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How Do Racial/Ethnic Groups Differ in Their Use of Neighborhood Parks? Findings from the National Study of Neighborhood Parks

Christine A. Vaughan ⬤ · **Deborah A. Cohen · Bing Han**

Abstract The current study examined racial/ethnic differences in use of parks and park facilities and features and self-reported park use and perceptions. We conducted observations in a nationally representative sample of 193 neighborhood parks in 27 US cities over a 1-week period between April and August of 2016 using the System of Observing Play and Recreation in Communities (SOPARC). To determine the propensity of different racial/ethnic groups to use parks relative to expectation based on their representation in the surrounding neighborhood, we calculated the percentages of park users of each race/ethnicity and compared these to the percentages of racial/ethnic groups residing in the neighborhood within a 1-mile radius of the park based on 2010 U.S. Census data. In the same parks, we administered an intercept survey to assess park users' self-reported use and perceptions of the park ($N = 1872$). We examined racial/ethnic differences in self-reported use and perceptions of parks using GEE models that adjusted for several individual- and park-level covariates. Hispanics comprised a disproportionate percentage of observed park users. Racial/ethnic groups generally did not differ in their self-reported park use and perceptions, except for the social context of park visits. In adjusted models, Hispanics had significantly higher odds of visiting with a child family member (OR = 1.44) and lower odds of visiting alone than non-Hispanic whites (OR = .55). Findings highlight Hispanics' greater propensity to use parks and indicate that parks may serve a communal purpose for Hispanics that they do not serve for other racial/ethnic groups.

Keywords Racial/ethnic differences · Park use · Neighborhood parks · Park observations · Park visits

The reduction of racial/ethnic disparities in health behaviors (e.g., healthy diet, physical activity) and chronic conditions such as cancer, heart disease, and diabetes is a key public health objective [1]. Much research has focused on the promotion of health behaviors through modifications to the built environment, of which neighborhood parks are a critical feature [2]. Neighborhood parks can facilitate physical activity and offer psychological and social benefits [3]. Thus, understanding how neighborhood parks are used by different racial/ethnic groups could help inform modifications to parks to make them equally attractive to and used by all racial/ethnic groups.

Several studies of racial/ethnic differences in park use have been conducted, with some finding that blacks and other racial/ethnic minorities are less likely to use parks than whites. Blacks had significantly lower odds of park visitation than whites, even after adjusting for demographic covariates, in surveys of residents in

C. A. Vaughan (✉)
RAND Corporation, 1885 Mission St, San Francisco, CA 94103, USA
e-mail: cvaughan@rand.org

D. A. Cohen · B. Han
RAND Corporation, 1776 Main St, P.O. Box 2138, Santa Monica, CA 90407-2138, USA

Cleveland, OH [4], and Minneapolis, MN [5]. Findings from an observational study of park use in Ghent, Belgium and San Diego, CA also indicated that park users were more likely to be non-Hispanic white than another race/ethnicity; however, the predominance of whites likely reflects the cities' racial/ethnic composition [6]. Of note, all these studies were conducted in only one or two cities.

By contrast, studies of more geographically or racially/ethnically diverse samples have found that park use is more common among racial/ethnic minorities than whites, or have not found racial/ethnic differences in park use. For example, in a survey of adults residing within ½ mile of a neighborhood park in Albuquerque, NM; Chapel Hill, NC; Columbus, OH; or Philadelphia, PA, non-Hispanic African American respondents were more likely to ever have visited the park than non-Hispanic whites, even after adjusting for several covariates [7]. Similarly, in another survey of a racially/ethnically diverse sample of residents of Los Angeles, CA, those of Asian/Pacific Islander/other race/ethnicity reported more frequent park use than whites, but there were no other racial/ethnic differences after adjusting for a wide range of individual- and park-level covariates [8]. Lastly, in a national survey, there were no significant racial/ethnic differences in self-reported park use after adjusting for sex, age, and household income [9].

