSS demographic measures were asked in order to create a demographic profile of park users.

The telephone survey component of the study was conducted with 800 residents living within the city limits of Knoxville. The survey was administered using landline and cell phone samples, and by web interface using Facebook advertisement, to ensure an adequate representation of all age groups. The sample was also stratified by census tracts to increase participation of residents from all areas of the city. The target sample size for each general region of the city – north, south, east, and west – was 200. This sample size was identified to provide a +/- 6.9%

margin of error at the 95% confidence level for each of the regions and a +/- 3.5% margin of error for at the 95% confidence level for the city at-large.

The addresses and phone numbers in the sample, as well as the Facebook advertisements, were purchased from Survey Sampling, Inc. based upon census tracts. When possible, household address information was included in the sample record. These addresses were used to mail a pre-notification letter explaining the purpose of the survey and providing researchers' contact information for any questions the household members had. Including a pre-notification letter in the methodology was intended to increase the response rate substantially and to reduce the non-response error. Facebook ads were designed to target subgroups that generally are underrepresented in telephone surveys. These groups typically include residents under the age of 45 and minority residents.

ENVIRONMENTAL SUPPORTS FOR PHYSICAL ACTIVITY QUESTIONNAIRE

(SOCIAL AND PHYSICAL ENVIRONMENT SURVEY)

Prevention Research Center
Norman J. Arnold School of Public Health
University of South Carolina

Principal Investigator:
Barbara E. Ainsworth, PhD, MPH

Developed in collaboration with B.E. Ainsworth, C.L. Addy, D.E. Porter, M.J. Neet, K.A. Kirtland, C.D. Kimsey, Jr., L.J. Neff, P.A. Sharpe, J.E. Williams, C.L. Tudor-Locke.

Suggested citation:

SIP 4-99 Research Group. (2002, October). Environmental Supports for Physical Activity Questionnaire. Prevention Research Center, Norman J. Arnold School of Public Health, University of South Carolina. Retrieved [date] from the World Wide Web: http://prevention.sph.sc.edu/tools/Env_Supports_for_PA.pdf.

SPECIAL INTEREST PROJECT #4-99 is supported by Cooperative Agreement #U48/CCU409664 from the Centers for Disease Control and Prevention

Section 3: Social and Physical Environments

"I will be asking you some questions about the neighborhood in which you live, followed by some questions about the community in which you live."

"First, some questions about the neighborhood in which you live. For the purpose of this interview, neighborhood is defined as the area within one-half mile or a ten-minute walk from your home.

3.1 How long have you lived at your current address?

Number of months (twelve months or less) .....___ ___
Number of years (one year or more).....___ ___
Don't know/ not sure 77
Refused 99

<Note to interviewer: Less than one year is entered as months and more than twelve months is entered as whole years only. E.g. 5 years, not 5 years and 4 months.>

3.2 In general, would you say that the people in your neighborhood are….

a. Very physically active.....1
b. Somewhat physically active.....2
c. Not very physically active 3
d. Not at all physically active.....4

Don't know/ not sure 7
Refused 9

3.3 Overall, how would you rate your neighborhood as a place to walk? Would you say…

a. Very pleasant 1
b. Somewhat pleasant.....2
c. Not very pleasant 3
d. Not at all pleasant.....4

Don't know/ not sure 7
Refused 9

Section 3: Social and Physical Environments

3.4 In general, would you say the motorized traffic in your neighborhood is…

a. Heavy, ...1
b. Moderate, OR....2
c. Light? 3
Don't know/not sure 7
Refused 9

3.5 Does your neighborhood have any sidewalks?

a. Yes 1
b. No ***(Skip to question 3.7)***....2
Don't know/not sure 7
Refused……9

3.6 For walking in your neighborhood, would you say your sidewalks are…

a. Very well maintained....1
b. Somewhat maintained....2
c. Not very well maintained....3
d. Not at all maintained....4
Don't know/ not sure 7
Refused 9

3.7 For walking at night, would you describe the STREET lighting in your neighborhood as…

a. Very good....1
b. Good....2
c. Fair 3
d. Poor 4
e. Very poor 5
Don't know/ not sure 7
Refused 9

