HHS Public Access

Author manuscript

J Rural Health. Author manuscript; available in PMC 2015 September 01.

Published in final edited form as:

J Rural Health. 2014 September ; 30(4): 369–378. doi:10.1111/jrh.12071.

The Associations Between Park Environments and Park Use in Southern US Communities

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Abstract

Purpose—To document park use and park and neighborhood environment characteristics in rural communities, and to examine the relationship between park characteristics and park use.

Methods—The System for Observing Play and Recreation in Communities measured use in 42 target areas across 6 community parks in May 2010 and October 2010. Direct observation instruments were used to assess park and neighborhood environment characteristics. Logistic regression was used to determine the relationship between the condition, number of amenities, and number of incivilities in a target area with target area use.

Findings—Ninety-seven people were observed across all parks during May 2010 data collection and 116 people during October 2010 data collection. Low park quality index scores and unfavorable neighborhood environment characteristics were observed. There was a significant positive association between number of incivilities in a target area and target area use (OR = 1.91; 95% CI: 1.09–3.38; P = .03).

Conclusions—The number of people observed using the parks in this study was low, and it was considerably less than the number observed in other studies. The objective park and neighborhood environment characteristics documented in this study provide a more comprehensive understanding of parks than other studies. Further examining the complex relationship between

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park and neighborhood environment characteristics and park use is important, as it can inform park administrators and city planners of characteristics that are best able to attract visitors.

Keywords

park conditions; park features; park incivilities; physical activity; rural

The advancement of ecological models in the physical activity (PA) and public health literature has resulted in a greater emphasis on the social and physical environments in which people live and interact. Within this expanded paradigm, parks have been identified as an important setting for PA,[1,2] as they offer a free or low-cost alternative to other PA resources. Although a number of park observation studies have been conducted, important areas of research remain before parks achieve their full potential within PA promotion efforts. Two areas for further investigation include documenting park use in rural settings and understanding the role of park environments on park use.

A majority of the park observation literature has been conducted in urban settings.[3–5] The available literature indicates that large differences exist in park visitation frequency and park-based PA between urban and rural parks.[6] Shores and West found that urban park use was more evenly spread throughout the week and day, with a majority of park users engaging in vigorous activities (72%).[6] In contrast, rural park use was clustered around weekends and highest in the afternoon and evening, with a majority of park users engaging in sedentary activities (51%).[6] In addition, a recent study in Australia found that while rural parks scored higher in aesthetics, urban parks scored higher in access, lighting/safety, diversity of play equipment, and were more likely to have paths suitable for walking/cycling.[7] These findings highlight important differences between urban and rural parks that limit the generalizability of the current literature.

Park design and park quality may strongly influence park use; however, few studies have documented park environments at this level of detail. Instead, a majority of the park observation literature has documented characteristics such as park size and available park facilities.[6,8–10] The literature documenting park environments and park use has been limited primarily to urban settings,[11,12] self-report measures of park use[11–13] and park environments,[11,12] and to the assessment of a subsample of areas within parks rather than entire parks.[14] Although this work has provided important insights into the influence of park quality on park use, a comprehensive examination of park environments and park use with objective measures was needed.

Further, parks do not exist in isolation of their surrounding environment but are directly and drastically affected by their neighborhood.[15] Unfortunately, few studies have moved beyond demographic characteristics to examine how broader social and physical environment characteristics influence park use. Similar to the park environment literature, the literature documenting neighborhood environment characteristics and park use has been limited primarily to urban settings[16–18] and self-report measures of park use[16,17,19,20] and neighborhood environment attributes.[17,21]

Gaining a better understanding of park use in nonurban areas will be important for determining their contribution to community-wide PA and improving park promotion efforts in these settings. This is critical as 21% of the US population lives in rural settings,[22] rural residents have less access to parks,[23] and rural populations suffer disproportionately from health compromising conditions.[24–28] Comprehensively documenting park and neighborhood environments with park use will aid in helping park administrators and city planners understand which park characteristics are best able to attract visitors, and it will provide insights into how neighborhood environments support parks and foster their use. Examining these issues in racial/ethnic, low-income, and rural populations is particularly important.[29] Thus, the purpose of this study was to document park use, park and neighborhood environments, and to examine the relationship between park characteristics and park use in 6 parks located in underserved communities in the southern United States.

