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# United States' Neighborhood Park Use and Physical Activity Over Two Years: the National Study of Neighborhood Parks

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## Abstract

The United States lacks surveillance to monitor park use and conditions. The purpose of this study was to use the System for Observing Play and Recreation in Communities (SOPARC) as a surveillance tool to describe the conditions, user characteristics, and physical activity of a national sample of neighborhood parks at two time points. Using a stratified multistage sampling strategy, a representative sample of 174 neighborhood parks in 25 major United States' cities were selected. During 2014 and 2016, park-related use, conditions, and physical activity were assessed using SOPARC in 169 parks. Overall, 74,106 park users were observed at baseline and 69,150 park users were observed two years later (p=0.37). There were persistent disparities in park use by gender and age, with disproportionately more male than female users in each age group (child, teenager, adult, older adult). Older adults used the park less than other age groups. Almost two-thirds of park users were observed being sedentary (61.9% in 2014, 60.7% in 2016), followed by moderate (30.8%, 32.0%) and vigorous (7.3%, 7.3%) activity. Empty target areas increased over two years (75.3%, 77.6%; p=0.01) and those that were equipped (2.6%, 1.2%; p=0.0003), accessible (95.4%, 94.3%; p=0.01), and organized (2.6%, 1.7%; p=0.01) decreased. Areas that were usable (97.5%, 97.4%) or provided supervised activities (2.0%, 2.4%) did not change significantly. The findings demonstrate the value of SOPARC as a surveillance tool, identify user groups under represented at parks, and suggest an opportunity to encourage more park-based physical activity among park visitors.

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**Keywords**

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## Introduction

Routine physical activity is critical to health and quality of life (2018 Physical Activity Guidelines Advisory Committee, 2018), yet large segments of the American population fail to achieve national physical activity guidelines (Centers for Disease Control and Prevention, 2018a; USDHHS, 2018). The socio-ecologic model emphasizes the importance of multiple factors that impact health behaviors, such as physical activity, including those at the intrapersonal, interpersonal, organizational, policy, and community level (McLeroy et al., 1988; Sallis and Owen, 1997). The community level includes the built environment, and neighborhood parks are one part of the built environment that can support physical activity. Having more parks near home, greater access to parks, and higher quality parks are associated with higher population-levels of physical activity among adolescents and adults (Bancroft et al., 2015; McGrath et al., 2015).

Since physical activity is such an important determinant of health and well-being, and parks are a key location for physical activity to occur, the surveillance of parks could provide important insights to guide policies and programs to promote physical activity. Parks also provide other physical and mental health benefits including improved affect, stress reduction, social cohesion, and weight control (van den Bosch and Ode, 2017). They also can provide noise and heat reduction, and benefit tourism, housing prices, water management, and air quality (Konijnendijk et al., 2013).

However, surveillance of parks is challenging due to both their diversity and scale (Evenson and Wen, 2013). Self-reported assessments of park use by adults have been developed and assessed for reliability and validity (Evenson et al., 2013); however, they are often limited by a lack of connection to which specific parks are being used and the corresponding characteristics of those parks. Objective assessments of park use have also been implemented. First, park staff traditionally monitor use through rosters of park users, but this approach is not feasible on a wide scale and it measures only those enrolled in specific programs (Cohen et al., 2016). Second, as early as 2005 an alternative measure of park use had participants wear both a global positioning system (GPS) unit and an accelerometer (Duncan et al., 2007; Rodriguez et al., 2005). The periods of physical activity identified from the accelerometer were mapped using the GPS points to a digital map overlaid with parks to identify physical activity in and around the parks. The length of time needed to accurately assess accelerometry-measured moderate to vigorous physical activity bouts by adults in parks approximates 12 days of monitoring (Holliday et al., 2017), making the feasibility of this method at scale challenging. Third, surveillance of park use was demonstrated by an analysis using data accessed from the MapMyFitness app (Hirsch et al., 2014). The limitations of this approach were the massive data size and lack of a representative sample using the app.