Section 3: Social and Physical Environments

3.8 For walking in your neighborhood, would you say that unattended dogs are….

a. A big problem 1
b. Somewhat of a problem 2
c. Not very much of a problem 3
d. Not a problem at all.....4

Don't know/ not sure 7

Refused 9

3.9 How safe from crime do you consider your neighborhood to be?

Would you say…

a. Extremely safe 1
b. Quite safe 2
c. Slightly safe 3
d. Not at all safe 4

Don't know/not sure 7

Refused 9

3.10 Generally speaking, would you say most people in your neighborhood can be trusted?

a. Yes 1
b. No.....2

Don't know/not sure 7

Refused……..9

3.11 Does your neighborhood have public recreation facilities (such as public swimming pools, parks, walking trails, bike paths, recreation centers, etc.)?

a. Yes 1
b. No ***(Skip to question 3.13)***.....2

Don't know/not sure 7

Refused……..9

Section 3: Social and Physical Environments

3.12 In general, how would you rate the condition of these public recreation facilities? Would you say…

a. Excellent 1
b. Good.....2
c. Fair 3
d. Poor 4
Don't Know/Not Sure 7
Refused 9

3.13 Thinking about how public money is spent on recreation facilities, which of the following statements is most accurate…

a. My neighborhood almost always gets its fair share.....1
b. My neighborhood often gets its fair share 2
c. My neighborhood seldom gets its fair share 3
d. My neighborhood never gets its fair share.....4
Don't Know/Not Sure 7
Refused 9

3.14 For physical activity, do you use ANY private or membership only recreation facilities?
(… including those outside of your neighborhood)

a. Yes 1
b. No.....2
Don't know/not sure 7
Refused……..9

Section 3: Social and Physical Environments

"For the next several questions, think about the community in which you live. For the purposes of this interview, community is defined as the area within ten miles or a twenty-minute drive from your home.

"Please tell me if you yourself USE any of the following resources and facilities in your community. If the type resource or facility I mention is not available in your community, please let me know."

<Note to interviewer: Emphasize you/yourself. The question is asking about personal use, not their family or community's use.>

3.15 Walking trails?

a. Yes – R USES WALKING TRAILS IN COMMUNITY 1
b. No – R DOES NOT USE WALKING TRAILS IN COMMUNITY 2
c. My community does not have any walking trails 3

Don't know/ not sure 7

Refused 9

PROBE: BY WALKING TRAILS WE MEAN PUBLIC TRAILS THAT ARE DESIGNATED FOR WALKING.

3.16 Public swimming pools?

a. Yes - R USES POOLS IN COMMUNITY.....1
b. No- R DOES NOT USE POOLS IN COMMUNITY 2
c. My community does not have any public swimming pools 3

Don't know/ not sure 7

Refused 9

3.17 Public Recreation Centers?

a. Yes - R USES PUBLIC RECREATION CENTERS IN COMMUNITY 1
b. No- R DOES NOT USE PUBLIC RECREATION CENTERS IN COMMUNITY.....2
c. My community does not have any public recreation centers.....3

Don't know/ not sure 7

Refused 9

Section 3: Social and Physical Environments

3.18 Bicycle paths or bike trails?

a. Yes - R USES BIKE TRAILS IN COMMUNITY 1
b. No- R DOES NOT USE BIKE TRAILS IN COMMUNITY 2
c. My community does not have any bike paths or bike trails 3
Don't know/ not sure 7
Refused 9

3.19 Parks/playgrounds/sports fields?

a. Yes - R USES PARKS IN COMMUNITY 1
b. No - R DOES NOT USE PARKS IN COMMUNITY 2
c. My community does not have any parks/playgrounds/sports fields 3
Don't know/ not sure 7
Refused 9

3.20 Schools that are open for public recreation activities?

a. Yes- R USES SCHOOLS FOR REC IN COMMUNITY 1
b. No - R DOES NOT USE SCHOOLS FOR REC IN COMMUNITY 2
c. Schools in my community are not open for the public to use 3
Don't know/ not sure 7
Refused 9

3.21 Do you use a shopping mall for physical activity/walking programs?

a. Yes- R USES MALLS FOR PA IN COMMUNITY 1
b. No- R DOES NOT USE MALLS FOR PA IN COMMUNITY 2
c. My community does not have a shopping mall 3
Don't know/ not sure 7
Refused 9

