

An Examination of Perceived Constraints to Outdoor Recreation

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Abstract

This study examines whether different social and marginalized groups in American society (minorities, women, rural dwellers, immigrants, low income, less educated) perceive more constraints or barriers to outdoor recreation participation than White middle-class males. Logistic regressions were applied to data from the National Survey on Recreation and the Environment to model the probability that individuals perceived certain constraints to participating in outdoor recreation activities. Eighteen constraints related to health, safety, socio-economic standing, and other personal factors were examined. Results indicated minorities, women, low income, less educated and elderly populations, in particular, were more likely to perceive they were constrained from participating in their favorite activities. In comparing these results to an earlier study, minorities, women, and urban dwellers perceived more constraints to recreation participation today than in previous years.

Keywords: Constraints, Logistic Regression, Marginalized Groups, Recreation Participation, Social Groups

Introduction

Race, gender, class, education, income, and residence continue to be important predictors of success in American society (Smith, 1995; Weicher & Beyer, 1997). However, though Americans' wage and education levels have increased overall, differences in attainment between African Americans (Blacks) and Whites, and between men and women remain different (DeNavas-Walt, Proctor, & Mills, 2004). These differences are also exacerbated by the limited avenues, opportunities, and resources available to various socioeconomic and socio-cultural groups in everyday life (Arnold & Shinew, 1998; Compton, 2003; Gewertz, 2003).

Outdoor recreation resources and activities are recognized and valued as avenues for play, relaxation, escape, meditation, and in some cases as opportunities for social support or equity (e.g., minorities in competitive recreation) (Ho, Payne, Orsega-Smith, & Godbey, 2003; Jarvie & Reid, 1997; Long & Hylton, 2002). Outdoor recreation is considered a fundamentally important and beneficial element of many people's lives, and it is often used as an indicator of people's social well-being (Godbey, Roy, Payne, & Orsega-Smith, 1998; Tinsley, Tinsley, & Croskeys, 2002). However, studies have shown that certain marginalized groups in American society (e.g., Blacks, women, rural dwellers, low income, or less educated) encounter various constraints resulting lower participation in outdoor recreation (Crespo, Smit, Anderson, Carter-Pokras, & Ainsworth, 2000; Johnson, Bowker, & Cordell, 2001).

Recreation constraints research began in the 1970's and was expanded during the 1990's (Crawford, Jackson, & Godbey, 1991; Henderson, 1991; Jackson, 1991, 1997, 2000). Early research focused on racial or gender differences, while recent research has examined the effects of income, education, age, and residence on people's participation in recreational activities (Arnold & Shinew, 1998). Despite the growth of research on constraints, few studies have examined how socio-economic or other social inequality factors (e.g., access, services, health) combine to constrain social and marginalized

groups from participating in outdoor recreation (Arnold & Shinen, 1998; Philipp, 1997). In an investigation of whether African-Americans, women, and rural-dwellers perceived constraints to outdoor recreation participation, Johnson et al. (2001) found that women were the most constrained for reasons of safety, inadequate information and facilities, and outdoor pests. They found African-Americans felt more constrained than Whites for reasons of personal safety. Rural residence did not appear to be a constraining factor in people's outdoor recreation participation (Johnson et al., 2001). Furthermore, only a few studies have examined how perceived constraints to recreation participation or park visitation by social and marginalized groups change over time (Jackson & Witt, 1994; Little 2002; Mowen, Payne, & Scott, 2005).

Purpose

This study represents an extension of a previous study concerning constraints¹ to outdoor recreation participation (Johnson et al., 2001). Like the previous investigation, this study examined traditionally marginalized groups—Blacks, women, and rural dwellers. However, per Johnson et al. (2001) and Shinen, Floyd, and Parry (2004) recommendations, this study examines in greater depth the perceived constraints of more diverse non-dominant groups. Hence, this study broadens previous work on constraints to include immigrants, Hispanics, Asian/Pacific Islanders, low income and less educated populations. Differences in perceived constraints due to activity-settings and geographical regions are also explored.

Based on existing literature, it was hypothesized that minorities, women, and rural dwellers, as well as immigrants, low income and less educated groups were more likely than their counterparts in society to perceive their participation in outdoor recreation was constrained by factors related to socioeconomic standing, safety, health, and other

¹The term „constraint’ is used throughout this paper. Some use the terms „constraint’ and „barrier’ interchangeably although Jackson (1988) distinguishes between the two.

personal factors. Eighteen specific constraints, grouped into three general categories, personal, structural, and psychological, were examined. Although the primary focus was on race (i.e., Blacks, Hispanics, Asians/ Pacific Islanders); gender, rural and regional residence, income, age, and activity-setting categories were also included. Comparisons were also made to the Johnson et al. (2001) study to examine whether differences in perceived constraints by social and marginalized groups have continued. Few studies have examined whether people's perceived constraints to recreation have changed over time (Jackson & Witt, 1994).

Following Henderson (1991), an outdoor recreation constraint is defined as "anything that inhibits people's ability to participate in leisure activities, to spend more time doing so, to take advantage of leisure services, or to achieve a desired level of satisfaction" (p. 366). These include internal constraints such as personal skills, abilities, knowledge, and health problems; and also external constraints such as lack of money, time, transportation, or facilities² (Jackson 1988). This study focuses on perceived constraints to participation in the respondent's *favorite* outdoor recreation activities. These activities could take place in natural settings away from the home or in more domestic places such as one's backyard. Activities ranged from walking or photographing nature to more intensive activities such as kayaking or mountain climbing.

Literature Review

There are abundant literature relating constraints to recreation participation and participation intensity (Jackson, 1991, 1997; Jackson, Crawford, & Godbey, 1993; Shinew, Floyd, & Parry, 2004). Part of this literature contends that certain social and marginalized groups in America perceive greater barriers to recreation participation.

²Crawford, Jackson, and Godbey (1991) identify three constraints categories—structural, interpersonal (or internal), and intrapersonal. This last category has to do with psychological, emotional, and self-esteem issues specific to the individual. No constraints of this type were included in our survey.

Searle and Jackson (1985) reported that marginalized groups, including the poor, elderly, and single parents, were more likely to perceive recreation barriers. Shaw, Bonen and McCabe (1991) posited that factors such as gender and age may help explain constraints to recreation participation. In fact, a number of studies have found that females (Henderson, 1991; Henderson & Bialeschki, 1991; Scott & Jackson, 1996), Blacks (Floyd, 1998; Philipp, 1995), elderly (Payne, Mowen, & Orsega-Smith, 2002; Scott & Jackson, 1996), immigrants (Stodolska, 1998), lower income (McCarville & Smale, 1993; Scott & Munson, 1994), and less-educated people (Alexandris & Carroll, 1997) are likely to perceive numerous constraints to recreation participation.