Methods

Study Setting

Six community parks in a county located in central South Carolina were observed in May 2010 and October 2010. The parks previously benefited from a mini-grant program conducted by the University of South Carolina Prevention Research Center (USC PRC).[30] The mini-grant program provided capacity building skills and financial awards to organizations representing underserved communities in the county, which resulted in the construction of a walking track at each park, along with other renovations (all renovations were completed 2005–2009). To protect community confidentiality, the parks in this study were renamed Parks A-F.

The communities were selected based on their limited access to community resources (eg, PA resources), social and economic factors, and low population density. We believe this approach is inline with the National Rural Health Association's recommendation that rural definitions be specific to the purpose of the program in which they are used, and that they (ie, rural definitions) be referred to as programmatic designations and not definitions.[31] There is no universally accepted definition of rural; however, for descriptive purposes we selected the urban/rural definition used by the US Census,[32] which identified 3 of the 6 park communities as rural (Table 1).[22] While 3 park communities were identified as urban, they have a high proportion of rural residents and low population densities (Table 1).[22] US Census tract data show that compared to South Carolina, the neighborhoods surrounding the parks in this study had a higher proportion of African American residents (55% vs 28%) and residents living below the poverty level (20% vs 17%).[22]

Data Collection Procedures

Park Use and Weather Conditions—The System for Observing Play and Recreation in Communities (SOPARC)[33] was used to document park use in May 2010 and October 2010. Direct observations of park users were conducted within predetermined target areas using momentary time sampling approaches.[34] Study investigators visited each park before May 2010 and October 2010 data collection to determine target areas using strategies recommended by McKenzie and colleagues.[35] Using detailed maps of each park, study

investigators walked throughout the entire park, identified all areas within the park (eg, baseball field, walking track, playground equipment, and open space), and precisely drew these areas on the maps. The resulting maps were provided to SOPARC data collectors, and photos of these target areas were used for training purposes. Across all parks, a total of 42 target areas were observed at each time point.

Target area conditions (ie, accessible, usable, equipped, supervised, organized, dark, or occupied) and the number of park users and their gender, age (ie, child, teen, adult, or senior), and race/ethnicity (ie, Latino, black, white, or other), along with the type (eg, walking) and intensity of PA in which park users engaged (ie, sedentary, walking, or vigorous) was collected for every target area observation. The SOPARC has demonstrated good inter-rater reliability,[33] and the PA coding system used in the SOPARC has been validated in previous studies.[36–39]

Consistent with the literature, each park was observed 4 times per day[33,34] on 4 randomly selected days[40,41] (ie, 2 weekdays, 1 Saturday, and 1 Sunday) in May 2010 and October 2010. Good to excellent reliability estimates of park use have been observed with the protocol used in this study.[42] Consistent with the literature, observation period (ie, morning, lunch, afternoon, and evening) start times were staggered to capture a longer duration of park use.[40,43] For each park, 1 weekday and 1 weekend day were randomly assigned an observation schedule of 7:00 AM, 11:00 AM, 3:00 PM, and 6:00 PM, with the remaining weekday and weekend day assigned to 8:00 AM, 12:00 PM, 4:00 PM, and 7:00 PM. The evening observation period was changed to 5:30 PM and 6:30 PM in October 2010 due to safety concerns, as most parks did not have adequate lighting.

Raters were trained in SOPARC data collection prior to May 2010 and October 2010 data collection by study investigators. Training consisted of in-class and field-based training and occurred over the course of 1 week. In-class training provided an overview of the work done by the USC PRC in these communities, the study purpose, data collection materials, target areas and target area maps, SOPARC and park observation protocols, and viewing and coding the SOPARC training and practice videos by McKenzie and colleagues (discrepancies between gold standard responses by McKenzie and colleagues and rater responses were discussed). Field-based training consisted of site visits to each park to review its location and target areas, and visiting nonproject parks and trails to practice SOPARC coding under the supervision of study investigators (discrepancies between study investigators and raters were discussed).

Most observations were conducted by 2 raters (92% in May 2010; 96% in October 2010). When an observation period was conducted by 2 raters, 1 rater was randomly selected, and his/her data were used for statistical analysis. Weather data were collected via The Weather Channel's website,[44] and raters documented adverse weather (eg, rain) on SOPARC data collection forms. Rain affected 3 days of data collection in May 2010 (6% of total park observation periods); these observation periods were reassessed as suggested elsewhere.[45] October 2010 data collection was not affected by adverse weather.