Section 3: Social and Physical Environments

3.22 Do you use physical activity programs and facilities at a place of worship?

a. Yes- R USES FACILITIES AT PLACE OF WORSHIP IN COMMUNITY 1
b. No- R DOES NOT USE FACILITIES AT PLACE OF WORSHIP IN COMMUNITY....2
c. My community does not have any places of worship with physical activity programs 3

Don't know/ not sure 7
Refused 9

3.23 Do you use nearby waterways such as creeks, rivers, and lakes for water-related physical activities such as canoeing, kayaking, swimming, or skiing? (DO NOT INCLUDE NON-PHYSICAL ACTIVITIES SUCH AS BOATING)

a. Yes- R USES WATERWAYS FOR PA IN COMMUNITY 1
b. No- R DOES NOT USE WATERWAYS PA IN COMMUNITY 2
c. My community does not have any waterways to use for physical activity 3

Don't know/ not sure 7
Refused 9

"The next questions concern your opinion about physical activity facilities in your community."

3.24 For your own physical activity, how important are recreational/ physical activity clubs, programs, or organized recreational events in your community…

a. Very important 1
b. Somewhat important 2
c. Not very important 3
d. Not at all important 4
e. My community does not have any physical activity clubs or programs 5

Don't know/ not sure 7
Refused 9

Section 3: Social and Physical Environments

3.25 In your community, would you say that all people have equal access to public recreation facilities?

a. Yes 1
b. No.....2
c. My community does not have any public recreation facilities, ***(Skip to question 4.1)*** 3

Don't Know/Not Sure 7

Refused 9

3.26 How safe are the public recreation facilities in your community? Would you say…

a. Very safe 1
b. Somewhat safe 2
c. Somewhat unsafe 3
d. Not at all safe 4

Don't Know/Not Sure 7

Refused 9

3.27 Do concerns about safety at the public recreation facilities in your community influence your using them?

a. Yes.....1
b. No.....2
c. My community does not have any public recreation facilities 3

Don't Know/Not Sure 7

Refused 9

2017

Behavioral Risk Factor Surveillance System Questionnaire

Physical Activity Questions

October 3, 2016

READ IF RESPONDENT ASKS ABOUT WHAT TO INCLUDE: "INCLUDE TOMATOES, GREEN BEANS, CARROTS, CORN, CABBAGE, BEAN SPROUTS, COLLARD GREENS, AND BROCCOLI. INCLUDE RAW, COOKED, CANNED, OR FROZEN VEGETABLES. DO NOT INCLUDE RICE."

1_ _ Days
2_ _ Weeks
3_ _ Months
888 Never
777 Don't Know
999 Refused

Section 13: Exercise (Physical Activity)

The next few questions are about exercise, recreation, or physical activities other than your regular job duties.

INTERVIEWER INSTRUCTION: If respondent does not have a "regular job duty" or is retired, they may count the physical activity or exercise they spend the most time doing in a regular month.

13.1 During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise? (233)

1 Yes
2 No **[GO TO Q13.8]**
7 Don't know / Not sure **[GO TO Q13.8]**
9 Refused **[GO TO Q13.8]**

13.2 What type of physical activity or exercise did you spend the most time doing during the past month? (234-235)

_ _ (Specify) [See Physical Activity Coding List]
77 Don't know / Not Sure **[GO TO Q13.8]**
99 Refused **[GO TO Q13.8]**

INTERVIEWER INSTRUCTION: IF THE RESPONDENT'S ACTIVITY IS NOT INCLUDED IN THE PHYSICAL ACTIVITY CODING LIST, CHOOSE THE OPTION LISTED AS "OTHER".

13.3 How many times per week or per month did you take part in this activity during the past month? (236-238)

1_ _ Times per week
2_ _ Times per month
777 Don't know / Not sure
999 Refused

13.4 And when you took part in this activity, for how many minutes or hours did you usually keep at it? (239-241)

_:_ _ Hours and minutes
777 Don't know / Not sure
999 Refused

13.5 What other type of physical activity gave you the next most exercise during the past month? (242-243)

_ _ (Specify) [See Physical Activity Coding List]
88 No other activity **[GO TO Q13.8]**
77 Don't know / Not Sure **[GO TO Q13.8]**
99 Refused **[GO TO Q13.8]**

INTERVIEWER INSTRUCTION: IF THE RESPONDENT'S ACTIVITY IS NOT INCLUDED IN THE CODING PHYSICAL ACTIVITY LIST, CHOOSE THE OPTION LISTED AS "OTHER".

