Journal of Outdoor Recreation and Tourism 5-6 (2014) 68–72

Contents lists available at ScienceDirect

Journal of Outdoor Recreation and Tourism

journal homepage: www.elsevier.com/locate/jort

Physical activity locations in Georgia: Frequency of use by socio-demographic group

Lincoln R. Larson [a,*], Jason W. Whiting [a,1], Gary T. Green [a], J.M. Bowker [b]

[a] Warnell School of Forestry & Natural Resources, University of Georgia, Athens, GA 30602, USA
[b] USDA Forest Service, Southern Research Station, Athens, GA 30602, USA

ARTICLE INFO

Article history:
Received 14 September 2013
Received in revised form
20 November 2013
Accepted 23 November 2013

Keywords:
Parks
Physical activity
Race/ethnicity

ABSTRACT

Active outdoor recreation helps to mitigate health consequences associated with sedentary behavior. Enhanced understanding of socio-demographic differences in physical activity (PA) location preferences could therefore contribute to health promotion. This study examined frequency of use for various PA locations in Georgia, a state with historically high levels of physical inactivity and obesity. Data were collected via intercept surveys of visitors to state parks ($n=761$) and flea markets near the parks ($n=234$). According to these self-reports, homes and backyards were used most frequently for PA followed by neighborhood settings. State parks and gyms or recreation centers were used less frequently than other recreation settings. Latinos relied more on parks and less on homes/backyards for PA than others groups. African Americans and Asians used gyms or recreation centers more often than other groups. Development of built environments that promote active living should account for PA location choices across diverse communities.

MANAGEMENT IMPLICATIONS

Physical activity is widely recognized as key element of health promotion, yet data depicting frequency of use for PA locations and variations among demographic groups is limited. By examining the frequency of use for various PA locations across a diverse population in north Georgia, this study revealed several patterns that have implications for recreation management:

- Localized outdoor settings (e.g., homes/backyards, neighborhoods) are used more often for PA than other recreation locations (i.e., parks).
- Females use neighborhood settings more often for PA than males.
- Latinos and African Americans use parks more often for PA than Whites.
- African Americans, Asians and high income individuals use gyms and recreation centers more often for PA than other groups.
- Efforts to promote PA via outdoor recreation should consider multiple aspects of the built environment and account for a range of diverse preferences that influence site use patterns across different demographic groups.

1. Introduction

Regular participation in physical activity (PA) lowers the risk of multiple health problems including cardiovascular disease and obesity (Bauman & Craig, 2005; Ogden et al., 2006; Sofi, Capalbo, Cesari, Abbate, & Gensini, 2008). Despite efforts to emphasize the benefits of active living, a majority of Americans fail to meet recommended PA levels (Centers for Disease Control and Prevention, 2010; Macera et al., 2005). Sedentary lifestyles and associated health problems are especially prevalent in low-income minority communities (Crespo, Smit, Anderson, Carter-Pokras, & Ainsworth, 2000; Kumanyika & Grier, 2006; Thomas, Eberly, Smith, Neaton, & Stamler, 2005). PA levels could potentially be increased by using models of health promotion that consider environmental surroundings and inter-personal factors (Bedimo-Rung, Mowen, & Cohen, 2005; Sallis et al., 2006). This approach requires an enhanced understanding of preferences regarding outdoor recreation locations where PA may occur.

* Correspondence to: 202 Bruckner Hall, Human Dimensions, Research Unit, Department of Natural Resources, Cornell University, Ithaca, NY 14853, USA. Tel.: +1 607 255 7953; fax: +1 607 254 2299.
E-mail address: LRL66@cornell.edu (L.R. Larson).
[1] Present Address: Department of Recreation Administration, California State University, Fresno, CA 93740, USA.

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http://dx.doi.org/10.1016/j.jort.2013.11.001

Research has shown that the proximity to recreation settings and opportunities, particularly outdoor recreation settings such as public parks, is often associated with higher levels of PA (Brownson, Baker, Housemann, Brennan, & Bacak, 2001; Giles-Corti et al., 2005; Kaczynski & Henderson, 2007). This relationship is especially strong in low-income, high-ethnic minority neighborhoods, where limited access to PA-related facilities and amenities has been identified as a key correlate of physical inactivity (Crawford et al., 2008; Diez Roux et al., 2007; Gordon-Larsen, Nelson, Page, & Popkin, 2006; Powell, Slater, Chaloupka, & Harper, 2006). Despite these patterns, few studies have directly examined individuals' choice of potential PA locations. Moreover, research exploring this topic has been inconclusive. For example, some studies have shown that neighborhood streets, homes, and fitness centers are the most frequently used PA locations (Huston, Evenson, Bors, & Gizlice, 2003), whereas others have highlighted the critical role of parks for PA (Wilhelm-Stanis, Schneider, Shinew, Chavez, & Vogel, 2008). Additional research is needed to explore the relative importance of various outdoor recreation settings to PA in diverse communities.