Research on how parks are used suggests differences in the types of active recreation and sports in which park users of different racial/ethnic backgrounds engage. For example, in Los Angeles, CA, whites were more likely than blacks and English-speaking Hispanics to report exercising in the park [8]. In a national survey, non-Hispanic whites had higher odds of reporting an active park visit than non-Hispanic blacks, but did not differ from Hispanics [9]. The same survey identified racial/ethnic differences in specific types of park-based activities: Non-Hispanic whites were significantly more likely to report walking or hiking than non-Hispanic blacks, while Hispanics and other race/ethnicities were more likely to report running/jogging and playing sports than non-Hispanic whites [9]. In an on-site survey of users of Lincoln Park in Chicago, whites were more likely than other racial/ethnic groups to report engaging in individual active sports, such as walking and bicycling and, within active group sports, tennis was more common among whites, basketball was more common among blacks, soccer was more common among Hispanics, and volleyball was more common among Asians [10].

Racial/ethnic differences in self-reported preferences for organized recreation vs. nature-based activities in parks have also been documented. One study found that blacks are more likely to prefer organized recreation activities than whites [4]. A survey of residents in Atlanta, GA, and Philadelphia, PA found that African American and Hispanic respondents ascribed greater importance to the presence of recreational facilities in parks than Asians and whites [11].

Some evidence also suggests that racial/ethnic minorities are more likely to use parks for passive, social purposes than whites. For example, in a national survey, non-Hispanic whites were less likely to attend a gathering of family or friends in parks than non-Hispanic blacks [9]. Similarly, among residents of Los Angeles, CA, Spanish-speaking Hispanics and Asian and other racial/ethnic groups were more likely than whites to visit the park with other people or meet people in the park [8]. Moreover, a study of users of Lincoln Park in Chicago, IL found large differences, whereby whites were more likely to visit the park alone or with only one other person, whereas racial/ethnic minorities tended to visit the park with their family or other larger group [10]. In the same study, minority groups reported a greater tendency than whites to use the park for passive, social activities, with talking and socializing in the park commonly reported by blacks, picnicking and watching organized sports commonly reported by Hispanics, and engaging in organized festivals and parties commonly reported by Asians.

Altogether, the existing evidence base indicates racial/ethnic differences in how parks are used, if not in the overall frequency of park use. However, the evidence base is also characterized by mixed findings, which likely stem from methodological limitations. First, most studies have examined parks in only one or two cities. Thus, different findings across studies may simply reflect differences between cities in patterns of park use. Moreover, most of these studies are limited in their generalizability across the USA. Studies conducted with nationally representative samples are needed to understand racial/ethnic differences in park use on a national level. Second, most studies of park use have relied on self-report of residents' park use, which has been validated [12], but is still subject to recall bias. An alternative method that does not depend on participants' recall is to assess park use objectively by conducting systematic observations of parks.

Designed to fill these gaps in the literature, the current study had the following aims: (1) to quantify racial/ethnic differences in overall park use, (2) to identify park features that are differentially associated with park use by different racial/ethnic groups, and (3) to explore racial/ethnic differences in reasons for park use and park-related preferences and behaviors. Systematic observational data were collected to permit objective assessment of racial/ethnic differences in overall park use and use of specific park features and facilities, and park user survey data were collected to illuminate possible reasons for racial/ethnic differences in park use.

Methods

Data Sources

Observational Data

Systematic observations of park users were collected as part of the national study of neighborhood parks (NSNP). Two waves of data were collected, one in 2014 and one in 2016; in the current study, we present findings from the second wave only. At the beginning of the NSNP, a representative sample of neighborhood parks was selected from 25 US cities with a population of 100,000 or more according to the 2010 U.S. Census using a two-stage stratified sampling strategy. The 289 cities with a population of 100,000 or more were divided into nine strata, with eight strata based on population (200,000–1,000,000 and 100,000–200,000) and region (West, Northeast, Midwest, and South), and the ninth stratum comprising cities with a population of more than 1 million. In the first sampling stage, 25 cities were randomly drawn from the 9 strata. In the second sampling stage, 174 parks were selected from a list of public parks in each of the 25 selected cities; lists of parks were retrieved directly from the city's Department of Recreation and Parks or from their website in 2013. The selection targeted parks between 3 and 20 acres and was restricted to avoid including parks less than one mile from each other and to ensure distributions of chosen parks were similar with regard to sizes and local poverty rates for all neighborhood parks within each city. For the first wave, the final sample of parks represented approximately 10% of all eligible neighborhood parks in the sampled cities; a more detailed description of sampling procedures is available elsewhere [13]. For

the second wave of data collection, we conducted observations in nearly all the same parks in the 25 cities sampled for the first wave and added two cities in geographic areas of the country that had previously been sparsely sampled. Parks were selected from the two new cities using the same inclusion and exclusion criteria and sampling procedures in the first wave. In total, observations were conducted at 193 parks in 27 cities in the second wave sample.