In contrast, the System for Observing Play and Recreation in Communities (SOPARC) tool has been used to simultaneously assess park use and park characteristics since 2006. A literature review indicated that many studies have used SOPARC and concluded that parks are generally used more often by males than females across all age groups and that they are typically used more by youths than adults (Evenson et al., 2016). However, most of the studies targeted specific parks and the results were not generalizable or representative of a geographic area (Evenson et al., 2016). In addition, few of these studies provided information on the types of specific facilities that park visitors might use and be associated with physical activity.

The current study of a nationally representative sample of parks uses SOPARC to address these limitations. First, we describe national-level park conditions and park user characteristics and activity at two time points. Then we examine physical activity in the park overall and by gender and age. These findings can help inform park-based programs and policies to increase park use, particularly for physical activity, in the US.

## Methods

The National Study of Neighborhood Parks includes a national sample of neighborhood parks in United States (US) cities with a population of at least 100,000 (according to the 2010 US Census) that were selected using a two-stage stratified sampling strategy (Cohen et al., 2016). Briefly, in the first sampling stage, a total of 289 cities were divided into 9 strata based on region and size, and 25 cities were randomly drawn. The local parks and recreation departments from these 25 cities provided a list of their public parks. In the second sampling stage, 174 parks ranging in size from 2 to 23 acres were chosen (mean 8.8 acres). The original sample approximated 10% of all eligible neighborhood parks in the sampled cities (Cohen et al., 2016) and the current investigation assessed 169 of the parks that were observed during both 2014 and 2016.

### SOPARC Protocol

This study was reviewed by the Institutional Review Board and deemed exempt. Direct observational data on park characteristics and park users, including their physical activity, were obtained from each park using SOPARC, a method with evidence for both validity (McKenzie et al., 2006) and reliability (Cohen et al., 2011; Evenson et al., 2016). SOPARC was used for data collection on clement days between April 2014 to August 2014 and April 2016 to July 2016. Two to four staff from each selected city were centrally trained to collect data. Each park was mapped and physical activity spaces were identified as distinct target areas (e.g., subareas within the overall park space). Each target area was numbered and observations proceeded in number order at each time. Any amenities located in target areas were documented (e.g., baseball field, garden, pool). While the same 169 parks were assessed during both time periods, the number of target areas within parks changed slightly because of remapping of target areas or construction. Specifically, during the second data collection period seven parks had at least one target area remapped due to construction over the interim period, while one park had one target area not assessed due to current construction.

For each target area, the predominant facilities or amenities were assigned to a sport or non-sport category. Sports included baseball fields, basketball courts (outdoors), multi-purpose courts, single purpose courts, skate parks, sports fields, and tennis courts. Non-sports included bleachers, classrooms, dog parks, exercise areas, fitness zones, gardens, gymnasiums, lawn, other indoor spaces, other outdoor spaces, patios, picnic areas, playgrounds, pools, seating areas, sidewalks, walking loops, and water features.

Based on a prior reliability study (Cohen et al., 2011), park observations during both measurement years (2014, 2016) occurred three times/day on two weekdays (Tuesday at 8am/11am/2pm and Thursday at 12pm/3pm/6pm) and both weekend days (Saturday at 9am/12pm/3pm and Sunday at 11am/2pm/5pm). Each park was assessed during a single week, unless inclement weather forced rescheduling; this was done on the previously scheduled day of the week and time of day. Physical activity was recorded in three categories: sedentary/low light (referred to as “sedentary”), high light or moderate including walking (referred to as “moderate”), and vigorous. Trained observers first scanned the target area for females, recording by age group (child, teenager, adult, older adult) and physical activity for a total of 12 categories. Scans were conducted similarly for males. Due to the large geographic area that they often covered, walking paths and fitness zones along paths were assessed by counting people moving past a specific spot during a 10-minute period at the end of each observation.

For each target area, except walking paths and fitness zones (since the entire area could not be observed with a single momentary assessment), the following conditions were also assessed: equipped (with loose, non-permanent equipment), supervised (by staff or other personnel), organized (by personnel), usable (physical activity could be performed; area not excessively wet or windy), accessible (not locked or privately rented), dark (no lights on if indoors), and empty (vacant).