This study examined the frequency of use for various PA locations among different socio-demographic groups of state park visitors and flea market attendees in north Georgia, a state where only 46% of adults are regularly active (38% of African Americans, 28% of Latinos) and more than 30% of adults are categorized as obese (Georgia Department of Public Health, 2010, 2011). Specifically, this study explored the use of state parks relative to other potential PA settings in non-urban areas of north Georgia.

2. Methods

Data were collected via intercept surveys at three state parks ($n=761$ collected in May–September 2010) and nine fleas markets ($n=234$ collected in March–July 2011) located 40–90 miles from downtown Atlanta, GA. Because resources were not available to implement a comprehensive population-based survey effort in this pilot study, the different locations were purposefully selected to obtain a convenience-based sample that allowed for comparisons of PA location preferences for north Georgians who may or may not visit state parks.

These state parks contained a variety of facilities (e.g., lakes, campgrounds, hiking trails) and were intentionally chosen based on visitor composition that reflected the increasing racial/ethnic diversity of the southeastern U.S. The dates for sampling at state parks were selected based on a stratified random sampling protocol to ensure coverage across all days of the week and times of the day (Whiting, Larson, & Green, 2012). Collection efforts targeted zones with high concentrations of day use visitors such as beaches and picnic areas, accounting for a large percentage of total park visitation (separate exit surveys revealed that more than 80% of all park visitors used these sites). During the intercept, bilingual interviewers approached every visitor group and asked adults if they would be willing to participate in a brief survey (in English or Spanish). Upon consent, participants were handed one of five survey versions (one version focused on PA). The state park response rate was 91.5%.

Flea markets varied in size (15–1000 vendors), and intercept surveys in these locations provided improved access to a racially/ethnically diverse and low-income segment of the population that is typically difficult to reach through more conventional survey methods such as mail, telephone, or internet (Dillman, 2007; Miller, Wilder, Stillman, & Beckler, 1997). The dates for sampling at flea markets were randomly distributed among weekends in the spring and summer, when attendance was typically highest. Collection efforts used an administration approach similar to the park-based protocol and focused on two groups of flea market attendees: vendors and customers. The flea market response rate was 73.7%.

The instrument included demographic characteristics such as gender, age, race/ethnicity, income, and ZIP code of permanent residence. A series of items were used to elicit how often (1="never" to 5="very often") participants used particular locations for PA. Validation of subjective ratings using self-reported PA

Table 1
Participants of the intercept survey at state parks (2010) and flea markets (2011) compared to the total population in the study region and throughout the state of Georgia.

Demographic variable	State park sample[a]	Flea market sample[b]	Population in study region[c]	Population in Georgia[c]
Sample size	761	234	4,033,579	9,919,945
Gender				
Distribution (%)				
Female	59.1	51.3	51.0	51.1
Male	40.3	48.3	49.0	48.9
Missing	0.5	0.4		
Age (Median in years)	35.5	38.0	34.8	35.3
Race/Ethnicity Distribution (%)				
White/Caucasian	54.8	41.5	56.3	55.1
Hispanic/Latino	31.4	32.9	13	9.2
Black/African American	7.2	17.1	24.6	31.2
Asian/Other	6.2	7.3	5.9	4.1
Missing	0.4	1.3		
Est. Median Income	$46,725	$38,297	$57,472	$49,736
Income				
Distribution (%)				
Low (< $25 K)	18.9	30.8	Data not available	25.1
Med ($25 K-50 K)	25	23.5		25.1
High (> $50,000 K)	33.6	19.2		49.8
Refused	17.5	20.9		
Missing	5	5.6		

[a] Proportions reflect pooled sample of all visitors to all state parks across sampling periods.
[b] Proportions reflect pooled sample of all visitors to all flea markets across sampling periods.
[c] Estimates based on 2012 population projections from U.S. Census Bureau (United States Census Bureau, 2013). Study region included the 21 counties containing or adjacent to state parks and flea markets in north Georgia where sampling occurred.

data showed that participants reporting more frequent use across all PA locations also reported higher numbers of physically active days per week ($r=0.284$, $p<0.001$). Comparisons of mean frequency of use ratings for PA locations across all groups were conducted using paired *t*-tests. Because a key objective of the research was to identify the ordered choice of two states (i.e., infrequent vs. frequent use), the scale for site use (1="never" to 5="very often") was dichotomized into "rare to occasional" for responses 1–3 and "often to very often" for responses 4–5. This approach, which has been used in other studies in both the public health (Davis, Shishodia, Taqui, Dumfeh, & Wylie-Rosett, 2007) and recreation fields (Bowker, Cordell, & Johnson, 1999), can help to facilitate interpretation of results and clarify potential management implications. Separate logistic regression models were used to examine socio-demographic differences in frequency of use based on this dichotomous dependent variable at each location, controlling for survey site.