Park Environment—The Physical Activity Resource Assessment (PARA) instrument[46] was used to document park characteristics in May 2010 and October 2010. Although our preference was to use a rural-specific measure, park audit tools were limited to urban settings at the time of data collection. Rural-specific built environment measures (eg, Rural Active Living Assessment Tools[47]) were considered; however, they did not document the park characteristics needed to address the research questions in this study. The PARA was identified as the most appropriate measure after a review of the literature and consulting with colleagues, as it offers greater generalizability to US parks[48] and comprehensively documents park characteristics (ie, features, amenities, and incivilities) when compared to other park measures.[48–50] Although the PARA was developed in urban areas of Kansas and Missouri, it was developed in primarily low-income, racial/ethnic minority communities,[46] similar to those in this study. The PARA has also been used in a rural county in the northeast United States[51] and 2 cities in the southern United States.[52]

The PARA is an audit tool used to document resource characteristics (ie, type of resource, approximate size, indoor capacity, cost, and hours of operation), signage (ie, hours of operation and rules), and features (eg, baseball field and play equipment), amenities (eg, benches and trash containers), and incivilities (eg, litter and vandalism) present at a variety of PA resources.[46] The instrument documents the absence or presence of 13 features and 12 amenities.[46] When features and amenities are present, their condition is rated as “poor,” “mediocre,” or “good” using operational definitions.[46] The absence or presence of 12 incivilities are also documented.[46] When incivilities are present, their quantity is rated as “little/few present,” “some present,” or “a lot present” using operational definitions.[46] The PARA has demonstrated good reliability (r’s > 0.77).[46]

PARA data were collected at the park and target area level in this study, with SOPARC target areas serving as PARA target areas. Individual PARA instruments were used to assess each park (N = 6) and target area (N = 42) at both time points. Data collected at the park level were used to create the Quality Physical Activity Resource (QPAR) index score (range: 0–25)[53]: number of different features + number of different amenities— number of different incivilities. Data collected at the target area level were used to create 3 independent variables: target area condition, number of amenities in a target area, and number of incivilities in a target area.

Target area condition—The first step in determining target area condition was to categorize each target area into a target area type. There were 42 target areas in May 2010 and October 2010, with target areas remaining the same at both time points. Target areas were categorized into one of the following: open space (N = 19), walking/running/biking trail (N = 7), play equipment (N = 6), basketball court (N = 5), baseball field (N = 4), and shelter (N = 1). The next step was to create a condition rating for each target area type. For target areas categorized as a walking/running/biking trail, play equipment, basketball court, baseball field, and shelter, their PARA condition rating served as the target area condition rating. Although open space is not an item measured in the PARA, 2 incivility items were deemed appropriate to create an open space condition rating: no grass and overgrown grass. These 2 items were reverse scored and averaged to represent the open space target area condition rating.

Number of amenities and incivilities—The number of different amenities in a target area was summed to create a total amenities score. Similarly, the number of different incivilities in a target area was summed to create a total incivilities score. Bike racks, categorized as a feature in the PARA, were considered an amenity in this study, and included in the total number of different amenities. As shelter, no grass, and overgrown grass items were used to determine a target area condition rating, they were not counted when creating the total number of different amenities and total number of different incivilities in a target area.

Neighborhood Environment—Using Geographic Information Systems techniques, each park had a Euclidean buffer placed around it, which included the 400-m area surrounding its perimeter. Objective audits of all street segments within the boundary were completed at one time point (June-July 2010) via a windshield survey using the Neighborhood Attribute Inventory (NAI) instrument.[54] A total of 103 street segments were assessed across all parks on weekdays between 10:00 AM and 4:00 PM. The NAI instrument has previously been used in the South and has an average inter-rater reliability of 83% among pairs of raters.[55] Inter-rater reliability was established in this study during field training and is discussed in the results section.