While we did not assess the economic costs of using the SOPARC tool, it could be estimated. For each park assessment, two field staff were trained over a two-day period, and an additional day was spent mapping the park. Data collection occurred over 4 full days at each park (32 hours). This was repeated similarly in both years. This estimate does not account for supervision, data management or processing, and weather delays.

## Statistical Analyses

Data were analyzed using SAS version 9.4 (Cary, North Carolina). All outcomes were measured at the target area level for 12 times during each of the two waves (2014 and 2016). Approximately 1% of scheduled target area observations were missed; therefore, the mean imputation method was used to impute missing data.

Statistical significance of changes was tested by generalized linear models using SAS PROC GENMOD (logistic regression for binary outcomes and negative binomial regression for count outcomes). In all models, city and time of observation were included as covariates. We applied the generalized estimating equation method to account for intra-class correlations among repeated observations within each park. A small number of models could not be fitted because either the binary outcome was too rare or a count outcome was too low.

Significance was interpreted at $p<0.05$. Due to small cell sizes, we did not display facilities where less than 700 people were observed (approximately 1% of the number of observed park users at one time point). Similarly, we did not display activities in the target areas that comprised less than 350 people observed (approximately 0.5%).

## Results

### Park Conditions Over Time

In total, 169 parks were assessed two years apart. In 2014, 3,687 mapped target areas resulted in 43,620 target areas being assessed for conditions. In 2016, 3,670 mapped target areas resulted in 43,344 target areas being assessed for conditions. By design, the walking paths (48 parks in 2014; 52 parks in 2016) and fitness zones (4 parks in 2014; 6 parks in 2016) were not assessed for target area conditions only.

Target areas during both years were mostly accessible (95.4% in 2014, 94.3% in 2016) and usable (97.5%, 97.4%) and rarely dark (1.0%, 1.2%) (Table 1). In contrast, equipment (2.6%, 1.2%), supervision (2.0%, 2.4%), and organized activities (2.6%, 1.7%) were rarely provided. The target areas were vacant about three-fourths of the time during both time periods (75.3%, 77.6%). From 2014 to 2016, there were significant increases in the number of empty target areas and significant decreases in the number of target areas that were equipped, accessible, and provided organized activities.

### Park Users by Facility Type Over Time

Across 169 parks, during the 12 observation periods in one week, 74,106 park users were observed at baseline and two years later 69,150 were observed ($p=0.37$). Approximately one-quarter (25.3% in 2014 and 28.7% in 2016) of park users were in a target area with sport facilities (Table 2).

Among the different sport facilities, the largest number of people were observed on baseball fields and sports fields (e.g., general multipurpose fields) (Table 2). Use of multipurpose courts was significantly lower in 2016 compared to 2014, with no other significant changes in sport facilities use was found. Among non-sport facilities, the largest number of users were on lawns, sidewalks, playgrounds, and bleachers. Use of classrooms, seating areas, sidewalks, and walking loops was significantly lower in 2016 compared to 2014, while use of gymnasiums was significantly higher.

### Park User Characteristics and Activity Types at Two Time Points

During both time periods, more males than females were observed in the parks, and there were more adults followed by children, teenagers, and older adults (Table 3). Also during both time periods, the most common activities park users engaged in were sitting (26.1% in 2014, 27.3% in 2016), walking (12.1%, 9.1%), standing (11.9%, 11.3%), and playground activities (11.4%, 11.3%). Basketball, jogging/running, and walking in the park were significantly lower in 2016 compared to 2014, while soccer was significantly higher.

The predominant use of the facility types by age and gender categories was generally similar across the two time periods. Facilities where male children were most frequently observed

(>15% at either time point) included playgrounds, baseball fields, and lawns (Appendix Table 1). In contrast, female children most frequently used playground and lawns, and were more likely to be observed at playgrounds than male children. Male teenagers most frequently used lawns, outdoor basketball courts, and baseball fields, while female teenagers most often used lawns and sidewalks (Appendix Table 2). The most common facility types where both adults and older adults were observed (Appendix Table 3 and 4, respectively) were lawns and sidewalks.