Studies have established that Blacks and Whites differ in leisure preferences (Shinew et al., 2004). For instance, Blacks are less likely than Whites to recreate in dispersed settings or to travel to regional recreation areas (Dwyer, 1994; Johnson et al., 1998; Philipp, 1993; Washburne, 1978). Although, Humphrey and Allen (1978) reported that Black residents in small Oklahoma towns cited recreation as either the most important or second most important need in their respective communities. Similarly, Payne et al. (2002) also reported that “Blacks were more likely to indicate an increased need for additional park land than Whites” (p. 193). Bowker, English and Cordell (1999) also found race was a factor in explaining outdoor recreation participation for all but a few activities, with Blacks generally showing less involvement than other groups.

Colston and Patton (1994), in referring to the impact of recreation on African-American communities, stated “urban recreation significantly influenced their lives, and in some instances, their professional careers” (p.43). Colston and Patton stated that urban recreation was “instrumental in influencing both their personal and social development” and their “extremely significant findings reinforce the positive impact of public-supported urban recreation on the African-American community” (p.43). Colston and Patton also noted that, many African-Americans reported reduced recreation

opportunities due to poor access, information, availability, facilities, or in other words “constraints.”

The marginality theory of recreation behavior attributes minority (particularly Black) differences in recreation behavior to social structural barriers such as lack of discretionary funds, transportation, and information about facilities (Johnson et al., 2001). Proponents have argued that poverty and ignorance have influenced the way Blacks respond to social and political activities (Washburne, 1978). West (1993) and Floyd (1998) discussed marginalization as it related to racial conflict in outdoor recreation. West (1993) cited incidences of aggression (e.g., Black on Black) in urban parks and how this may have deterred Blacks from visiting such places. West (1993) conceded these were isolated examples limited to a few individuals, but also cautioned such discrimination may be more pervasive.

Alternatively, ethnicity theory has attributed differences in recreation participation by minorities to value differences based on sub-cultural norms. That is, sub-cultures (e.g., Blacks, Hispanics) are thought to possess unique cultural value systems which influence their recreation behavior (Floyd, 1998). However, neither theory has been shown to conclusively explain minority recreation participation (Floyd, Shinew, McGuire, & Noe, 1994). More recent studies have suggested social psychological factors such as place meaning are important in understanding lack of participation by minorities. For instance, the socio-cultural backgrounds of minorities may affect their choice or preference for different recreational settings (Johnson et al., 1998; Virden & Walker, 1999; Williams & Carr, 1993).

With respect to another sub-cultural group, Stodolska (1998, p.521) found immigrants experience constraints “not commonly found in the general population,” such as insufficient language skills or not feeling at ease in the general population. However, Stodolska (1998) also found that some constraints for immigrants diminished as they became more assimilated to their new environment.

Rojek (1985, p.18) found women experience “a unique set of barriers to leisure which are less likely to obstruct the leisure pursuits of men.” These barriers relate both to the “gender role structure imposed on women from a male dominated society and also from concerns women have as sexual objects in a male dominated society” (p.18). Henderson (1991) argued that women’s lives are structured to give greater consideration to others than to themselves. The wife or mother places a higher priority on assuring that their family, rather than themselves, enjoys leisure time activities. Due to the assumptions of what it means to be wife, mother, daughter, or single woman, there is an “innate” inequity in women’s leisure that cannot be easily ignored (Brown, Brown, Miller, & Hansen, 2001). Henderson and Bialeschki (1991) and Wearing and Wearing (1988) submitted that women were more likely to believe they were not entitled to leisure. Because of familial responsibilities, in particular the role of women as caretakers, women tended to deny themselves opportunities to engage in outdoor and other leisure activities and felt constrained (Brown et al., 2001; Jackson & Henderson, 1995; Little, 2002).

Fear of attack and harassment also represent very real psychological constraints to women’s pursuit of outdoor recreation (Arnold & Shinew, 1998). Women are likely to feel apprehensive about camping or hiking alone in remote areas because of fear of attack, rape or other sexual harassment (Goble, Selin & Erickson, 2003; Henderson 1991). Henderson (1991) stressed that because such fears are so prevalent, women do not challenge the social structures which deny them basic freedoms, including the right to recreate without fear of sexual assault in public places.

Because of relatively lower tax revenues and incomes in rural areas, rural recreation programs tend to have less funding available for facility development (Johnson et al., 2001). Hence, rural residents may be more constrained in having reasonable access to developed facilities. Constraints to outdoor recreation participation in rural areas may also be related to restricted access to dispersed resources such as hunting or fishing areas. It is common for hunting clubs, which may not include local, rural residents, to close off

rural areas to nonmembers (Marks 1991). Members of such organizations may be more affluent, non-rural residents who effectively constrain outdoor recreation for less affluent rural locals (Marks, 1991).

Recreation constraints for rural residents may also be related to how sub-populations in such areas have historically defined the land. Supply of public outdoor recreation land in many rural communities, notwithstanding the mere existence of such resources, does not guarantee use by local populations. For sustained and committed use to occur, locals must not only be aware of the resources but also view interaction with such places as an expression of group values and attitudes towards the land. Johnson, Horan, and Pepper (1997) found rural Blacks in north Florida were less likely than rural whites to recreate in wildland areas although both groups had access to a local national forest. Lack of Black visitation to wildland was related to the relative lack of „place attachment.’

Johnson et al. (2001) discovered that people with lower incomes were more likely to feel constrained by „lack of funds’ and „lack of transportation.’ In the same study, older people were found to be less likely to say „insufficient time, „no companions,’ and „inadequate information,’ hindered their participation in outdoor recreation activities. Scott and Munson (1994) also found that “income was the single best predictor of perceived constraints to park visitation” (p. 79). However, “fear of crime, lack of companionship, poor health, transportation problems, and costs” were also found to limit park usage by people of low income (p. 79). In a follow-up study, Mowen et al. (2005) found the same perceived constraints still influencing park visitation. In another study, with a four year follow-up, Jackson and Witt (1994) also found very little change in people’s constraints to leisure participation.

The preceding discussion indicates that minorities, women, rural dwellers, the elderly, and low income groups face more structural, personal, and psychological challenges to participation in outdoor recreation than other groups. The scarcity of

research exploring how particular subgroups of the population perceive constraints, or how perceived constraints may change over time, makes these issues worthy of further examination.

Methodology

Data

Data for this study came from the National Survey on Recreation and the Environment (NSRE). The NSRE is an on-going, nationwide recreation survey, dating back to the Outdoor Recreation Resources Review Commission of 1960 (Cordell et al., 2004). The most recent NSRE was a nation-wide in-the-home phone survey of 105,000+ households across the United States. Data on individual and household characteristics and information about recreation participation were collected from all respondents.