The NAI instrument is divided into 4 sections: physical conditions, public spaces, social interactions, and nonresidential land uses.[54] Using the NAI instrument, 3 index scores (range: 0–1) were created for each park: physical incivilities, territoriality, and social spaces.[55] The items used to create these index scores are presented in Table 2.[55] *Physical incivilities* are defined as physical disorder associated with an increased fear of crime, perceptions of problems in the neighborhood, and decreased social control, which may contribute to crime and further neighborhood deterioration.[54,56,57] *Territoriality* is thought to represent an outward manifestation of neighborhood cohesion and to convey ownership and social control, which may lead to protective effects against crime and adverse neighborhood events.[54,55] *Social spaces* provide residents with communal spaces to build relationships and strengthen social ties and with resources to be physically active.[54,55] Lower physical incivilities index scores are more desirable, while higher territoriality and social spaces index scores are more desirable. Index scores were first created for each street segment and an average score was then calculated across all street segments surrounding a park for each of the 3 indices.

Statistical Analysis

Inter-Rater Reliability

Inter-rater reliability for the SOPARC was assessed using percent agreement and intraclass correlations (ICCs). Percent agreement was calculated for target area condition items. ICCs were calculated for total number of park users observed during a target area observation and number of park users in a gender, age, racial/ethnic, and activity-level group. ICCs were only calculated for observations in which a park user was observed by at least 1 of 2 raters. Inter-rater reliability for NAI instrument index items was assessed using percent agreement for dichotomous items, weighted Kappa statistics for categorical items, and ICCs for continuous items.

Descriptive Statistics

Descriptive statistics were used to document SOPARC target area condition items, number of park users, weather conditions, and park and neighborhood environment characteristics. Target area observations were dichotomized into use (ie, 1 or more users observed) or no use (ie, no users observed). Logistic regression was used to determine whether the likelihood of observing use differed by observation period (ie, morning, lunch, afternoon, or evening) and observation day (ie, weekday vs weekend day) stratifying by park and time point.

Relationship Between Target Area Characteristics and Use

For each observation day, target area use was summed across the 4 observation periods. Target area use was then dichotomized into use (ie, 1 or more users observed) or no use (ie, no users observed). A single logistic regression model was used to determine whether the likelihood of observing use differed by target area condition, number of amenities in a target area, and number of incivilities in a target area, adjusting for target area type (eg, baseball field), type of day (ie, weekday and weekend day), and time point. The analysis was repeated, stratifying by target area type. Stratified analysis was not conducted for shelters, as only 1 shelter was present across all parks. Condition was not examined for play equipment and basketball courts as all play equipment and basketball courts had the same condition rating.

Logistic regression was then used to determine whether the likelihood of observing use differed by target area type (eg, basketball court), with the Bonferroni correction method being used to account for the multiple comparisons examined in the analysis ($\alpha = 0.05/15 = 0.003$). Statistical analysis was conducted using SAS version 9.2 (SAS Institute Inc., Cary, North Carolina).

Results

Inter-Rater Reliability

There was perfect agreement between raters on SOPARC target area condition items except for usable condition (99% agreement). There was near perfect agreement on number of park users (ICC = 0.99), and excellent agreement (ICCs > 0.90) on number of park users by gender, age, race/ethnicity, and activity level except for Latino (ICC = 0.81; excellent agreement) and other race/ethnicity (ICC = 0.57; fair agreement). There was almost perfect/excellent agreement on NAI instrument categorical (Ks > 0.90), dichotomous (>96% agreement), and continuous (ICCs > 0.98) index items except for litter (K = 0.63; substantial agreement) and general condition of public spaces (K = 0.66; substantial agreement).

Park Use and Weather Conditions

Sample size (ie, number of target area observations) varied by park but remained the same at each time point. Sample size at each time point was: Park A (N = 144), Park B (N = 128), Park C (N = 96), Park D (N = 96), Park E (N = 96), and Park F (N = 112). Target areas were almost always usable (>96% at all parks at both time points), but they were rarely equipped, supervised, and associated with organized activities (<5% at all parks at both time points). Target areas were 100% accessible except for Park B (63% in May 2010; 38% in October

2010) and Park E (77% in May 2010; 94% in October 2010), with inaccessibility resulting from park entrances being locked. Target areas were rarely occupied (ie, users present; <6% at all parks at both time points).