### Physical Activity Among Park Users at Two Time Points

Almost two-thirds of park users at both time periods were observed being sedentary (61.9% in 2014, 60.7% in 2016), followed by moderate (30.8%, 32.0%) and vigorous (7.3%, 7.3%) activity (Table 4). Compared to 2014, proportionately fewer park users were sedentary and more were engaged in moderate activity compared in 2016.

Patterns of findings for physical activity and sedentary behavior by park user characteristics were further explored (Table 4). Females were more commonly observed being sedentary than males, overall and within each age group. Sedentary behavior was also higher with each successive age group. The proportion of park users observed being sedentary was lower and vigorous activity higher in 2016 compared to 2014 for males (overall), children, and specifically male children. In addition, the proportion of adult females being sedentary was significantly higher in 2016 compared to 2014 and those in vigorous activity was lower. People in the following facility types were typically observed being sedentary (>75% at one time point): bleachers, classrooms, lawns, picnic areas, and other seating areas.

Males were more commonly observed in vigorous activity than females, and the proportion being vigorous was lower with each successively older age group. Vigorous activity was more commonly observed at the following facility types (>15% at one time point): basketball courts (outdoors), tennis courts, and walking loops.

## Discussion

This national study of neighborhood parks identified changes in park conditions and differences in park use by demographic groups over a two-year period, and it demonstrated the usefulness of SOPARC as a surveillance measure. We found that overall park use did not significantly change from 2014 to 2016. During this same time period, nationally adults reporting no leisure-time physical activity in the past month decreased slightly, from 30.0% (2014) to 26.9% (2016) (Centers for Disease Control and Prevention et al., 2018a). Also during this similar time period, the proportion of youths in $9^{th}$ to $12^{th}$ grades that were active at least one hour for 5 or more days remained stable (47.3% in 2013, 48.6% in 2015, 46.5% in 2017), as did other indicators of physical activity (Centers for Disease Control and Prevention et al., 2018b).

This national study confirmed findings of smaller or less generalizable studies (Evenson et al., 2016; Joseph and Maddock, 2016), including that males use parks more often than females across all age groups and they are typically more active when there. Based on the US Census Bureau, the distribution of the population in 2015 included 23% children (<18

years), 62% adults (18-64), and 15% older adults (>=65) (United States Census Bureau, 2018). Our study can be compared against this population distribution, indicating disproportionately low park use among seniors. Park management could consider these disparities by developing programs and designing facilities that appeal to those less likely to use the park.

The most common facilities where people were observed were baseball fields, sports fields, lawns, sidewalks, playgrounds, and bleachers. In contrast, the facilities where the highest proportion of people were observed in moderate-to-vigorous physical activity were outdoor basketball courts, pools, tennis courts, and walking loops. This information, coupled with the use of park facilities by demographic groups, provides useful information for those seeking to enhance physical activity in parks.

Park conditions contribute to whether people visit a park. A review of SOPARC studies found that target area accessibility (range in studies 82-100%) and usability (85-100%) were typically high, while organized (0-31%), equipped (0-15%), or supervised (0-31%) areas were much lower (Evenson et al., 2016). Findings from the current study fell within those ranges, with accessibility and usability above 94% during both years, and areas being equipped, supervised, and organized at 3% or less in both years. The prior review (Evenson et al., 2016) found a wide range reported for empty target areas (53->94%), and in this study 75-78% were empty. Although some target areas may have been located in park areas typically less used or for a specific use only, the data still indicate that many neighborhood parks are an underused community resource. Over the two-year period there was an increase in empty target areas and small decreases in areas being accessible, equipped, and organized. This trend for a reduction in (i) spaces being accessible, (ii) having physical activity-promoting equipment, and (iii) providing organized activities is of concern because they are related to lower park use.