Observations of park users were conducted by trained data collectors using the System of Observing Play and Recreation in Communities (SOPARC), a validated observational tool [14]. SOPARC uses momentary time sampling and direct observation methods to assess park use and characteristics. Existing research confirms the high inter-rater reliability of SOPARC to assess the total number of people observed by age, gender, and race/ethnicity [12]. For each wave of data collection, two to four local field staff in each selected city were recruited and trained.
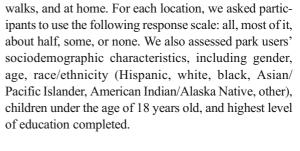
Each park was mapped and divided into subareas called target areas that could be observed in one scan. Target areas typically included one type of facility (e.g., play equipment, basketball court, lawn) or supported only one type of activity (e.g., tennis). All of the target areas were numbered so that every single observation occurred in exactly the same order. Observations of the entire park were generally completed within 1 h. Based upon a previous study indicating that 12 observations selected on different days and different times of day were sufficient for reliably estimating weekly park use [15], each park was observed according to the following schedule: Tuesday, 8 AM, 11 AM, and 2 PM; Thursday, 12 PM, 3 PM, and 6 PM; Saturday, 9 AM, 12 PM, and 3 PM; and Sunday, 11 AM, 2 PM, and 5 PM. Staff tried to observe a park during a single week, but when the weather was inclement, the observation was rescheduled for the next available day (same time of day and day of week) that was not raining. Each park user in a target area was counted. For both waves, data were collected between April and August.

Park User Survey Data We conducted intercept surveys of users of the same parks where observations data were collected in 2016. The purpose of the survey was to gain insight into users' reasons for visiting the park and park-related preferences and how these might explain racial/ethnic differences in park use. Data collectors administered pencil-and-paper surveys to park users on the same

days that they conducted systematic observations of parks in between hours of observation. Quota sampling was conducted in each park, with the quota determined by the number of people observed in the park at baseline. Eligibility criteria for participation were being at least 18 years old and able to complete the survey in English or Spanish (surveys were available in English and Spanish). Data collectors approached park users, briefly described the survey and its purpose, and asked them if they were at least 18 years old; if they indicated that they were, they were invited to complete the survey. Surveys were completed in 178 of the 193 parks at which observations data were collected; there were no surveys completed for some parks because of the absence of park users during data collection periods. The refusal rate for survey participation was 45.7%.[1] In total, 1872 park users from 178 parks and 27 cities completed surveys. The great majority of participants completed the survey in English (86%, $n = 1612$).

In the current study, we analyzed data on the social context of participants' visits to the park, their main reasons for visiting the park, favorite features of the park, the amount of their exercise and physical activity that occurs in the park vs. other locations, and sociodemographic characteristics. To assess the social context of participants' visits to the park, we asked, "When you visit this park, who do you usually come with or meet?", and instructed participants to check all that apply of the following response options: adult family member; child family member; non-family child or adult for whom I provide care; friends; team, class or league members, or instructors; come alone. We assessed participants' main reasons for visiting the park with the following question: "What are the main reasons that you visit this park?" Participants were asked to check all that apply of the following response options: exercise/physical activity, play games/sports, bring children, meet friends, and relax. We also asked participants to indicate their favorite features of the park and offered them the following response options, with the instructions to check all that apply: lawn, large shade trees, sports facilities, walking path/loop, playground. Finally, we assessed the proportion of participants' exercise and physical activity that occurs in public parks and

recreation centers, private health clubs, streets and side-walks, and at home. For each location, we asked participants to use the following response scale: all, most of it, about half, some, or none. We also assessed park users' sociodemographic characteristics, including gender, age, race/ethnicity (Hispanic, white, black, Asian/Pacific Islander, American Indian/Alaska Native, other), children under the age of 18 years old, and highest level of education completed.