A total of 97 people were observed across all parks during May 2010 data collection (median = 14; range = 0–48) and 116 people during October 2010 data collection (median = 16; range = 5–38). A majority of users were male at both time points (59% in May 2010; 60% in October 2010), black (57%) and white (40%) in May 2010, and black (93%) in October 2010. A large amount of intergenerational use occurred at both time points (37% child, 20% teen, and 43% adult in May 2010; 31% child, 29% teen, and 40% adult in October 2010). A majority of users engaged in walking (28%) and sedentary activities (62%) (eg, lying down, sitting, and standing in place) in May 2010, and sedentary (28%) and vigorous activities (54%) (ie, activities that are more vigorous than an ordinary walk, such as jogging, swinging, and doing cart wheels) in October 2010.

The probability of observing use was significantly lower on weekdays than weekend days at Park A in May 2010 (OR = 0.14; 95% CI: 0.03–0.80; P = .03) and Park E in October 2010 (OR = 0.08; 95% CI: 0.01–0.43; P = .003). In contrast, the probability of observing use was significantly greater on weekdays than weekend days at Park C in May 2010 (OR = 14.41; 95% CI: 1.02–204.74; P = .048). The probability of observing use significantly differed by observation period (P = .047) at Park B in October 2010, with greater use in the afternoon than in the morning, lunch, and evening. Average temperature and humidity were 78°F and 65% in May 2010 and 69°F and 51% in October 2010.

Park and Neighborhood Environments

Table 3 presents park environment characteristics. QPAR index scores were low across all parks (median = 5.0 in May 2010; median = 5.5 in October 2010), with parks containing a low number of different features (median = 3.0 at both time points) and a high number of different incivilities (median = 5.0 in May 2010; median = 4.0 in October 2010). Neighborhood index scores showed mixed results. Physical incivilities index scores were low (a more desirable outcome) across all neighborhoods (median = 0.27; range = 0.19–0.30), while territoriality (median = 0.16; range = 0.12–0.29) and social spaces index scores (median = 0.31; range = 0.23–0.39) were also low across all neighborhoods (a less desirable outcome).

Relationship Between Target Area Characteristics and Use

The number of incivilities in a target area was positively associated with target area use (OR = 1.91; 95% CI: 1.09– 3.38; P = .03). Target area condition (P = .41) and number of amenities in a target area (P = .23) were unrelated to target area use. In stratified analyses, number of amenities in a target area was positively associated with target area use for play equipment (OR = 2.14; 95% CI: 1.05–4.36; P = .04). Park use differed by target area type (P = .002) in a separate logistic regression model. The analysis examining individual comparisons found the probability of observing use was significantly lower in baseball fields (OR = 0.06; 95% CI: 0.01–0.25; P = .001) and open spaces (OR = 0.88; 95% CI: 0.70– 0.96; P = .0004) than in basketball courts.

Discussion

The park use and park and neighborhood environment results observed in this study have important implications for understanding park use in rural settings. The number of people observed using the parks in this study was low, and less than the number observed in other park observation studies.[3,43,58] In their observation of urban and rural parks in North Carolina, Shores and West observed an average of 100.5 and 133.2 people per day at each urban and rural park.[6] In comparison, we observed an average of 4.0 and 4.8 people per day at each park in May 2010 and October 2010 using a similar observation protocol as Shores and West.[6] In an effort to better understand park use in these communities, we calculated ratios of total park use to community population (ie, total park use/total population) for each park using 2010 US Census data.[22] Census block group ratios were low for May 2010 (median = 0.9%; range = 0.0–2.1%) and October 2010 (median = 0.8%; range = 0.4–4.8%), as were census tract ratios for May 2010 (median = 0.4%; range = 0.0–0.6%) and October 2010 (median = 0.4%; range = 0.1–1.0%).

A compelling explanation for the low park use observed in this study is that the parks lacked important features valued by residents. In her discussion of neighborhood parks, Jacobs hypothesized that parks located in noncentral, low-density areas are not used for generalized or impulsive park use, but are used when special demand goods are available.[15] Jacobs explained that features such as swimming pools and sports fields, and activities such as concerts and plays, can serve as important demand goods valued by residents, and they can be sufficient to promote use in these low-density settings.[15] This hypothesis has important implications in this study.