## Strengths and Limitations

This study represents the first national observational investigation of neighborhood parks conducted during the same season two years apart. The sample included 169 representative parks sized 2 to 23 acres in 25 US cities with a population of least 100,000. However, it cannot be assumed that these results generalize to parks in smaller cities or in rural areas or to parks that are smaller (e.g., pocket parks) or larger (e.g., regional or state parks). The assessments were conducted in spring and summer only, and do not represent fall and winter activities. Future research is needed to conduct similar work in smaller and larger parks, during other seasons, and in rural areas.

This study had several limitations. First, we were unable to account for the spatial placement of facilities in target areas which could impact condition and use. For example, a target area might be vacant because an adjacent target area was busy. Second, SOPARC scans are momentary time samples (i.e., “snapshots”) of park use and cannot determine the length of stay for particular individuals. Third, the study did not assess the quality of park facilities, amenities, or aesthetics, factors that could differentially impact usage. For example, park quality impacts park use (Engelberg et al., 2016) and facility refurbishment may increase

physical activity (Cohen et al., 2015; Tester et al., 2009; Veitch et al., 2012; Veitch et al., 2018).

## Conclusion

Our understanding of park usage has been limited to a few cities or regions of the US (Evenson and Wen, 2013). By selecting a national sample of parks and conducting observations at similar times during two different years, this study provides a more generalizable understanding of park use. The lack of significant increases in park usage from 2014 to 2016 is of concern, since it is also at a time when the US was experiencing an epidemic of obesity and diabetes (Centers for Disease Control and Prevention and Division of Diabetes Translation, 2017), both of which could be addressed with physical activity. Also of concern are the significant increases in empty target areas and small declines in areas being accessible, equipped, and organized. Increased investment in US neighborhood parks and staff may help address these identified patterns.

These findings more broadly reinforce the usefulness of the SOPARC observational tool for monitoring park use for park planning decisions and its broader potential as a surveillance measure. Surveillance of parks and similar types of environmental indicators should be prioritized locally and nationally, given the Community Preventive Services Task Force recommendation to provide greater access to parks and recreational facilities (Community Preventive Services Task Force, 2016).

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## Highlights

Males used neighborhood parks more often than females.

Older adults used neighborhood parks less than other age groups.

Approximately two-thirds of neighborhood park users are sedentary.

Approximately one-third of neighborhood park users are physically active.

**Table 1:**

Target area conditions in 2014 and 2016 (n=169 parks); National Study of Neighborhood Parks

| | 2014 | | 2016 | | p value |
|---|---|---|---|---|---|
| **Target Area Conditions** | **Number of Target Areas Visited (total n=43,620)** | **% of Target Areas Visited** | **Number of Target Areas Visited (total n=43,344)** | **% of Target Areas Visited** | |
| Equipped | 1124 | 2.6% | 528 | 1.2% | 0.0003 |
| Supervised | 860 | 2.0% | 1017 | 2.4% | 0.07 |
| Organized | 1122 | 2.6% | 751 | 1.7% | 0.01 |
| Usable | 42533 | 97.5% | 42203 | 97.4% | 0.79 |
| Accessible | 41602 | 95.4% | 40875 | 94.3% | 0.01 |
| Dark | 424 | 1.0% | 534 | 1.2% | 0.53 |
| Empty | 32842 | 75.3% | 33614 | 77.6% | 0.01 |

Note: These conditions were not collected for walking paths and fitness zones.

**Table 2:**

Observed use by facility type in 2014 and 2016 (n=169 parks); National Study of Neighborhood Parks