Statistical Analyses

Observational Data We analyzed the observational data to quantify (1) racial/ethnic differences in overall park use and (2) racial/ethnic differences in the use of specific types of target areas in parks. To examine racial/ethnic differences in overall park use, we first calculated the total number of observed park users in each racial/ethnic group by summing the number of people in each racial/ethnic group over all parks in the NSNP sample. Then, we computed the percentages of people in each racial/ethnic group out of the total number of park users in all racial/ethnic groups. This method of calculation has been used in previous research that has examined differences in park use by race/ethnicity, as well as gender, age, and other characteristics [14]. Next, because the observed racial/ethnic distribution of park users might simply reflect the racial/ethnic composition of residents of the neighborhood around the park, we adjusted observed percentages of park users of each race/ethnicity by dividing them by the percentage of residents living within a 1-mile radius of the park in each racial/ethnic group based on 2010 U.S. Census data. The resultant ratios are thus interpreted as the propensity of a particular racial/ethnic group to use parks relative to what would be expected based on their representation in the neighborhood around the park.

We also examined racial/ethnic differences in the use of different types of target areas. To streamline this analysis, we grouped target area types into the following categories: (1) passive use areas, which include lawns, picnic areas, bleachers, and seating areas; (2) sports facilities and fields, which include basketball courts, baseball fields, sports fields, tennis courts, pools, and skate parks; (3) exercise and fitness areas include walking loops, exercise areas, gymnasiums, and fitness zones; (4) dog parks; and (5) play areas. For each race/ethnicity and target area category, we computed the observed percentage of users as the percentage of users of that

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[1] The response rate could not be calculated because it was not possible to determine the number of park users who were eligible to complete the survey. Instead, we report the refusal rate, which is the number of people who were invited to complete the survey and refused divided by the total number of people who were invited to complete the survey.

race/ethnicity observed in that target area category out of all users observed in the same target area category. Then, we adjusted observed percentages of target area users of each race/ethnicity by dividing them by the percentage of residents living within a 1-mile radius of the park of that race/ethnicity based on 2010 U.S. Census data. To determine whether the resultant ratios were significantly different from one, indicating that target area users of a particular race/ethnicity were observed significantly more or less frequently than would be expected based on their representation in the surrounding neighborhood, we calculated a one-sample, two-tailed z test for proportions for each racial/ethnic group and target area category.

Park User Survey Data We analyzed the park user survey data to examine racial/ethnic differences in self-reported patterns of park use and preferences for park features. Given the nested data structure in which park users are nested in parks, which are nested in cities, we estimated generalized estimating equation (GEE) regression models to adjust for clustering of observations within these levels of analysis. For dichotomous variables, we estimated binary logistic regression models. For ordinal outcomes, such as the proportion of exercise and physical activity that occurs in different locations, we estimated ordinal logistic regression models. For all outcomes, we ran two sets of models in which we estimated (1) the bivariate association between race/ethnicity and the outcome without adjustment for covariates (i.e., unadjusted models) and (2) the multivariate association between race/ethnicity and the outcome with adjustment for several potentially confounding covariates (i.e., adjusted models), including individual sociodemographic characteristics (age, gender, highest level of education, has children under the age of 18) and park-level characteristics that have demonstrated significant associations with park use in other analyses of the NSNP data (park size in acres, the number of residents residing within a 1-mile radius of the park, and the percentage of people in poverty residing within a 1-mile radius of the park) [13].

Results

Observations of Park Users

Racial/Ethnic Differences in Neighborhood Park Use We found significant racial/ethnic differences in

the propensity to use parks, relative to the racial/ethnic distribution of residents of the surrounding neighborhood. Specifically, compared to the local population distribution, Hispanics were more likely to use parks, and members of other racial/ethnic groups were less likely. As shown in Table 1, the observed percentage of Hispanic park users (40%) was significantly greater than would be expected based on the percentage of Hispanic residents of the surrounding neighborhood (26%) ($p < .0001$); in other words, Hispanics' propensity to visit parks was roughly 1.5 times greater than would be expected based on their representation in the surrounding neighborhood. By contrast, the observed percentage of park users of Asian and other racial/ethnic groups (other than Hispanic, white, or black) (5%) was less than half of the percentage of Asian and other racial/ethnic residents of the surrounding neighborhood (12%) ($p < .0001$). The percentage of white park users (37%) was also significantly lower than would be expected given the percentage of white residents in the surrounding neighborhood (43%). The percentage of black park users (18%) was nearly identical to the percentage of black residents of the surrounding neighborhood (19%).