The parks in this study may not have possessed the optimal number or combination of features (eg, soccer fields and tennis courts) to be valued by residents, as a low number of different features were present at each park and there was little variety in the type of features available across all parks. This hypothesis is supported by the literature, with number of park features being positively associated with parks being used for PA among adults,[13] number of school playground features being positively associated with playground use during out-of-school time,[59] and access to a variety of park features being positively associated with park use among youth.[60] Park entrances were often locked at 2 parks, which may help to explain low use in these specific parks, as this represents a barrier to access and could negatively impact how residents view these resources. It is important to note that community members and park staff were responsible for locking/unlocking entrances to Park B; information that highlights a unique challenge in rural settings when park and recreation department staff are unable to unlock these facilities.

Low QPAR index scores were observed in this study, with the number of different incivilities present often equaling or outnumbering the number of different features present. Furthermore, incivilities that may be perceived more negatively by residents, including evidence of alcohol use, graffiti/tagging, and sex paraphernalia, were observed in a third or more of the parks in this study. These findings are important as park incivilities can serve as a deterrent to park use. A qualitative review found that incivilities such as no grass, litter,

broken glass, and graffiti, all of which were observed in this study, were negatively associated with park use among youth and adults.[60]

In contrast to our hypothesis and the literature, a significant positive association was observed between the number of incivilities in a target area and target area use. This result may seem counterintuitive, as one might expect an inverse relationship. However, it is important to acknowledge that these data are cross sectional and causality cannot be established. Viewed from this perspective, the presence of incivilities may be a by-product of increased use. The literature has shown that green spaces in poor condition had more users than green spaces in good condition,[14] and playgrounds with fewer clean features were used more often than playgrounds with cleaner features.[59] Consistent with expectations, we found a significant positive association between number of amenities (eg, benches) and target area use for play equipment in the stratified analysis.

Although favorable neighborhood physical incivilities index scores were observed, vacant housing units were prevalent: 4 neighborhoods had a high proportion of street segments (39–45%) containing burned, boarded up, or abandoned housing. The presence of vacant housing in these neighborhoods is important as they likely alter residents' perceptions of safety. A recent study found that vacant land was perceived by residents to raise concerns about crime and safety, to overshadow positive aspects of neighborhood life, and to undermine attempts to improve the image and overall success of a community.[61] The literature has also shown that neighborhood disorder is negatively associated with self-report involvement in sports or exercise among women, and it is negatively associated with parents encouraging their children to use local playgrounds.[19]

The unfavorable territoriality and social spaces index scores are notable as the literature suggests opportunities for socialization in neighborhoods are positively associated with self-reported park visitation.[21] The lack of safe walking routes to the parks in this study may also explain their low use. Three neighborhoods in this study had no sidewalks, with the remaining 3 neighborhoods having a low proportion of street segments with sidewalks (4–14%). This finding highlights the uniqueness of rural communities (eg, a large proportion of rural streets do not have sidewalks or shoulders[62]), and it suggests that rural residents may seek alternative active transportation options, such as walking on the street or using less official paths. Although the association between sidewalk access and park use has not been fully explored in rural settings, findings from urban settings show that concerns with traffic safety and busy roads are associated with lower self-report park use.[20,60] In addition, concerns with traffic safety while walking or riding a bike are associated with being obese and inactive among rural adults.[62] We believe this literature can be extended to rural settings; however, additional research is needed.

This study has several limitations and strengths. First, a small number of parks were observed. Second, the parks are a convenience sample rather than a random sample of parks in the county. Third, information on park programming and park activities were not collected. At the same time, there are several notable strengths. First, this study relied on strong methods and used an objective, "gold standard" measure of park use. Second, we comprehensively measured park and neighborhood environments using objective measures,

which few studies to date have done. Third, while park use is typically observed at 1 time point, we conducted observations at 2 time points. Finally, this study provided insights into park use in financially disadvantaged, rural communities that serve a high proportion of racial/ethnic minority residents, for which little information is known.

In conclusion, despite benefiting from a mini-grant program that provided capacity building skills to community organizations and financial awards for park renovations, the parks in this study were in poor condition and infrequently used. The objective park and neighborhood environment characteristics documented in this study are important as they provide a more comprehensive understanding of parks than do other studies. Further examining the complex relationship between park and neighborhood environment characteristics and park use in rural settings is an important next step, as it can inform park administrators and city planners of park characteristics that are best able to attract visitors. Future work should examine the contribution rural parks make to community-level PA, examine factors that promote and discourage park use among rural residents, and develop effective methods for promoting park use and park-based PA in rural settings.