| | 2014 | | | 2016 | | | p value |
|---|---|---|---|---|---|---|---|
| **Facility Type** | **Parks with the Facility (n=169)** | **Number of Observed Park Users (total n=74,106)** | **% of Observed Park Users** | **Parks with the Facility (n=169)** | **Number of Observed Park Users (total n=69,150)** | **% of Observed Park Users** | |
| Sports | 138 | 17,497 | 24.7% | 138 | 18,808 | 28.4% | 0.85 |
| Non-sports | 31 | 53,405 | 75.3% | 31 | 47,429 | 71.6% | 0.08 |
| Sports | | | | | | | |
| Baseball fields | 83 | 7,247 | 10.2% | 83 | 8,117 | 12.3% | 0.38 |
| Basketball courts (outdoor) | 92 | 3,345 | 4.7% | 91 | 2,762 | 4.2% | 0.09 |
| Multi-purpose courts | 30 | 977 | 1.4% | 28 | 449 | 0.7% | <.0001 |
| Sports fields | 61 | 4,949 | 7.0% | 63 | 6,685 | 10.1% | 0.13 |
| Tennis courts | 53 | 979 | 1.4% | 50 | 795 | 1.2% | 0.49 |
| Non-sports | | | | | | | |
| Bleachers | 67 | 4,298 | 6.1% | 67 | 3,368 | 5.1% | 0.07 |
| Classrooms | 26 | 867 | 1.2% | 25 | 579 | 0.9% | 0.02 |
| Gymnasiums | 16 | 2,032 | 2.9% | 16 | 2,465 | 3.7% | 0.0003 |
| Lawns | 163 | 15,274 | 21.5% | 162 | 13,549 | 20.5% | 0.052 |
| Picnic areas | 73 | 2,847 | 4.0% | 75 | 3,062 | 4.6% | 0.80 |
| Playgrounds | 150 | 9,192 | 13.0% | 151 | 8,739 | 13.2% | 0.26 |
| Pools | 21 | 2,411 | 3.4% | 20 | 2,576 | 3.9% | 0.89 |
| Seating areas | 31 | 2,445 | 3.4% | 34 | 1,842 | 2.8% | <.0001 |
| Sidewalks | 134 | 10,615 | 15.0% | 134 | 8,439 | 12.7% | 0.004 |
| Walking loops | 48 | 2,215 | 3.1% | 48/52 | 1,583 | 2.4% | 0.0003 |
| Water features | 20 | 1,209 | 1.7% | 21 | 1,227 | 1.9% | 0.82 |

Example calculation: the percent of park users on baseball fields is calculated as the number of observed park users on baseball fields divided by the total number of observed park users overall. Facilities including dog parks, exercise areas, fitness zones, gardens, other indoor/outdoor spaces, patios, single purpose courts, and skate parks were not displayed due to low overall use at both time periods.

**Table 3:**

Observed park use by user characteristics and predominant activities in 2014 and 2016 (n=169 parks); National Study of Neighborhood Parks

| | 2014 | | 2016 | | |
|---|---|---|---|---|---|
| | **Number of Observed Park Users (n=74,103)** | **% of Observed Park Users** | **Number of Observed Park Users (n=69,149)** | **% of Observed Park Users** | **p value** |
| Gender | | | | | |
| Male | 42,923 | 58.0% | 40,760 | 59.0% | 0.25 |
| Female | 31,118 | 42.0% | 28,357 | 41.0% | 0.38 |
| Age | | | | | |
| Children (infant to 12) | 23,771 | 32.1% | 22,795 | 33.0% | 0.24 |
| Teenager (13 to 20) | 12,201 | 16.5% | 9,251 | 13.4% | 0.07 |
| Adult (21 to 59) | 34,839 | 47.1% | 34,346 | 49.7% | 0.69 |
| Older adult (60+) | 3,230 | 4.4% | 2,725 | 3.9% | 0.52 |
| Predominant Activity in Target Areas During Scan | | | | | |
| Baseball/Softball | 5,538 | 7.5% | 5,651 | 8.2% | 0.24 |
| Basketball | 4,338 | 5.9% | 3,769 | 5.5% | 0.046 |
| Football | 655 | 0.9% | 404 | 0.6% | 0.85 |
| Jogging/Running | 800 | 1.1% | 360 | 0.5% | 0.01 |
| Lying Down | 782 | 1.1% | 453 | 0.7% | 0.07 |
| Not Listed / Other | 2,241 | 3.0% | 2,221 | 3.2% | 0.91 |
| Picnic | 4,251 | 5.7% | 4,079 | 5.9% | 0.58 |
| Playground Activities | 8,411 | 11.4% | 7,781 | 11.3% | 0.24 |
| Sitting | 19,307 | 26.1% | 18,873 | 27.3% | 0.37 |
| Skating Skateboarding | 776 | 1.0% | 694 | 1.0% | 0.72 |
| Soccer | 4,161 | 5.6% | 6,097 | 8.8% | 0.03 |
| Standing | 8,802 | 11.9% | 7,812 | 11.3% | 0.97 |
| Swimming | 1,489 | 2.0% | 1,775 | 2.6% | 0.06 |
| Tennis/Racquetball | 749 | 1.0% | 677 | 1.0% | 0.86 |
| Walking | 8,929 | 12.1% | 6,263 | 9.1% | 0.004 |