Table 2
Mean frequency of use for physical activity locations in Georgia[a] ($n=995$).

Physical activity location	Mean	SD
Home/backyard	3.77[a]	1.28
Neighborhood streets & sidewalks	3.17[b]	1.33
Workplace	3.06[b]	1.63
Neighborhood parks	3.03[b]	1.30
State parks	2.63[c]	1.09
Gym/rec center	2.52[c]	1.39

Notes: Frequency of use was rated on a scale where: 1=never, 2=rarely, 3=occasionally, 4=often, 5=very often. Data depict pooled means across all state parks and flea markets. Mean ratings for PA locations sharing a letter in the superscript do not differ significantly on paired *t*-tests. Sample includes intercept survey participants at state parks and flea markets in 21 counties across northern Georgia.

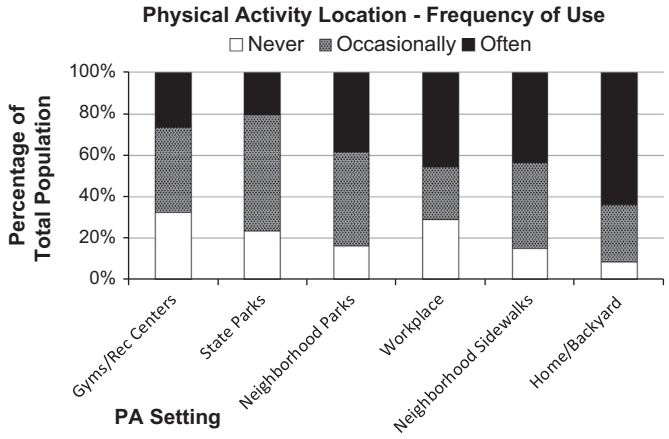

Fig. 1. Frequency of use for physical activity locations in Georgia [$n=995$; sample includes intercept survey participants at state parks and flea markets in 21 counties across northern Georgia]. Note: To better illustrate relative use rates, the original 5-point Likert-type scale was condensed to a three point scale where: 1=never, 2–3=occasionally, and 4–5=often.

3. Results

Results confirmed that day use visitors in state parks and flea markets represented a diverse sample of the north Georgia population (Table 1). Based on observed proportions of participants in the sample, ZIP code data revealed that most state park visitors (68.3%) and flea markets attendees (60.7%) were of local origin (i.e., living within 20 miles of at least one of the north Georgia research sites). Across all groups, homes and backyards were used more frequently for physical activity than any other locations, followed by neighborhood sidewalks and streets. Neighborhood parks and the workplace were used at approximately equal rates, and both were used significantly more than state parks or gyms and recreation centers (Table 2, Fig. 1).

After controlling for differences in survey location, socio-demographic differences in frequency of use ratings were evident at several PA locations (Table 3). Females were active more often in neighborhood settings (e.g., local parks and sidewalks), while males were active more often in the workplace. Frequent use of neighborhood parks for PA was inversely related to age. Latinos engaged in PA in home environments significantly less often than Whites and other groups. Conversely, Latinos and other racial/ethnic minorities used parks (either neighborhood parks or state parks) for PA significantly more than Whites. African Americans

Table 3
Logistic regression models exploring socio-demographic differences in frequency of use for physical activity locations in Georgia[a].