Acknowledgments

We wish to thank the many staff and students who assisted with data collection.

Funding: This research is supported in part by the Centers for Disease Control and Prevention's National Center for Chronic Disease Prevention and Health Promotion by Cooperative Agreement Number U48-DP-001936. This research is also supported in part by a cooperative agreement from the Centers for Disease Control and Prevention and the Prevention Research Centers through the Association of Schools of Public Health. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention, the Department of Health and Human Services, or the Association of Schools of Public Health.

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Table 1

Population Characteristics

	Park A	Park B	Park C	Park D	Park E	Park F
Urban/rural classification	Urban	Rural	Rural	Rural	Urban	Urban
Total population						
Block group	2,253	1,765	1,735	1,324	799	2,280
Tract	7,845	8,538	3,679	4,604	3,936	4,188
% Population rural						
Block group	26%	82%	100%	74%	0%	77%
Tract	27%	63%	100%	23%	0%	88%
Land area (miles^2)						
Block group	4.3	12.1	27.5	8.0	0.7	37.1
Tract	51.7	91.5	50.1	9.5	3.0	119.3
Population density (persons/miles^2)						
Block group	524.0	145.9	63.1	165.5	1141.4	61.5
Tract	151.7	93.3	73.4	484.6	1312.0	35.1

Urban/rural classification and land area data are from the US Census G001 Geographic Identifiers dataset (2010 SF1 100% Data), total population data are from the US Census P1 Total Population dataset (2010 SF1 100% Data), and percent population rural are from the US Census P2 Urban and Rural dataset (2010 SF1 100% Data).[22]

Table 2

NAI Instrument Index Items

Physical Incivilities	Territoriality	Social Spaces
1. Presence of burned, boarded-up, or abandoned housing units	1. Presence of neighborhood/ community watch, no trespassing/ no solicitation/private property, or security signs	1. Presence of people
2. Overall condition of resident-kept grounds	2. Reaction of people to raters	2. Presence of children playing
3. Amount of litter	3. One-third or more housing units with a border (fences/shrubs)	3. One-third or more homes with a front yard
4. Amount of graffiti	4. One-third or more homes with security bars/gratings	4. One-third or more homes with a porch
5. Overall condition of nonresidential buildings	5. One-third or more homes with decorations	5. Presence of nonresident visitors
6. Presence of burned, boarded-up, or abandoned nonresidential buildings	6. Presence of neighborhood sign	6. Presence of parks/playgrounds
7. General condition of public spaces		7. Condition of parks/playgrounds
		8. Presence of nonmoderately busy or major thoroughfare/street
		9. Presence of sidewalks

Table 3

Park Environment Characteristics

	Park A		Park B		Park C		Park D		Park E		Park F	
	May	Oct	May	Oct	May	Oct	May	Oct	May	Oct	May	Oct
QPAR index score	7	6	4	5	5	8	5	5	5	7	6	4
Park features												
No. available	5	5	3	3	4	4	3	3	3	3	3	3
Condition rating												
Poor (%)	0	0	0	0	0	0	33	33	0	0	0	0
Mediocre (%)	100	100	67	67	100	100	67	67	100	100	100	100
Good	0	0	33	33	0	0	0	0	0	0	0	0
Park amenities												
No. available	7	7	6	6	5	6	8	8	7	8	5	5
Condition rating												
Poor (%)	14	14	17	17	20	17	13	13	0	0	0	0
Mediocre (%)	71	57	67	67	80	50	38	38	86	75	60	60
Good (%)	14	29	17	17	0	33	50	50	14	25	40	40
Park incivilities												
No. present	5	6	5	4	4	2	6	5	5	4	2	4
Quantity present												
Little/Few (%)	80	83	60	50	50	50	33	20	40	50	50	50
Some (%)	0	0	0	0	25	0	33	20	0	25	0	25
A Lot (%)	20	17	40	50	25	50	33	60	60	25	50	25

QPAR index scores range from 0 to 25 (higher scores are more desirable). Park feature condition rating, amenity condition rating, and incivility quantity percentages may not sum to 100% due to rounding.