The NSRE consisted of five modules or sets of questions. Recreation activity participation and demographics modules composed the core of the survey and were asked of all people sampled. Other sets of modules were included in different versions over the sample period. Some modules gathered information about wilderness, wildlife, land management agencies, water quality, environmental attitudes, recreation benefits, or constraints to participation in favorite outdoor recreation activities (Cordell, et al., 2004). Each of the 22 versions took, on average, 13 minutes to be completed. Approximately 5,000 completed interviews were obtained for each version.

The NSRE was conducted between 2000 and 2008 using a computer-aided telephone interviewing system (CATI) based on random digit dialing. The CATI system randomly selects a telephone number, the interviewer upon hearing someone answer inquires how many people in the household are 16 years or older. The person with the most recent birthday is selected for interviewing (Link & Oldendick, 1998).

Constraints Module

The constraints questions were included within version eight of the eighteen NSRE versions. Version eight was conducted from December 2001 through July 2002. A

population weighted random sample of 5,013 interviews, from across the United States, were obtained.

In the constraints module, individuals who indicated that they participated in outdoor recreation within the past year were queried about their favorite outdoor recreation activities. [It should be noted that this study examined perceived constraints of participants (98.7%), where as Johnson et al. (2001) examined perceived constraints of both participants and non-participants]. Then respondents were read the following passage³:

“Following is a list of reasons people might not participate in outdoor activities as often as they want. For each reason, please indicate by a “yes” or “no” whether the reason I mentioned is one of the reasons that has kept you from doing your favorite activity.”

The telephone interviewer then read a list of 18 constraints (See Table 1), and the respondent indicated, by yes or no, whether the constraint affected participation.

[Table 1 about here]

Logistic Regression

To statistically test whether the groups of interest (minorities, women, rural dwellers, low income, less educated) were more (or less) constrained in their pursuit of outdoor recreation than others, logistic regression equations were developed for each of the constraints. Logistic regression can be used to model the probability of binary outcomes, here, whether an individual responded „yes’ or „no’ to perceiving a given constraint toward participating in his/her favorite activity. For each constraint the logistic regression was specified as:

³There is a potential bias for closed-ended responses because it may cause respondents to limit their replies to the choices contained in the questionnaire. However, the survey did offer an “other” category (used by less than 1% of respondents) for constraints not included in this study.

$$prob(yes) = \frac{\exp(XB)}{1 + \exp(XB)} \quad (1)$$

where, X is a vector of explanatory variables and B is a parameter vector (Greene, 2002). Both binary and continuous explanatory variables were included. Choice of explanatory variables was based primarily on existing literature.

Continuous variables included age and household income. Binary variables were used for ethnicity (Black, Hispanic, Asian/Pacific Islander), gender (male), region (South, Central, West), education (less than high school, bachelor's degree or more), residency (urban), and setting for favorite activity (winter, water, dispersed). Table 2 lists variable definitions, coding, and sample means. A statistically significant positive coefficient on any of these variables would indicate that the probability the respective group feels constrained in participation is higher than for those outside the group. Such a finding would suggest that the particular group was more affected than the base case (white, female, rural, high school educated, North) and hence the null hypothesis could be rejected.

[Table 2 about here]

Results

Logistic Models

Logistic regression models for each constraint were estimated using LIMDEP 8.0 (Greene, 2002). Table 3 presents the results of the logistic regressions. Included in these results are: maximum likelihood parameter estimates with asymptotic t-ratios, p-values, and the percent of correct predictions.

Analysis revealed that all eighteen constraint regressions were statistically significant based on likelihood ratio tests (Greene 2002). Results for each explanatory variable are presented below (See Table 4 for summary of results significant at $p \leq 0.05$)⁴.

⁴ Regression coefficients are reported in Table 3. Mathematically because logistic regression coefficients are not easily interpretable, a URL is provided at which the interested reader is able to calculate and compare probabilities, much like discrete derivatives, across the various constraints and categories. For examples, a reader can use the spreadsheet to compare the estimated constraint probability for a 60 year

[Table 3 about here]

Age

Age was significant ($p \leq 0.05$) for fifteen of the constraints equations. In nine of the cases (e.g., *don't have enough time because of my job and family*, *don't have enough money*, *inadequate transport, facilities and information*, *crowded activity areas*, *poorly maintained facilities*, and *pollution problems*) the coefficients were negative, meaning that as people grew older they felt less constrained by these reasons from being able to participate in their favorite recreation activities. Conversely, in the cases of *health reasons*, *safety problems*, *feel afraid in forests*, *can't understand the language*, *physically limiting condition*, and *household member has a disability*, as people grew older they felt more constrained by these reasons.

As people age their visitation to parks and participation in outdoor recreation often declines (Payne et al., 2002). This declining use may also be due to perceived constraints. Others have suggested that there is some continuation of recreation participation over people's life spans as they often adjust the activities they choose to do or choose different activities to enjoy (Scott & Willits, 1998). Subsequently, facilities that are more sensitive to people's problems (e.g., safety problems, disabilities, poor health) and that also provide a wider range of recreational opportunities may cater more successfully to the changing needs of an aging population (Payne et al., 2002).

Gender

Men felt more constrained than women in one case (*don't have enough time because of my job*) out of thirteen significant ($p \leq 0.05$) constraints equations. For the reasons of *don't have enough time because of family*, *don't have enough money*, *health reasons*, *no one to do activities with*, *inadequate transport, facilities and information*, *safety problems*, *feel afraid in forests*, *outdoor pests*, *physically limiting condition*, and

household member has a disability, women felt more constrained than men from participating in their favorite recreation activities.

Overall women are more constrained in their recreation participation than men. Due to existing cultural expectations and inequities, women are often the main caretakers in our society, they earn (on average) less than men, and they are often more concerned about their physical safety (Jackson & Henderson, 1995; Johnson et al., 2001).

Immigrants

Ten constraints equations were significant ($p \leq 0.05$) for immigrants. Except for the case of *can't understand the language*, immigrants felt less constrained than people born in the U.S. for the reasons of *don't have enough money, inadequate transport and information, crowded activity areas, safety and pollution problems, outdoor pests, feel unwelcome or uncomfortable*, and *household member has disability*. Stodolska (1998) found that immigrants often experienced constraints unlike the general populace (e.g., language barriers). Stodolska (1998) also found that many constraints were less important to immigrants because they normally worked more and consumed less of their income, while often confining their leisure engagements to their ethnic communities.