13.6 How many times per week or per month did you take part in this activity during the past month? (244-246)

1_ _ Times per week
2_ _ Times per month
777 Don't know / Not sure
999 Refused

13.7 And when you took part in this activity, for how many minutes or hours did you usually keep at it? (247-249)

_:_ _ Hours and minutes
777 Don't know / Not sure
999 Refused

13.8 During the past month, how many times per week or per month did you do physical activities or exercises to STRENGTHEN your muscles? Do NOT count aerobic activities like walking, running, or bicycling. Count activities using your own body weight like yoga, sit-ups or push-ups and those using weight machines, free weights, or elastic bands. (250-252)

1_ _ Times per week
2_ _ Times per month
888 Never
777 Don't know / Not sure
999 Refused

Section 14: Seatbelt Use

14.1 How often do you use seat belts when you drive or ride in a car? Would you say — (253)

Please read:
1 Always
2 Nearly always
3 Sometimes
4 Seldom
5 Never

Do not read:
7 Don't know / Not sure
8 Never drive or ride in a car
9 Refused

Section 15: Immunization

Now I will ask you questions about the flu vaccine. There are two ways to get the flu vaccine, one is a shot in the arm and the other is a spray, mist, or drop in the nose called FluMist™.

15.1 During the past 12 months, have you had either a flu shot or a flu vaccine that was sprayed in your nose? (254)

Activity List for Common Leisure Activities

(To be used for Section 12: Physical Activity)

Code Description (Physical Activity, Questions 12.2 and 12.5 above)

01 Active Gaming Devices (Wii Fit, Dance, Dance revolution)
02 Aerobics video or class
03 Backpacking
04 Badminton
05 Basketball
06 Bicycling machine exercise
07 Bicycling
08 Boating (Canoeing, rowing, kayaking, sailing for pleasure or camping)
09 Bowling
10 Boxing
11 Calisthenics
12 Canoeing/rowing in competition
13 Carpentry
14 Dancing-ballet, ballroom, Latin, hip hop, Zumba, etc.
15 Elliptical/EFX machine exercise
16 Fishing from river bank or boat
17 Frisbee
18 Gardening (spading, weeding, digging, filling)
19 Golf (with motorized cart)
20 Golf (without motorized cart)
21 Handball
22 Hiking – cross-country
23 Hockey
24 Horseback riding
25 Hunting large game – deer, elk
26 Hunting small game – quail
27 Inline Skating
28 Jogging
29 Lacrosse
30 Mountain climbing
31 Mowing lawn
32 Paddleball
33 Painting/papering house
34 Pilates
35 Racquetball
36 Raking lawn/trimming hedges
37 Running
38 Rock climbing
39 Rope skipping
40 Rowing machine exercises
41 Rugby
42 Scuba diving
43 Skateboarding
44 Skating - ice or roller
45 Sledding, tobogganing
46 Snorkeling
47 Snow blowing
48 Snow shoveling by hand
49 Snow skiing
50 Snowshoeing
51 Soccer
52 Softball/Baseball
53 Squash
54 Stair climbing/Stair master
55 Stream fishing in waders
56 Surfing
57 Swimming
58 Swimming in laps
59 Table tennis
60 Tai Chi
61 Tennis
62 Touch football
63 Volleyball
64 Walking
66 Waterskiing
67 Weight lifting
68 Wrestling
69 Yoga
71 Childcare
72 Farm/Ranch Work (caring for livestock, stacking hay, etc.)
73 Household Activities (vacuuming, dusting, home repair, etc.)
74 Karate/Martial Arts
75 Upper Body Cycle (wheelchair sports, ergometer
76 Yard work (cutting/gathering wood, trimming, etc.)
98 Other_____
99 Refused