Racial/Ethnic Differences in Park Use as a Function of Park Facilities and Features As shown in Table 2, Hispanics were observed 1.73 times more frequently in passive use areas, 1.48 times more frequently in sports facilities and fields, 1.27 times more frequently in exercise and fitness areas, and 1.27 times more frequently in play areas than would be expected based on their representation among residents within a 1-mile radius of parks with at least one target area in the corresponding category. By contrast, relative to what would be expected based on the racial/ethnic composition of the surrounding neighborhood, whites were observed .81 times less frequently in passive use areas, .90 times less in sports facilities and fields, and .78 times less in exercise and fitness areas. The opposite pattern was observed in dog parks, which was the only type of target area in which Hispanics were observed .19 times less often and whites were observed 1.89 times more often than would be expected based on their representation in the surrounding neighborhood. Blacks were observed .84 times less in passive use areas, .95 times less in sports facilities and fields, .20 times less in dog parks, and .89 times less in play areas and 1.2 times more often in exercise and fitness areas than would be expected based

Table 1 Percentage of park users by racial/ethnic group (*N* = 82,036 person hours)

Race/ethnicity	Total weekly park use in person hours[a]	Percentage (%) of all park users in person hours[b]	Percentage (%) of residents within 1-mile radius of park[c]	Ratio of % park users to % residents[d]
Hispanic/Latino	32,861	40	26	1.54
White	30,322	37	43	.86
Black	14,601	18	19	.95
Asian/other	4252	5	12	.42
Total	82,036	100	100	1

Because the sample size is so large (*N* = 82,036), all tests are significant at *p* < .0001

[a] For each racial/ethnic group, the total number of park users in person hours was computed by summing the number of observed park users with that race/ethnicity across all parks in the NSNP sample in 2016. The total shown in the last row of the table was computed by summing the number of observed park users in all racial/ethnic groups across all parks in the NSNP sample in 2016

[b] For each racial/ethnic group, the percentage of park users in person hours was computed by dividing the total number of park users in the racial/ethnic group by the total number of park users in all racial/ethnic groups in person hours and multiplying by 100. For example, the percentage of Hispanics was computed by dividing 32,861 by 82,036 and multiplying by 100

[c] For each racial/ethnic group, the percentage of residents living within a 1-mile radius of the park was computed by summing the number of people of that race/ethnicity residing within a 1-mile radius of the park across all parks in the NSNP sample, dividing that number by the total number of people of all race/ethnicities residing within a 1-mile radius of the park for all parks in the NSNP sample, and multiplying the resultant ratio by 100. Data for these calculations came from the 2010 U.S. Census data

[d] For each racial/ethnic group, the ratio of the percentage of park users to residents around the park was computed by dividing the percentage of park users by the percentage of residents within a 1-mile radius of the park

on the racial/ethnic composition of the surrounding neighborhood. Those of Asian and other racial/ethnic groups were observed using passive use areas .33 times less, sports facilities and fields .33 times less, exercise and fitness areas .75 times less, dog parks .31 times less, and play areas .67 times less than would be expected based on their representation in the surrounding neighborhood. All differences described in this paragraph are significant at *p* < .001.

Park User Survey

Sociodemographic Characteristics of Park User Survey Participants As shown in Table 3, participants were, on average, 39 years old (SD = 13.40 years old). Slightly less than half of participants were male (47%), and nearly two thirds had at least one child under the age of 18 years old (65%). The most-commonly endorsed racial/ethnic category was non-Hispanic white (43%), followed by Hispanic (30%), non-Hispanic black (18%), and non-Hispanic Asian/other (8%). Over 40% of participants reported that they had completed college or graduate school (41%). Roughly one quarter of participants indicated that they had completed some college without obtaining a 4-year degree (26%), and another quarter reported that they had completed high school or obtained a GED (24%). Less than 10% reported that

they had completed the 7–11th grade (6%) or 6th grade or less (3%).