Income

Eleven constraints equations for income resulted in significant ($p \leq 0.05$) negative coefficients indicating that people with lower incomes felt more constrained from participating in their favorite recreation activities. Lower income households felt more constrained for the following reasons, *don't have enough money, health reasons, inadequate transport, no one to do activities with, feel afraid in forests, pollution problems, outdoor pests, feel unwelcome or uncomfortable, can't understand the language, physically limiting condition*, and *household member has a disability*. These results support previous studies findings that people with lower incomes feel more constrained than others (Arnold & Shinew, 1998; McCarville & Smale, 1993, Scott & Munson, 1994).

Education

People with less than a high school education felt less constrained than people with a high school education due to reasons of *don't have enough time because of my job and family*, and *inadequate information* ($p \leq 0.05$). The fact that *inadequate information* was not perceived as a constraint by this group could indicate this group has found a way to circumnavigate this problem, or they are using facilities and resources close to home which they are already fully aware of (Shinew et al., 2004).

For reasons of *inadequate transportation and information, health reasons, don't have enough money, feel afraid in forests, feel unwelcome or uncomfortable, can't understand the language, physically limiting condition, and household member has a disability* ($p \leq 0.04$), people with less than a high school education felt more constrained than people completing high school from participating in their favorite recreation activities. Studies have shown that people's participation in recreational activities is highly correlated with their education and income levels (Arnold & Shinew, 1998). Hence, people with low education and income levels usually have low participation rates and often encounter multiple barriers to participation (Arnold & Shinew, 1998). Therefore, it is not surprising that people without a high school education felt constraints like people with low incomes.

People with college degrees were less likely to feel constrained by factors such as, *don't have enough money, health reasons, inadequate transportation and facilities, poorly maintained facilities, can't understand the language, physically limiting condition, and household member has a disability* ($p \leq 0.04$).

Blacks

Thirteen constraint equations were significant ($p \leq 0.05$) for Blacks. Except for the reason of *no one to do activities with*, Blacks felt more hindered from participating in their favorite recreation activities than Whites for the reasons of *inadequate transportation, facilities and information, safety and pollution problems, poorly*

maintained facilities, outdoor pests, feel unwelcome or uncomfortable, can't understand the language, feel afraid in forests, physically limiting condition, and household member has a disability ($p \leq 0.05$).

These results are similar to previous findings by Philipp (1999) and West (1989). However, more recent research by Shinew et al. (2004) reported Blacks were less constrained than Whites in their park use and desired leisure activity. Johnson et al. (2001) also found race to be non-significant in terms of constraints to recreation participation for participants.

Asian/Pacific Islanders

Of the nine significant constraints equations for Asian/Pacific Islanders (API), *crowded activity areas* ($p \leq 0.05$) was the only factor where API's felt less constrained than Whites from participating in their favorite recreation activities. However, for the reasons of *don't have enough time because of my job, inadequate transport, facilities and information, safety problems, feel unwelcome or uncomfortable, and feel afraid in forests* ($p \leq 0.02$ to ≥ 0.0001), API felt more constrained than Whites.

Hispanics

The results for Hispanics were similar to those for Blacks, but Hispanics felt more constrained from participating in their favorite recreation activities than Whites for the reasons of *not enough time because of my job, safety problems, can't understand the language, and feel afraid in forests* ($p \leq 0.002$). It is important to note this study's findings for Asian/Pacific Islanders and Hispanics because previous constraints research (e.g., Johnson et al., 2001; Shinew et al., 2004) has focused on Blacks in comparison to Whites. In comparing the results of Blacks, Asian/Pacific Islanders, and Hispanics considerable overlap appears to exist in their perceived constraints to recreation participation. These combined results support the notion that many facilities and parks appear to cater to a White market, and that recreation is still a predominately White (male) leisure pursuit (Benson, 2005; Cordell et al., 2004; Philipp, 1995, 1999). Bengston (2005) stated "we are

trying to do a better job managing national forests that are more responsive to ethnic minorities” and “we’ve had kind of a monolithic approach that doesn’t reflect the kind of diversity our country is headed for” (p.7).

Rural Residence

Results for perceived constraints by urban or rural residence revealed that urban dwellers felt less constrained by reasons of *don't have enough time because of my job and family*, and *outdoor pest* ($p \leq 0.01$) than rural dwellers. Urban dwellers were more likely to feel constrained by *inadequate transport*, *crowded areas*, and *safety problems* ($p \leq 0.01$) than rural dwellers.

Regions

The South was significant ($p \leq 0.05$) for nine of the constraints equations. In eight of these cases (*don't have enough time*, *health reasons*, *no one to do activities with*, *safety problems*, *inadequate facilities*, *outdoor pests*, *can't understand the language*, and *feel afraid in a forest*) Southerners felt more constrained from participating in their favorite recreation activities than Northerners. However, in the case of *inadequate transport* Southerners felt less constrained than Northerners. Conversely, people who resided in the Central region felt more constrained than Northerners for reasons of *don't have enough money* ($p \leq 0.03$) and *crowded activity areas* ($p \leq 0.002$). They felt less constrained by reasons of *don't have enough time because of family*, *poorly maintained activities*, *pollution problems*, and *outdoor pests* ($p \leq 0.05$).

Westerners felt more constrained by reasons of *health reasons* and *physically limiting condition* ($p \leq 0.0001$) than Northerners. Westerners felt less constrained than Northerners for reasons of *outdoor pests* ($p \leq 0.0001$) and *can't understand the language* ($p \leq 0.02$).

Activity Settings

In general the activity setting category, i.e., developed, winter, water, dispersed had little influence on an respondent's perceived constraints. People favoring dispersed

activities felt they were more constrained than people favoring developed activities for reasons of *don't have enough time because of my job* ($p \leq 0.002$) and *pollution problems* ($p \leq 0.01$). People favoring water activities felt more constrained because of time, but less constrained for reasons of *no one to do activities with*, *inadequate information*, and *physically limiting condition* ($p \leq 0.05$).

Overall, the most prevalent constraints to participants were *not enough time because of my job*, *inadequate transport*, *safety problems*, *physically limiting condition*, *outdoor pests*, *can't understand the language*, and *feel afraid of a forest*. The least mentioned constraints were *poorly maintained areas* and *crowded activity areas*.

Discussion

It was hypothesized that potentially marginalized groups in society -- minorities, women, rural residents, immigrants, low income, and less educated people-- perceived more constraints to outdoor recreation participation than their counterparts, thus they participate less. With logistic regressions, a number of personal, structural and psychological constraints to recreation were examined. Results supported the hypotheses that minorities, women, rural residents, lower income and less educated people had higher probabilities of feeling constrained in their participation. Contrary to expectations, results also indicated that immigrants perceived fewer constraints, except for language, than people born in the U.S. Table 4 provides a qualitative summary of statistically significant (i.e., $p \leq 0.05$) findings by constraint and explanatory variable. These groupings help to identify and separate those constraints that public land managers may be able to potentially address.

