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Outdoor Recreation Participation of People with Mobility Disabilities: Selected Results of the National Survey of Recreation and the Environment

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EXECUTIVE SUMMARY: Outdoor recreation is an important and meaningful experience that carries numerous benefits for people with and without disabilities. Traditionally, relatively few recreation services and facilities were accessible to people with disabilities. Recent legislation such as the Americans with Disabilities Act has increased the accessibility of many outdoor recreation resources, yet little documentation of the outdoor recreation participation patterns of people with disabilities exists. If outdoor recreation services are going to be inclusive of all people, then a greater understanding of the participation patterns and barriers faced by people with mobility disabilities is needed.

The National Survey of Recreation and the Environment (NSRE) is an on-going study of the outdoor recreation participation of people living in the United States. The 1995 version of the survey included questions about participation in a variety of outdoor recreation activities as well as about disability and constraints. Data were collected through a nationwide telephone survey conducted by the National Forest Service. Binary logistic regression and chi-square analyses were used to analyze the data.

Results indicated that for many of the activities and constraints, significant differences were found between people with mobility disabilities and people without disabilities. Characteristics of activities that influenced participation rates included: (a) the physical nature of activities, (b) the degree of adaptation needed for participation, (c) social expectations, self perceptions, and social fears associated with certain activities, (d) the financial costs of activities, and (e) the accessibility of sites where activities took place. There were no significant differences between people with mobility disabilities and people without disabilities for six of the constraints included in the survey. Seven constraints were experienced significantly more often by people with mobility disabilities than by people without disabilities, and only one constraint was experienced more often by people without disabilities than by people with mobility disabilities.

KEYWORDS: Outdoor recreation, mobility disabilities, constraints, inclusion

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Outdoor pursuits such as kayaking, snowboarding, jet skiing, and wildlife viewing are increasingly popular activities enjoyed by a diverse American population (Cordell, Green, & Betz, in press; McAvoy, 2001). This diverse population includes an estimated 43 million people with disabilities, and as the population ages, the number of people with disabilities is expected to increase (Dattilo, 2002). Outdoor recreation is a meaningful and important experience to many people that carries numerous civic and personal benefits (Driver, Brown, & Peterson, 1991). The benefits of outdoor recreation experiences are largely the same for people with and without disabilities (McAvoy & Lais, 1999), but relatively few studies have documented outdoor recreation participation patterns of people with disabilities.

Although specific patterns of participation have been largely unexplored, several researchers have examined the benefits of participation in outdoor recreation by people with disabilities. McAvoy, Schatz, Stutz, Schleien, and Lais (1989) reported that people with disabilities who participated in inclusive outdoor recreation programs were more self-confident than they had been prior to participation. Additionally, participants increased their leisure activity skills and their abilities to set goals, manage stress, and develop interpersonal relationships. People without disabilities tended to have more positive impressions and greater acceptance of people with disabilities after engaging in inclusive outdoor recreation programs (Anderson, Schleien, McAvoy, Lais, & Seligmann, 1997; McAvoy et al., 1989; Sable, 1995). McAvoy and Schleien (2001) concluded that inclusive outdoor programs are effective at increasing peer acceptance among participants with and without disabilities.

Although benefits of inclusive outdoor recreation have been well-documented, historically relatively few recreation services and facilities were accessible to people with disabilities (Smith, Austin, & Kennedy, 2001). To help improve accessibility of national parks and to promote the inclusion of people with disabilities, The National Park Service's Special Programs and Populations Branch was created in the 1980s (Smith et al., 2001). Access was promoted further by the passage of the Americans with Disabilities Act (ADA; PL 101-336) of 1990. The ADA is a comprehensive civil rights law designed to prevent discrimination on the basis of disability and to improve access to all areas of life for people with disabilities. Such legislation in conjunction with new technology and the emergence of adventure education agencies has increased the opportunities for people with disabilities to participate in outdoor recreation activities. According to McAvoy and Lais (1999), "Persons with disabilities are a major and

growing market segment for those involved in providing adventure education services and facilities" (p. 403). Additionally, Smith (1995) identified outdoor and adventure programming as a growing trend in the delivery of services to people with disabilities.