Racial/Ethnic Differences in the Social Context of and Reasons for Park Use, Favorite Park Features, and Amount of Physical Activity that Occurs in the Park and Other Locations As Table 4 shows, the main aspect of patterns of park use and park-related preferences on which racial/ethnic groups differed was their social context for park visits. In unadjusted analyses, relative to non-Hispanic whites, Hispanics had significantly higher odds of usually visiting the park with an adult family member (OR = 1.24), child family member (OR = 1.44), non-family care recipient (OR = 1.81), or friends (OR = 1.33) and significantly lower odds of visiting the park alone (OR = .45). In adjusted analyses, Hispanics continued to have significantly higher odds of visiting the park with a child family member (OR = 1.44) and significantly lower odds of visiting the park alone (OR = .55) relative to non-Hispanic whites. Non-Hispanic blacks had significantly higher odds than non-Hispanic whites of reporting that they usually visited the park with friends in unadjusted (OR = 1.70) but not adjusted analyses, and alone in unadjusted (OR = 1.39) and adjusted (OR = 1.47) analyses.

There were some racial/ethnic differences in the main reasons for visiting the park in unadjusted analyses.

Table 2 Percentage of observed target area users by race/ethnicity, racial/ethnic distribution of residents around the park, and ratio of observed target area users to residents by race/ethnicity

Target area category	Hispanics			Whites			Blacks			Asian/other		
	Percentage (%) of observed users[d]	Percentage (%) of residents around park[e]	Ratio of (%) users to (%) residents[f]	Percentage (%) of observed users[d]	Percentage (%) of residents around park[e]	Ratio of (%) users to (%) residents[f]	Percentage (%) of observed users[d]	Percentage (%) of residents around park[e]	Ratio of (%) users to (%) residents[f]	Percentage (%) of observed users[d]	Percentage (%) of residents around park[e]	Ratio of (%) users to (%) residents[f]
Passive use areas[a]	45	26	1.73	35	43	.81	16	19	.84	4	12	.33
Sports facilities and fields[b]	40	27	1.48	38	42	.90	18	19	.95	4	12	.33
Exercise and fitness areas[c]	38	30	1.27	29	37	.78	24	20	1.2	9	12	.75
Dog parks	5	27	.19	87	46	1.89	2	10	.20	5	16	.31
Play areas	33	26	1.27	42	43	.98[ns]	17	19	.89	8	12	.67

Sample sizes for the total number of observed users in each target area category are: passive use areas ($N = 28{,}862$), sports facilities and fields ($N = 24{,}209$), exercise and fitness areas ($N = 5640$), dog parks ($N = 852$), and play areas ($N = 10{,}939$). For each race/ethnicity and target area category, the percentage of observed users differed significantly from the corresponding percentage of residents around the park at $p < .001$ unless indicated by the superscript notation "ns"

[a] Passive use areas include lawns, picnic areas, bleachers, and seating areas

[b] Sports facilities and fields include basketball courts, baseball fields, sports fields, tennis courts, pools, and skate parks

[c] Exercise and fitness areas include walking loops, exercise areas, gymnasiums, and fitness zones

[d] For each race/ethnicity and target area category shown in the table, the percentage of observed users was computed as the total number of users of that race/ethnicity observed in all target areas within that category divided by the total number of users of all race/ethnicities observed in all target areas within that category (multiplied by 100)

[e] The percentage of residents around the park was computed as the total number of residents of that race/ethnicity within a 1-mile radius of parks with at least one target area within that category divided by the total number of residents of all race/ethnicities within a 1-mile radius of parks with at least one target area within that category. For example, the percentage of Hispanic residents around parks with sports facilities and fields is the number of Hispanics who reside within a 1-mile radius of parks with at least one sports facility/field target area divided by the total number of residents of all race/ethnicities within a 1-mile radius of parks with at least one sports facility/field target area

[f] This ratio was computed as the percentage of users of that race/ethnicity observed in the target area category divided by the percentage of residents of that race/ethnicity who live within a 1-mile radius of the park

Table 3 Sociodemographic characteristics of park user survey participants

Characteristic	M (SD) or %
Age	39.00(13.40)
Male	47
At least one child under the age of 18	65
Race/ethnicity	
Hispanic	30
Non-Hispanic black	18
Non-Hispanic white	43
Non-Hispanic Asian/other	8
Highest level of education	
6th grade or less	3
7–11th grade	6
High school graduate or GED	24
Some college, but less than a 4-year degree	26
Completed college or graduate school	41