[Table 4 about here]

Personal Constraints

The constraints of *lack of time because of work or family* were significant across several groups (See Table 4). In general, public land managers are not in the position to address these types of personal constraints (Johnson et al., 2001). Public land managers

could possibly address the constraints of personal health reasons, having a physically limiting condition, and a disabled household member that were perceived as barriers to participation for older people, women, less education, low income, and Blacks. Public land managers could help to mitigate some of these barriers by obtaining a better understanding of the problems encountered by these groups. Providing better information, easier access, greater staff awareness and sensitivity, specialized facilities, targeted services and programs could help reduce many of the problems encountered by these constrained groups (Arnold & Shiness, 1998; Scott & Jackson, 1996).

Blacks and Asian/Pacific Islanders perceived *inadequate transportation* as a constraint, while women, low income, and less educated people perceived both *inadequate transportation* and *not enough money as constraints*. With respect to these constraints, some public natural resource areas offer free passes to people who volunteer, reduced charges for different populations (i.e., children, disabled, unemployed or elderly) or lower off-season rates (A. Heard, Personal Communication, September 15, 2005; Pride, 2004). Many segments of our society are often unaware of the different opportunities available to them (Stodolska, 1998). Stronger outreach services into communities and local organizations containing lower socio-economic populations, which provide customized information (in multiple languages) concerning the availability of subsidized or targeted programs for these particular groups could help address this problem (Arnold & Shiness, 1998; Scott & Munson, 1994). Working with local transportation providers, non-profit and charitable organizations, public land managers could also alert local communities about existing or alternate transportation options as well as provide this information within their regular media (e.g., websites, brochures, and advertisements) (Scott & Munson, 1994).

Structural Constraints

One or more of the structural constraints of *poorly maintained areas, inadequate facilities and information, crowded activity areas, and pollutions problems*, were

perceived as barriers to recreation participation by younger people, women, people with low income, people with less education, Blacks, Asian/Pacific Islanders, urban dwellers, and dispersed activity-setting participants. Older people, people with low income, immigrants, Blacks, and Hispanics also indicated they were constrained for the reason of *can't understand language on signs or as spoken at outdoor recreation areas*. Our natural resource areas are sometimes criticized for not providing information, brochures, or signage in multiple languages. They are further criticized for displaying signs that often depict Whites males doing activities and not women, Blacks or Hispanics. Women and minorities also point to the issue that they are infrequently seen as rangers, interpreters or guides at parks, which helps to maintain the perception that our natural resource areas are predominately catering to White males.

Psychological Constraints

Across most minority groups (including women), older people, urban dwellers, and people with lower education, the constraints of *feel afraid in a forest, safety problems, or feel unwelcome* were perceived as barriers to participation. While Hispanic's *felt afraid* and perceived *personal safety problems in activity areas*; they did not *feel unwelcome because of who they were*. The strengths of this study have been its examination of differences between particular minority groups (e.g., Women, Blacks, Asian/Pacific Islanders and Hispanics). This examination implies that more research is needed regarding these groups recreation preferences and behavior. For instance, do different groups have different perceptions of what constitutes a safety issue, such as fear of wild animals in woodlands, racial conflict in outdoor recreation areas, urban violence at community recreation sites or is it something else entirely (Virden & Walker, 1999)?

In conjunction with *safety problems* and *feel afraid*, women also felt constrained for reasons of *inadequate transport, facilities and information, no one to do activities with, and outdoor pests*. One could argue that these perceived constraints relate to issues of safety (Scott & Munson, 1994). One could also argue many women are aware of their

surroundings and their safety, and this concern becomes more apparent when women participate in outdoor recreation activities in remote natural areas (Arnold & Shinew, 1998). Research has also shown that many women adapt their behavior (e.g., don't go out after dark or walk alone) in order to participate in outdoor activities (Arnold & Shinew, 1998). Therefore, future research should focus on the ways women or minorities alter their behavior and how might land managers mitigate these behavior modifications.

The questions used in this study were general, and did not probe deeply into the meanings behind the constraints. Responses were also limited to only „favorite activities.’ However, findings about personal safety concerns by minorities, female, rural/urban dwellers, low income, less educated, and older participants merit closer scrutiny from researchers and land managers. In the near future, efforts should be made to examine in greater depth the context and reality (versus perception) of the personal safety issues encountered by these groups (Henderson, 1991). At a minimum, organized group programs, increased information (about facilities, transportation, safety, outdoor pests, et cetera), and increased security presence could be implemented to help address these perceived barriers.

Johnson et al. (2001) found that non-participating Blacks perceived personal safety as a constraint to participation in their favorite outdoor activity. But, they found that race and rural dwelling did not explain the probability that participants felt constrained. In this study, race and rural/urban dwelling did relate to several constraints and many of these constraints concerned safety issues. Johnson et al. also found that women were most likely to feel constrained by *safety concerns, inadequate facilities and information, insufficient funds, and outdoor pests* (p. 111). These issues are still perceived by women as barriers to recreation participation. As this study shows, women, minorities, and rural/urban dwellers continue to perceive more constraints than their counterparts (i.e., Whites, males), and the majority still relate to issues of safety (Arnold & Shinew, 1998; Jackson & Henderson, 1995).

Implications and Future Research

Public lands, natural resources and recreational facilities were designed, in part, for the enjoyment, benefit, and recreational participation of all. However, some segments of our society feel more constrained from participating in outdoor recreation. Past images of our parks have presented signage, pictures, displays, facilities, programs and services offered, employed personnel, and languages spoken, has failed to reflect the diversity of our nation (Bengston, 2005). Furthermore, whether consciously or not, many segments of our population remember those times and inequities, and thus this perception still exists (Johnson, 1998; Snipp, 1996). Historic context might partly explain why immigrants, who are often new to this country, perceive fewer constraints to outdoor recreation.

Future research should seek a better understanding of the context or nature of people's perceived constraints. This understanding could be gained from the use of more qualitative studies, which could help identify actual incidences or examples of encountered constraints to non-dominant groups. More research is also needed to better understand potential participant needs (e.g., concerning facilities, transportation options, outdoor pests, safety measures). Managers should also be aware that people face multiple constraints to outdoor recreation, and this should influence their provision of facilities, programs, and services. For example, an Hispanic household wanting to enjoy a family recreation experience, but lacking suitable transportation would face multiple barriers to participation.

Finally, as this is one of the few studies examining upon how perceived constraints may change over time, more research is needed in this area (Jackson & Witt, 1994). Issues of safety, along with concerns about crowded activity areas, inadequate facilities and transportation, pollution problems and access, may become more prevalent in the future as population, land development, and recreation participation levels continue to increase. More research is necessary if our public lands are to be enjoyed and valued by all Americans.