Predominant activities including catch, cheerleading, chess/checkers, climbing, cycling, dance, fitness stations, Frisbee, gymnastics, handball, horseshoes, jumping, kickball, manipulatives, martial arts, reading, strengthening exercises, tag, tetherball, and volleyball were not displayed due to low overall participation at both time periods.

**Table 4:**

Observed physical activity in the park, overall and by user characteristics and facility type (n=169 parks); National Study of Neighborhood Parks

| | 2014 | | | | | | 2016 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sedentary | | Moderate | | Vigorous | | Sedentary | | Moderate | | Vigorous | | |
| | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | p value |
| Overall | 45,834 | 61.9% | 22,809 | 30.8% | 5,398 | 7.3% | 41,957 | 60.7% | 22,122 | 32.0% | 5,038 | 7.3% | 0.04 |
| Gender | | | | | | | | | | | | | |
| Male | 25,370 | 59.1% | 13,881 | 32.3% | 3,672 | 8.6% | 23,366 | 57.3% | 13,766 | 33.8% | 3,628 | 8.9% | 0.04 |
| Female | 20,464 | 65.8% | 8,928 | 28.7% | 1,726 | 5.5% | 18,591 | 65.6% | 8,356 | 29.5% | 1,410 | 5.0% | 0.06 |
| Age | | | | | | | | | | | | | |
| Children | 12,636 | 53.2% | 8,559 | 36.0% | 2,577 | 10.8% | 11,246 | 49.3% | 8,932 | 39.2% | 2,617 | 11.5% | 0.03 |
| Teenager | 6,540 | 53.6% | 4,438 | 36.4% | 1,223 | 10.0% | 4,794 | 51.8% | 3,459 | 37.4% | 998 | 10.8% | 0.43 |
| Adult | 24,297 | 69.7% | 9,002 | 25.8% | 1,540 | 4.4% | 23,965 | 69.8% | 9,025 | 26.3% | 1,356 | 3.9% | 0.09 |
| Older adult | 2,361 | 73.1% | 811 | 25.1% | 59 | 1.8% | 1,952 | 71.6% | 706 | 25.9% | 67 | 2.5% | 0.84 |
| Age and Gender | | | | | | | | | | | | | |
| Children Male | 7,329 | 52.0% | 5,169 | 36.7% | 1,603 | 11.4% | 6,547 | 47.7% | 5,471 | 39.9% | 1,695 | 12.4% | 0.02 |
| Children Female | 5,307 | 54.9% | 3,391 | 35.1% | 974 | 10.1% | 4,699 | 51.7% | 3,461 | 38.1% | 922 | 10.2% | 0.20 |
| Teenager Male | 3,894 | 51.0% | 2,851 | 37.4% | 887 | 11.6% | 2,842 | 47.8% | 2,318 | 39.0% | 781 | 13.1% | 0.25 |
| Teenager Female | 2,647 | 57.9% | 1,587 | 34.7% | 336 | 7.4% | 1,952 | 59.0% | 1,141 | 34.5% | 217 | 6.6% | 0.82 |
| Adult Male | 12,827 | 66.3% | 5,392 | 27.9% | 1,137 | 5.9% | 12,831 | 65.8% | 5,568 | 28.5% | 1,105 | 5.7% | 0.27 |
| Adult Female | 11,470 | 74.1% | 3,610 | 23.3% | 403 | 2.6% | 11,134 | 75.0% | 3,457 | 23.3% | 251 | 1.7% | 0.01 |
| Older Adult Male | 1,320 | 71.9% | 470 | 25.6% | 46 | 2.5% | 1,146 | 71.5% | 409 | 25.5% | 47 | 2.9% | 0.95 |
| Older Adult Female | 1,041 | 74.6% | 341 | 24.4% | 13 | 0.9% | 806 | 71.8% | 297 | 26.4% | 20 | 1.8% | * |
| Facility Type | | | | | | | | | | | | | |
| Baseball field | 4,424 | 61.0% | 2,211 | 30.5% | 616 | 8.5% | 4,779 | 58.8% | 2,690 | 33.1% | 655 | 8.1% | 0.64 |
| Basketball court (outdoor) | 1,275 | 38.3% | 1,562 | 47.0% | 489 | 14.7% | 969 | 35.2% | 1,258 | 45.7% | 525 | 19.1% | 0.35 |
| Bleacher | 3,812 | 88.8% | 429 | 10.0% | 54 | 1.3% | 2,942 | 87.7% | 389 | 11.6% | 23 | 0.7% | 0.32 |
| Classroom | 760 | 87.6% | 101 | 11.6% | 7 | 0.8% | 476 | 82.4% | 95 | 16.4% | 7 | 1.2% | 0.37 |