The results in the table include all participants who answered the survey item assessing the characteristic in question. Sample sizes for calculating the percentage of participants with each characteristic ranged from 1692 (child under the age of 18) to 1857 (male)

Specifically, relative to non-Hispanic whites, Hispanics had significantly lower odds of reporting exercise/physical activity (OR = .65) and significantly higher odds of reporting bringing children (OR = 1.48) as one of their main reasons for visiting the park. In addition, non-Hispanic blacks had significantly higher odds of reporting meeting friends (OR = 1.87) and relaxing (OR = 1.47) as main reasons for visiting the park relative to non-Hispanic whites. However, none of these associations continued to be significant after adjusting for individual-level sociodemographic characteristics and park-level characteristics.

Racial/ethnic groups generally did not differ in their choice of favorite park features. The one exception to this was the lawn: Hispanics had significantly lower odds than non-Hispanic whites of citing this as their favorite park feature in unadjusted (OR = .61) and adjusted (OR = .68) analyses, and non-Hispanic blacks had significantly lower odds of choosing lawn as their favorite park feature than non-Hispanic whites in unadjusted analyses (OR = .68).

With respect to locations of exercise and physical activity, non-Hispanic blacks had significantly higher odds than non-Hispanic whites of getting more of their exercise and physical activity in public parks and

recreation centers (OR = 1.52) and at home (OR = 1.62) in unadjusted analyses. However, neither of these associations continued to be significant in adjusted analyses. Hispanics had significantly lower odds of getting more exercise and physical activity on streets and sidewalks than non-Hispanic whites in unadjusted (OR = .55) and adjusted (OR = .46) analyses.

Discussion

The current study augments the existing evidence base by documenting objectively measured racial/ethnic differences in park use in a nationally representative sample of US* neighborhood parks. To our knowledge, this is the first and only study of this kind. Unlike past research in this area, most of which has been conducted in only one or two cities, we found that Hispanics used parks more frequently than would be expected based on their representation in the neighborhood surrounding the park, and their propensity for park use exceeded that of whites, blacks, and other racial/ethnic groups.

To identify park facilities and features that might be differentially attractive to racial/ethnic groups, we also examined the use of specific target areas of the park by different racial/ethnic groups. In general, Hispanics were more frequently observed in multiple categories of target areas than would be expected, indicating that their preference may be broadly for parks, rather than localized to specific park facilities or features. Hispanics' greater propensity to be observed in sports facilities and fields and exercise and fitness areas converges with findings from a previous national self-report survey suggesting that Hispanics and other race/ethnicities were more likely to report running/jogging and playing sports in parks than non-Hispanic whites [9]. All other racial/ethnic groups were generally observed in most target areas less often than would be expected, with some exceptions: Blacks were more commonly observed in exercise and fitness areas, and whites were more commonly observed in dog parks. Thus, these park features may be particularly valued by blacks and whites.

We also compared park users of different race/ethnicities on their self-reported patterns of park use and preferences, finding that racial/ethnic groups were generally more similar than different in their self-reported favorite parts of the park, reasons for park use, and locations of physical activity after adjusting for a wide array of individual- and park-level covariates. We

Table 4 Racial/ethnic differences in motivations and social context for park visits among park users

Reasons/features	Hispanics		Non-Hispanic blacks		Non-Hispanic Asian/other	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Usually visits park with[a]…						
Adult family member	1.24*	1.30	1.06	1.02	1.20	1.28†
Child family member	1.44***	1.44*	1.00	1.05	1.09	1.17
Non-family care recipient	1.81*	1.29	1.66†	1.25	.70	.62
Friends	1.33*	1.05	1.70*	1.49	1.28	1.03
Team	.95	.96	.87	.88	.71	.71
Alone	.45**	.55**	1.39*	1.47*	.83	.70
Main reasons to visit park[b]						
Meet friends	1.02	.80	1.87*	1.30	1.39	1.21
Relax	.82	.82	1.47*	1.25	1.13	1.05
Play games/sports	.95	1.02	.96	.83	1.22	1.20
Exercise/physical activity	.65***	.85	1.12	1.30	1.04	1.15
Bring children	1.48*	1.39	1.16	1.22	1.21	1.43
Favorite park feature[c]						
Lawn	.61**	.68*	.68*	.70†	.92	.90
Large shade trees	.87	.92	1.03	1.19	.71	.72
Sports facilities	1.27	1.18	1.24	1.11	1.10	1.06
Walking path/loop	.90	.85	1.16	1.41†	.92	.90
Playground	1.17	1.10	.94	1.00	1.14	1.18
Locations of physical activity/exercise[d]						
Park	1.00	1.03	1.52*	1.34†	1.39	1.26
Private health club	.77	.93	.88	.99	.84	.77
Street or sidewalk	.55***	.46***	1.07	.83	.70	.65
Home	.99	.75	1.62*	1.29	.95	.87