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Table 1.

*Dependent Variables: Recreation Constraints Groupings**Personal*

Not enough time because of my job and long hours of work

Not enough time because of family, childcare or other in-the-home obligations

Personal health reasons

I have a physically limiting condition and do not have the assistance or equipment needed for the activities

A member of my household has a disability that limits my participation in outdoor recreation

Not enough money

Inadequate transportation

No one to do activities with

Structural

Poorly maintained activity areas

Inadequate facilities in activity areas

Crowded activity areas

Pollution problems in activity areas

Inadequate information on places to do activities

I can't understand the language on signs or as spoken at many outdoor recreation areas

Psychological

I feel unwelcome or uncomfortable at many outdoor recreation areas because of who I am

Personal safety problems in activity areas

I am uncomfortable because sometimes I feel afraid in forest or other natural settings

Outdoor pests, such as mosquitos, chiggers, or ticks.

Table 2.
Describe and Means of Explanatory Variables

Variable	Definition	Mean*
Age	Age of participant (Years)	42.7744
Gender	Sex of participant (Male=1)	0.4742
Immigration	Born in the United States (Immigrant=1)	0.1469
Income	Household income (Dollars 2002)	51,673.65
Low Education	Less than high school diploma or GED (Low Ed=1)	0.2488
B.S./Graduate Education	Bachelors or higher education (High Ed=1)	0.2052
Black	Self identifies as Black (Black=1)	0.1255
Asian/Pacific Islander	Self identifies as Asian/Pacific Islander (API=1)	0.0342
Hispanic	Self identifies as Hispanic (Hisp=1)	0.1522
Urban	Beale Code >4 (Urban=1)	0.7946
South	States include TN, NC, MS, AL, GA, SC, FL, VA, AR, & LA (South=1)	0.1936
Central	States include AZ, NV, UT, ID, MT, WY, CO, NM, ND, SD, NE, KS, OK, & TX (Central=1)	0.2116
West	States include WA, OR, & CA (West=1)	0.1233
Winter	If favorite activities include ice skating, downhill skiing, snowboarding, cross-country skiing, snowmobiling, sledding, snowshoeing, & ice fishing (Winter=1)	0.0239
Water	If favorite activities include freshwater fishing, coldwater fishing, warmwater fishing, saltwater fishing, anadromous fishing, boating, canoeing, kayaking, rafting, jet ski boats, swimming, snorkeling, scuba diving, visit beach, & visit waterside (Water=1)	0.2609
Dispersed	If favorite activities include mountain biking, picnicking, hiking, primitive camping, orienteering, backpacking, mountain climbing, rock climbing, caving, gathering mushrooms etc., birdwatching, fish viewing, wildlife viewing, other viewing, viewing scenery, hunting, big hunting, & small hunting (Dispersed=1)	0.1509

Note. “*” Means were weighted by post stratification using a combination of multivariate and multiplicative weights to account for age, race, sex, education, and urban/rural differences.

Table 3.

Logistic MLE Regression Estimates for Probability of Being Constrained in Favorite Outdoor Recreation Activity for Recreation Participants.