Appendix D: Qualitative Methodology

Key Informant Interviews

12 high-priority census tracts were selected within the City of Knoxville based on local data on prevalence of coronary heart disease among adults aged ≥18 years and diagnosed with diabetes among adults aged ≥18 years as well as the lowest estimates for no leisure-time physical activity among adults aged ≥18 years and life expectancy. To recruit key informants, we identified individuals within these areas who might play a role in the local programing and policy initiatives related to access, quality, and services of parks and recreation facilities. Potential key informants included City of Knoxville parks and recreation representatives, Knox County School District officials, representatives of neighborhood associations, representatives of community housing, directors of non-profit organizations, clergy, and/or others working with religious organizations. The research team contacted eligible participants via email and/or telephone to recruit key informants. Two 60-90 minute in-depth interviews were conducted by trained Public Health graduate students within each of the 12 high-priority census tracts, except for census tracts 14, 19, 21, and 67 where four were held. The institutional review board (IRB) at the University of Tennessee reviewed and approved all study materials and protocols before implementation. To safeguard participant confidentiality and the collected data, participants' identities were not disclosed in the study findings. With permission, interviews were audio-recorded and transcribed using InqScribe v. 2.2.4 (InQuirium, 2019). The research team conducted the key informant interviews using a semi-structured interview guide on the physical environment of neighborhood parks, accessibility to parks and recreation facilities, services offered at parks, the quality and condition of the recreation facilities, and programming and policy initiatives for neighborhood parks. Demographic information (i.e., age, education level, etc.) was collected. Transcripts were analyzed with rapid qualitative data analysis techniques, specifically data condensation, were used to analyze the key informant interviews. Data were sorted, organized, and reduced to facilitate and verify conclusions (Miles & Huberman, 1994). Additionally, neutral domain names for each interview question (deductive approach) and a summary matrix were developed (Averill, 2002).

Focus Group Interviews

One focus group (5-15 participants) was conducted in six priority census tracts; a total of six focus groups. Focus group methodology, as suggested by Krueger and Casey (2014) and Patton (2015), was utilized. Focus group participants were recruited with the assistance of the Knox County Health Department and key informants. Consent was obtained for each participant prior to the start of each focus group. Graduate students in Public Health and Kinesiology trained in focus group methodology conducted the groups. All focus groups were audio-recorded and transcribed using InqScribe v. 2.2.4 (InQuirium, 2019). Transcripts were coded and subsequently abstracted to identify common elements. Demographic information (i.e., age, education level, etc.) was also collected. Participants received a $25 Knoxville Utility Board voucher for their participation. The focus groups of 5-15 participants provided the opportunity to directly question men and women about their perceptions of the parks and recreation facilities and its influence on their physical activity behaviors. We intended to elicit responses from participants about the context and meaning of these complex concepts for themselves

and their families. Barriers and facilitators to park use and the impact of physical activity or inactivity in their lives were also themes of interest.

Appendix E
Characteristics of City of Knoxville Parks:
Physical Activity Features, Aesthetics, Amenities

PHYSICAL ACTIVITY PROMOTING FEATURES

Trail	Park N	%
Paved	40	42.6
Unpaved	21	22.3
Open Space	71	75.5
Pools	3	3.2
Sidewalk	42	44.7
Playground		
Playset	56	59.6
Other Play Equipment	49	52.1
Athletics		
Field	34	36.2
Court	29	30.8
Skate Board	3	3.2
Indoor Rec Center	11	11.7
Greenway Linkage	24	25.8

AESTHETICS

Meadow	14	14.9
Wooded Area	80	85.1
Ponds/Lakes	15	16.0
Streams/Creeks	29	30.8
Appealing Views	23	24.5
Fountains	7	7.4
Historical Markers	16	17.0
Landscaping	46	48.9
Sculpture/Art	18	19.2

AMENITIES

Connecting Paths	45	47.9
Water Fountains	26	27.7
Grills	31	33.0
Picnic Area	56	59.6
Vending	14	14.9
Restrooms	38	40.4
Shelters/Pavilions	44	46.9
Entertainment Stages	8	8.5

PHYSICAL ACTIVITY PROMOTING FEATURES (Continued)

Seating Park	Park N	%
Benches	70	74.5
Tables	66	70.2
Seat Walls	16	17.0
Bleachers	19	20.2
Visibility to Neighborhood	31	33.0
Trash Cans		
Trash	83	88.3
Recycling	67	80.7
Bike Racks	25	26.6
Parking Lots	64	68.1
Maps	13	13.8
Event Postings	4	4.3