| | 2014 | | | | | | 2016 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sedentary | | Moderate | | Vigorous | | Sedentary | | Moderate | | Vigorous | | |
| | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | Number of Observed Park Users | % of Observed Park Users | p value |
| Gymnasium | 1,318 | 64.3% | 589 | 28.7% | 142 | 6.9% | 1,666 | 67.1% | 637 | 25.6% | 181 | 7.3% | 0.79 |
| Lawn | 11,536 | 75.5% | 3,227 | 21.1% | 516 | 3.4% | 9,901 | 73.2% | 3,190 | 23.6% | 438 | 3.2% | 0.16 |
| Multi-purpose court | 508 | 52.3% | 330 | 34.0% | 134 | 13.8% | 233 | 51.5% | 176 | 38.9% | 43 | 9.5% | 0.44 |
| Picnic area | 2,385 | 83.4% | 421 | 14.7% | 52 | 1.8% | 2,454 | 80.1% | 560 | 18.3% | 48 | 1.6% | 0.50 |
| Playground | 4,678 | 51.0% | 3,524 | 38.4% | 979 | 10.7% | 4,371 | 50.1% | 3,471 | 39.8% | 884 | 10.1% | 0.12 |
| Pool | 1,135 | 46.9% | 1,021 | 42.2% | 266 | 11.0% | 1,222 | 47.8% | 1,034 | 40.4% | 303 | 11.8% | 0.64 |
| Seating area | 2,041 | 83.8% | 352 | 14.4% | 44 | 1.8% | 1,448 | 78.8% | 342 | 18.6% | 48 | 2.6% | 0.46 |
| Sidewalk | 6,179 | 58.3% | 3,955 | 37.3% | 467 | 4.4% | 5,365 | 63.6% | 2,856 | 33.9% | 213 | 2.5% | 0.26 |
| Sports field | 2,730 | 55.2% | 1,593 | 32.2% | 626 | 12.6% | 3,495 | 52.2% | 2,392 | 35.7% | 812 | 12.1% | 0.93 |
| Tennis court | 346 | 35.6% | 458 | 47.1% | 168 | 17.3% | 249 | 31.4% | 427 | 53.8% | 118 | 14.9% | 0.25 |
| Walking loop | 118 | 5.4% | 1,686 | 76.8% | 392 | 17.9% | 41 | 2.6% | 1,353 | 86.5% | 171 | 10.9% | 0.001 |
| Water feature | 750 | 62.1% | 357 | 29.6% | 100 | 8.3% | 659 | 53.8% | 462 | 37.7% | 105 | 8.6% | 0.48 |

* Due to small cell sizes and model convergence, the p value was not calculated.