Variable	Con-stant	Age	Gender	Immi-gration	Income	Low Educa-tion	B.S./ Grad Educa-tion	Black	Asian/ Pacific Islander	His-panic	Urban	South	Central	West	Winter	Water	Dis-perse	Correctly Predicted %
Not enough time b/c of work & long hours	1.4787	-0.0326*	0.2588	0.1160	0.0017	-0.9262	0.1597	0.1661	0.6296	0.5887	-0.2095	0.0737	0.1098	-0.0133	0.1951	0.1956	0.2739	66.99
	10.6560	-18.100#	4.1700	1.0540	1.6330	-11.3400	1.9130	1.7000	3.3890	5.1660	-2.6370	0.8740	1.3270	-0.1330	0.9540	2.6790	3.0390	
	<0.0001	<0.0001^	<0.0001	0.2917	0.1024	<0.0001	0.0558	0.0892	0.0007	<0.0001	0.0084	0.3821	0.1844	0.8944	0.3402	0.0074	0.0024	
Not enough time b/c of family	0.5381	-0.0235	-0.4613	0.0237	0.0019	-0.1853	0.0181	0.0743	0.0691	0.2127	-0.2007	0.1850	-0.1690	-0.0367	-0.5109	0.0603	0.1124	64.99
	3.8700	-12.6910	-7.2580	0.2210	1.7970	-2.2910	0.2140	0.7540	0.3980	1.9410	-2.4960	2.1890	-1.9820	-0.3630	-2.3250	0.8160	1.2420	
	0.0001	<0.0001	<0.0001	0.8253	0.0723	0.0219	0.8303	0.4510	0.6910	0.0523	0.0125	0.0286	0.0474	0.7165	0.0201	0.4144	0.2141	
Not enough time b/c of volunteer work	-0.8633	-0.1100	-0.1117	-0.1928	0.0003	0.1796	0.2571	0.3109	0.7759	0.0219	-0.1722	0.1755	-0.1266	-0.0347	-0.2611	0.2183	-0.0515	78.05
	-5.5110	-5.4060	-1.5630	-1.5530	0.2570	2.0020	2.7230	2.9310	4.4150	0.1710	-1.9140	1.8720	-1.2910	-0.2990	-1.0470	2.6700	-0.4840	
	0.0000	0.0000	0.1180	0.1205	0.7969	0.0452	0.0065	0.0034	0.0000	0.8645	0.0556	0.0612	0.1968	0.7649	0.2952	0.0076	0.6285	
Not enough money	0.8327	-0.0058	-0.2026	-0.2922	-0.0131	0.3253	-0.3055	0.0724	0.1546	0.0151	-0.0849	0.0251	0.2446	0.0482	0.0597	0.0298	0.0568	61.79
	6.1230	-3.4720	-3.3590	-2.7760	-10.708	4.2710	-3.6600	0.7710	0.8900	0.1420	-1.1160	0.3060	3.0760	0.4890	0.2940	0.4170	0.6520	
	0.0000	0.0005	0.0008	0.0055	0.0000	0.0000	0.0003	0.4408	0.3736	0.8870	0.2646	0.7594	0.0021	0.6249	0.7690	0.6768	0.5144	
Personal health reasons	-2.7433	0.0460	-0.4821	-0.2480	-0.0083	0.7837	-0.3119	-0.1546	0.3094	-0.2366	0.1479	0.2124	0.0792	0.4557	0.0207	-0.1052	-0.0938	77.92
	-16.272	22.4570	-6.5820	-1.8850	-5.5950	8.4360	-2.9970	-1.3440	1.4920	-1.7530	1.6230	2.1840	0.8160	3.9600	0.0770	-1.2120	-0.8810	
	0.0000	0.0000	0.0000	0.0594	0.0000	0.0000	0.0027	0.1790	0.1356	0.0796	0.1046	0.0289	0.4143	0.0001	0.9387	0.2256	0.3781	
I have a physically limiting condition	-3.3891	0.0386	-0.2842	0.1663	-0.0060	0.5057	-0.4669	0.9237	0.4885	-0.0017	0.0956	0.1114	0.1533	0.5721	0.0122	-0.2791	-0.1397	86.90
	-16.736	16.7460	-3.3400	1.1740	-3.3280	4.9070	-3.5570	7.8500	2.0780	-0.0110	0.8920	0.9760	1.3570	4.3530	0.0370	-2.6550	-1.1180	
	0.0000	0.0000	0.0008	0.2405	0.0009	0.0000	0.0004	0.0000	0.0377	0.9913	0.3726	0.3292	0.1749	0.0000	0.9705	0.0079	0.2635	
A member of my household has a disability	-3.2065	0.0297	-0.2775	-0.3481	-0.0050	0.7204	-0.5004	0.4664	-0.1607	-0.0372	0.0992	0.2252	0.0275	-0.0095	0.2486	-0.1705	0.1576	88.97
	-15.017	12.3970	-3.0150	-2.0470	-2.5510	6.6860	-3.3780	3.6380	-0.4920	-0.2190	0.8870	1.9170	0.2260	-0.0600	0.7390	-1.4980	1.2300	
	0.0000	0.0000	0.0026	0.0407	0.0107	0.0000	0.0007	0.0003	0.6228	0.8266	0.3753	0.0553	0.8210	0.9525	0.4600	0.1342	0.2187	
Inadequate transportation	-1.4267	-0.0095	-0.1769	-0.2947	-0.0109	0.9690	-0.4273	0.6657	0.6009	0.1986	0.4556	-0.2328	-0.0978	0.0875	0.1495	-0.0316	0.0112	89.54
	-7.2570	-4.1850	-2.0840	-2.1210	-5.6540	10.1790	-2.9350	5.7110	2.6340	1.4100	3.9450	-1.9760	-0.8540	0.6640	0.5410	-0.3110	0.0880	
	0.0000	0.0000	0.0371	0.0339	0.0000	0.0000	0.0033	0.0000	0.0084	0.1586	0.0001	0.0482	0.3929	0.5068	0.5885	0.7561	0.9295	
Crowded activity areas	-0.9313	-0.0058	0.0642	-0.3786	-0.0015	-0.0703	-0.1105	0.0829	-0.4657	-0.1021	0.2320	0.0382	0.1815	0.0658	0.0791	0.0372	0.1296	74.54
	-6.2570	-3.1180	0.9610	-3.0880	-1.3190	-0.8250	-1.2170	0.8100	-2.1400	-0.8510	2.6680	0.4200	2.0750	0.6050	0.3700	0.4720	1.3690	
	0.0000	0.0018	0.3365	0.0020	0.1873	0.4095	0.2236	0.4180	0.0324	0.3947	0.0076	0.6744	0.0380	0.5451	0.7116	0.6368	0.1710	
Personal safety problems	-2.9244	0.0129	-0.2955	-0.3469	-0.0035	-0.0105	-0.0718	0.6334	1.2239	0.7812	0.3035	0.3952	0.1529	0.0001	0.3848	0.0403	0.1540	89.93
	-13.447	5.1370	-3.1580	-2.2480	-1.9330	-0.0910	-0.5530	4.8280	5.7260	5.1280	2.4460	3.2560	1.2340	0.0010	1.2230	0.3650	1.1590	
	0.0000	0.0000	0.0016	0.0246	0.0532	0.9278	0.5800	0.0000	0.0000	0.0000	0.0144	0.0011	0.2171	0.9994	0.2214	0.7152	0.2466	
Inadequate facilities in activity areas	-1.2957	-0.0057	-0.2963	-0.2111	-0.0004	-0.1420	-0.2290	0.5932	0.4455	0.1897	-0.1590	0.2827	-0.1163	-0.2435	0.2640	0.0114	0.1751	85.46
	-7.1820	-2.4570	-3.5540	-1.4430	-0.2970	-1.3630	-1.9740	5.1620	2.0070	1.2860	-1.5560	2.6900	-1.0230	-1.6840	0.9990	0.1170	1.5030	
	0.0000	0.0140	0.0004	0.1489	0.7668	0.1728	0.0484	0.0000	0.0447	0.1984	0.1197	0.0071	0.3062	0.0922	0.3176	0.9071	0.1329	