To account for the dependence of observations within parks and cities, GEE models were estimated. Questions about the social context of park visits, participants' main reasons for visiting the park, and participants' favorite park features had possible response options of "yes" and "no." Accordingly, the binary logistic distribution was specified in these GEE models, and odds ratios are reported in the table. Questions about the amount of exercise that occurs in each location were asked on a 5-point ordinal scale, with response options of none (1), some (2), half (3), most (4), and all (5). Accordingly, the cumulative logistic distribution was specified in these GEE models, and the numbers reported in the table represent the odds of being in a higher category (i.e., getting more exercise or physical activity in the location in question). Race/ethnicity was represented in models by a set of dummy-coded binary indicators with non-Hispanic whites as the reference category. Unadjusted models included only race/ethnicity as a predictor of the dependent variable. In adjusted models, covariates included individual sociodemographic characteristics (age, gender, highest level of education, has children under the age of 18) and park characteristics that have been shown to be key predictors of park use in previous research (park size in acres, number of residents living in the 1-mile radius around the park, and percent of residents in the 1-mile radius around the park living in poverty)

[a] For all unadjusted models, $N = 1806$. For all adjusted models, $N = 1514$

[b] For unadjusted models, sample sizes ranged from 1705 to 1707. For adjusted models, sample sizes ranged from 1446 to 1447

[c] For unadjusted models, sample sizes ranged from 1667 to 1671. For adjusted models, sample sizes ranged from 1419 to 1421

[d] For unadjusted models, sample sizes ranged from 1568 to 1619. For adjusted models, sample sizes ranged from 1432 to 1465

†$p < .10$

*$p < .05$

**$p < .01$

***$p < .001$

detected racial/ethnic differences in self-reported survey data primarily in the social circumstances of park visitation. Specifically, relative to non-Hispanic whites, Hispanics had significantly greater odds of reporting that they visited parks with a child family member and significantly lower odds of reporting that they visit parks alone, even after adjusting for several individual- and park-level covariates. Non-Hispanic blacks, by contrast, had significantly higher adjusted odds of reporting that they visited the park alone relative to non-Hispanic whites. These findings suggest that parks may serve a significant communal purpose for Hispanics that they do not serve for other racial/ethnic groups. Our findings partly converge with and partly diverge with those of past research, which has found differences between whites and all racial/ethnic minorities in the social circumstances of park visitation, but has not found that Hispanics were more inclined to use parks for social purposes than other racial/ethnic minorities [10].

Strengths and Limitations

The current study's primary strengths are the large, nationally representative sample of neighborhood parks in which observations data were collected and surveys of park users were administered. Indeed, the NSNP is the first and only study of this kind. This affords greater confidence in the generalizability of findings to users of neighborhood parks across the USA.

The current study also has limitations, one of which is that it does not offer insight into why non-park users do not use parks, as data from both observations and surveys were collected only on park users. In addition, there are some aspects of parks that we did not assess in the survey that might be particularly important to some racial/ethnic groups. For example, we did not assess concerns about experiencing racial discrimination in parks, which has been identified as an issue of particular importance to blacks in other research [11].

Conclusion

Findings from the current study highlight that, while some racial/ethnic minority groups (Hispanics) are using parks more than would be expected, other racial/ethnic minority groups (blacks and Asians) are using parks less than would be expected. This suggests that

greater effort may be needed to draw more blacks and Asians to their neighborhood parks by adding programming or features that are desirable to these subgroups.

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