	Home/backyard		Local streets & sidewalks		Workplace		Local parks		State parks		Gym/Rec center	
Percentage using "often" (%)	63.3		43.9		45.1		38.9		20.5		26.9	
Variables in model	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Constant	1.629	0.346	0.533	0.322	0.243	0.320	−0.186	0.327	−0.861	0.395	−1.064	0.383
Survey Site (State Park)	−0.332*	0.184	−0.532***	0.171	−0.125	0.170	−0.441**	0.173	−0.804***	0.196	0.120	0.203
Age	−0.011*	0.006	−0.012*	0.006	−0.015**	0.006	−0.004	0.006	0.003	0.008	−0.022***	0.007
Gender (Male)	−0.264*	0.151	−0.391	0.147	0.465***	0.145	−0.320**	0.150	0.098	0.181	0.097	0.166
Race/ethnic (Latino)	−0.803***	0.179	0.081	0.174	−0.054	0.173	0.760**	0.174	0.360*	0.212	0.293	0.200
Race/ethnic (Black)	0.207	0.272	0.450*	0.248	0.365	0.248	0.529**	0.246	0.267	0.296	0.742***	0.265
Race/ethnic (Asian/other)	0.114	0.321	0.493*	0.299	−0.082	0.301	0.222	0.311	−0.045	0.397	0.674**	0.322
Income (mid: $25-50 K)	−0.084	0.218	0.022	0.211	0.010	0.207	−0.005	0.212	−0.021	0.244	0.295	0.261
Income (high: > $50 K)	−0.083	0.218	0.364*	0.208	−0.060	0.205	0.171	0.210	−0.411	0.254	0.977***	0.248
Income (refused)	−0.201	0.241	−0.071	0.230	0.118	0.226	−0.117	0.231	−0.481*	0.284	0.483*	0.273
Model fit statistics[b]	n = 824; H–L: χ^2(df=8)=14.3, p=0.075; Nagel. R^2=0.05		n=830; H–L: χ^2(df=8)=1.9, p=0.984; Nagel. R^2=0.05		n=827; H–L: χ^2(df=8)=5.1, p=0.743; Nagel. R^2=0.06		n=833; H–L: χ^2(df=8)=8.5, p=0.391; Nagel. R^2= 0.06		n=811; H–L: χ^2(df=8)=5.3, p=0.721; Nagel. R^2=0.06		n=809; H–L: χ^2(df=8)=8.7, p=0.366; Nagel. R^2=0.07	

* Denotes statistically significant Beta coefficient at $\alpha=0.10$.
** Denotes statistically significant Beta coefficient at $\alpha=0.05$.
*** Denotes statistically significant Beta coefficient at $\alpha=0.01$.
[a] Sample includes intercept survey participants at state parks and flea markets in 21 counties across northern Georgia.
[b] Model Fit Statistic Codes: H–L=Hosmer–Lemeshow goodness of fit test; Nagel R^2=Nagelkerke's pseudo R^2.

and Asians tended to use developed areas such as gyms or recreation centers for PA more than other groups. Gyms and recreation centers were also used more often by higher-income individuals. Though results revealed many significant differences among socio-demographic groups, pseudo R^2 values and goodness of fit statistics for the regression models suggested that demographic variables explained only a small degree of the overall variation in PA location choices.

4. Conclusion

Results of this study support comprehensive approaches to PA promotion via outdoor recreation that consider multiple aspects of the built environment and accommodate a range of preferences that influence site use patterns. Improved understanding of where an activity occurs could inform efforts to promote active lifestyles and enhance opportunities for PA in diverse communities. PA across all groups generally occurred most frequently at localized scales in outdoor settings (e.g. backyards, neighborhoods). However, differences in PA location choices were also evident, highlighting the relative importance (in terms of frequency use) of certain locations for particular demographic groups. For example, results highlight associations between neighborhood settings and female PA, parks and Latino PA, and gyms/recreation centers and the PA of high income individuals and African Americans and Asians. Additional studies are needed to discern the origin of these differences and potentially increase the predictive power of PA frequency of use models by incorporating other latent factors in addition to demographic traits. These models might include an examination of structural constraints (e.g., cost, access, home ownership) and personal or cultural factors (e.g., recreational interests, support from friends and family) that affect the PA of racial/ethnic minorities in particular recreation settings (Gobster, 2002; Gordon-Larsen et al., 2006; Wilhelm-Stanis, Schneider, Chavez, & Shinew, 2009).

Future research could also address limitations of this exploratory study by extending the geographical scope of inquiry within and outside of state parks, expanding the sampling scheme by adding a more robust "offsite" component that includes households across Georgia (thereby enhancing population-level inferential capacity), and assessing frequency of use for various PA locations and overt PA levels using more objective measures. Additional studies could explore intervention strategies (e.g., targeted marketing and outreach) that lead to increased activity levels for certain populations in each of these locations (Cohen et al., 2013). Finally, more research is needed to examine the overall amount of PA that occurs in each type of location, not just the relative frequency of use for particular PA locations (Godbey & Mowen, 2010). By combining this information, researchers and practitioners will be better equipped to assess overall PA participation among different populations and its impact on health and well-being.

Acknowledgments

The authors wish to acknowledge the Parks, Recreation and Historic Sites Division of the Georgia Department of Natural Resources for its financial support and assistance with this project.

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