Variable	Con-stant	Age	Gender	Immi-gration	Income	Low Educa-tion	B.S./ Grad Educa-tion	Black	Asian/ Pacific Islander	His-panic	Urban	South	Central	West	Winter	Water	Dis-perse	Correctly Predicted %
Poorly maintained activity areas	-1.3128 -7.4030 0.0000	-0.0078 -3.4440 0.0006	0.0993 1.2340 0.2170	-0.1951 -1.4010 0.1612	-0.0009 -0.6390 0.5229	0.0659 0.6710 0.5025	-0.2627 -2.2550 0.0241	0.6524 5.8270 0.0000	0.1348 0.5780 0.5632	0.2543 1.8200 0.0688	-0.1019 -1.0020 0.3162	0.0483 0.4560 0.6481	-0.2192 -1.9640 0.0495	-0.0944 -0.7140 0.4754	-0.0078 -0.0290 0.9766	0.0168 0.1780 0.8591	0.0159 0.1360 0.8917	85.62
Pollution in activity areas	-1.2172 -7.0920 0.0000	-0.0082 -3.7940 0.0001	0.0207 0.2700 0.7873	-0.3811 -2.7420 0.0061	-0.0040 -2.7830 0.0054	0.1395 1.4680 0.1420	-0.0014 -0.0130 0.9898	0.4765 4.3640 0.0000	-0.2512 -1.0320 0.3021	0.1031 0.7580 0.4483	0.1631 1.6150 0.1063	-0.0974 -0.9420 0.3461	-0.2688 -2.5070 0.0122	0.0688 0.5660 0.5716	-0.0772 -0.2960 0.7669	0.1580 1.7570 0.0789	0.2666 2.4750 0.0133	83.46
Inadequate information on places to do activities	0.2550 1.6820 0.0926	-0.0248 -11.9850 0.0000	-0.2542 -3.6790 0.0002	-0.3738 -3.0480 0.0023	-0.0019 -1.5620 0.1184	-0.4393 -4.8730 0.0000	-0.0134 -0.1470 0.8835	0.6069 6.0900 0.0000	0.5777 3.2280 0.0012	-0.0812 -0.6560 0.5115	-0.0011 -0.0120 0.9901	0.0720 0.7850 0.4324	-0.1045 -1.1170 0.2642	-0.0026 -0.0230 0.9816	-0.1984 -0.8870 0.3752	-0.1770 -2.1790 0.0293	0.0326 0.3330 0.7393	75.16
No one to do activities with	-0.4636 -3.0840 0.0020	-0.0029 -1.5460 0.1222	-0.2721 -3.9770 0.0001	-0.1755 -1.4240 0.1544	-0.0075 -5.7830 0.0000	-0.0004 -0.0050 0.9963	0.0532 0.5790 0.5627	-0.3909 -3.5450 0.0004	0.3248 1.7860 0.0740	-0.4662 -3.6650 0.0002	0.1103 1.2800 0.2007	0.1846 2.0370 0.0417	0.0599 0.6620 0.5078	0.0592 0.5330 0.5941	0.1809 0.8380 0.4020	-0.1687 -2.0730 0.0381	-0.0864 -0.8740 0.3821	74.92
Outdoor pests, ex. mosquitos, chiggers, or ticks	-0.0727 -0.5040 0.6140	-0.0027 -1.5110 0.1307	-0.8208 -12.152 0.0000	-0.2421 -2.0430 0.0411	-0.0024 -2.0370 0.0417	-0.0241 -0.2890 0.7724	-0.0793 -0.8770 0.3806	0.4072 4.1440 0.0000	0.0367 0.1890 0.8498	0.0628 0.5250 0.5996	-0.2058 -2.5220 0.0117	0.3188 3.7550 0.0002	-0.2241 -2.5300 0.0114	-0.7673 -6.2070 0.0000	0.0400 0.1750 0.8609	-0.0714 -0.9150 0.3604	0.0435 0.4560 0.6481	70.63
I feel unwelcome / uncomfortable at many outdoor recreation areas b/c of who I am	-2.5613 -8.2720 0.0000	0.0042 1.2000 0.2301	-0.1625 -1.1900 0.2341	-0.7882 -3.1170 0.0018	-0.0144 -4.1380 0.0000	0.3820 2.4780 0.0132	-0.3139 -1.3430 0.1792	1.0533 6.2710 0.0000	0.8506 2.2990 0.0215	0.3934 1.6630 0.0962	-0.0982 -0.5930 0.5532	0.0410 0.2340 0.8146	-0.1281 -0.6700 0.5030	0.1390 0.6050 0.5454	-0.7073 -1.0120 0.3117	-0.1005 -0.6180 0.5368	-0.0449 -0.2240 0.8228	96.03
I can't understand language on signs or spoken at many outdoor recreation areas	-3.8071 -10.340 0.0000	0.0081 2.1060 0.0352	0.2665 1.8810 0.0599	1.3156 6.7450 0.0000	-0.0133 -3.2980 0.0010	0.3589 2.2360 0.0253	-1.2493 -3.4260 0.0006	0.9323 4.8000 0.0000	0.0027 0.0050 0.9959	0.7096 3.0900 0.0020	0.3864 1.9270 0.0540	0.3870 2.1210 0.0339	-0.3448 -1.7080 0.0876	-0.5372 -2.1750 0.0296	-28.841 0.0000 1.0000	-0.1877 -1.0270 0.3043	-0.0884 -0.4140 0.6786	97.21

Variable	Con- stant	Age	Gender	Immi- gration	Income	Low Educa- tion	B.S./ Grad Educa- tion	Black	Asian/ Pacific Islander	His- panic	Urban	South	Central	West	Winter	Water	Dis- perse	Correctly Predicted %
I am uncomfor- table b/c sometimes I feel afraid in forest or other natural settings	-3.0965	0.0110	-0.8041	-0.2062	-0.0049	0.3662	-0.0871	0.9477	1.0171	0.6533	0.1023	0.4666	0.1934	0.0638	0.5500	0.0304	-0.0124	93.68
	-11.768	3.6750	-6.6030	-1.1130	-2.0200	2.7260	-0.5100	6.3360	3.6920	3.4410	0.7030	3.1960	1.2570	0.3350	1.4560	0.2250	-0.0720	
	0.0000	0.0002	0.0000	0.2656	0.0434	0.0064	0.6102	0.0000	0.0002	0.0006	0.4819	0.0014	0.2088	0.7376	0.1453	0.8224	0.9426	

* = Coefficient; # = t-val; ^ = Probability.

Table 4.

Summary of Significant Results ($p \leq .05$) for Personal, Structural, and Psychological Constraints

Variable	Age	Gender	Immi- gration	Income	Low Educa- tion	B.S./ Grad Educa- tion	Black	Asian/ Pacific Islander	His- panic	Urban	South	Central	West	Winter	Water	Dis- perse
Personal																
Not enough time b/c of work & long hours	-X	X			-X			X	X	-X					X	X
Not enough time b/c of family, etc	-X	-X			-X					-X	X	-X		-X		
Personal health reasons	X	-X		-X	X	-X					X		X			
I have a physically limiting condition w/o equipment	X	-X		-X	X	-X							X		X	
A member of my household has a disability	X	-X	-X	-X	X	-X	X									
Not enough money	-X	-X	-X	-X	X	-X							X			
Inadequate transportation	-X	-X	-X	-X	X	-X	X	X		X	-X					
No one to do activities with		-X		-X			-X		-X		X				-X	
Structural																
Poorly maintained activity areas	-X					-X	X						-X			
Inadequate facilities in activity areas	-X	-X				-X	X	X			X					
Crowded activity areas	-X		-X					-X		X		X				
Pollution problems in activity areas	-X		-X	-X			X					-X				X
Inadequate information on places to do activities	-X	-X	-X		-X		X	X							-X	
I can't understand language on signs or spoken at many outdoor recreation areas	X		X	-X			X		X		X		-X			

X = significant ($p \leq .05$)

Variable	Age	Gender	Immi- gration	Income	Low Educa- tion	B.S./ Grad Educa- tion	Black	Asian/ Pacific Islander	His- panic	Urban	South	Central	West	Winter	Water	Dis- perse
Psychological																
I am uncomfortable b/c sometimes I feel afraid in forest or other natural settings	X	-X		-X	X		X	X	X					X		
Personal safety problems in activity areas	X	-X	-X				X	X	X	X	X					
I feel unwelcome/ uncomfortable at many outdoor recreation areas b/c of who I am			-X	-X	X		X	X								
Outdoor pests, ex. mosquitos, chiggers, or ticks		-X	-X	-X			X				-X	X	-X	-X		