Despite improved access and a perception that people with disabilities represent an emerging market for outdoor recreation programs, relatively few inclusive outdoor recreation programs exist due in part to apparent ignorance of the need for such programs (Devine, 1998). It would appear that people with disabilities have motivations to participate in outdoor recreation similar to those of people without disabilities. Brown, Kaplan, and Quaderer (1999) reported that there are few differences between people with disabilities and people without disabilities in their preferred outdoor recreation experiences. The literature provides little information about the actual patterns of participation and continued constraints to participation in outdoor recreation experienced by people with mobility disabilities.

Constraints

An extensive body of constraints research generally pertaining to recreation participation spans nearly two decades. While numerous frameworks attempting to organize constraints to participation in recreation have been proposed, the conceptualization of structural, intrapersonal, and interpersonal constraints identified by Crawford and Godbey (1987) seems to have found the firmest foothold in the literature. *Structural* constraints were described as factors that intervene between a person's preferences and actual participation. *Intrapersonal* constraints were described as elements of an individual's psychology that affect his or her preferences. Examples include stress, socialization, and perceived skills (Little, 2002). Finally, *interpersonal* constraints were described as failures to develop preferences due to a number of factors such as socialization or a lack of abilities.

Crawford, Jackson, and Godbey (1991) suggested a hierarchy of these constraints whereby a person first encounters intrapersonal constraints. In non-individual activities, a person might encounter interpersonal constraints. A person who successfully negotiates intrapersonal and interpersonal constraints might encounter structural constraints. Commonly, leisure researchers (e.g., Henderson, Stalnaker, & Taylor, 1988) have grouped intrapersonal and interpersonal constraints into the same category of antecedent constraints. Numerous studies have been conducted resulting in the identification of constraints across categories that usually include insufficient time, money, awareness, technical skills, and interest (Raymore, Godbey, Crawford, & von Eye, 1993).

Research into constraints experienced by people with disabilities has yielded a number of categories of constraints different from those identified by Crawford and Godbey (1987). For instance, Caldwell, Adolph, and Gilbert (1989) identified environmental barriers and a perceived lack of skill as the most important constraints faced by people with disabilities. Kennedy, Smith, and Austin (1991) identified the primary categories of

constraints faced by people with disabilities as intrinsic, environmental, and communication. As the volume of constraints research has increased, researchers and theorists have begun to critically examine the predominant understandings of constraint.

In one such critique of the constraints literature, Samdahl, Hutchinson, and Jacobson (1999) noted that people find ways to participate in recreation activities despite constraints. Thus, the constraints research program has evolved to include the investigation of strategies people use to negotiate constraints. According to Little (2002), "this phase of research development led to a progression away from viewing constraints as absolute barriers, toward a conceptualization recognizing a range of negotiation strategies and a range of interactions" (p. 158). Samdahl et al. (1999) concluded that *negotiation* would be more appropriately labeled *accommodation* because the onus for change, acceptance, and adaptation rests largely or entirely with the individual rather than with the existing limiting conditions.

Leisure constraints research has begun to focus less on the applications of constraints across the general population and to focus more on specific populations. For instance, an ever-growing and rich literature relates to constraints experienced by women and the strategies used to negotiate those constraints. Unfortunately, with few exceptions (e.g., Henderson, Bedini, Hecht, & Schuler, 1995) there is no comparable body of literature related to people with disabilities. While researchers and theorists continue to increase understanding of constraints and negotiation, some populations and contexts have received relatively little attention.

Surprisingly little research has been conducted into the constraints faced by people with various disabilities, and almost no research has been conducted into constraints that significantly affect participation by people with mobility disabilities in outdoor recreation. While understanding negotiation is an important evolution of the constraints literature, and while critique of the constraints paradigm is a valuable intellectual pursuit, the first priority in gaining an understanding of the experience of people with mobility disabilities in outdoor recreation is to identify participation patterns and the nature and scope of constraints to be negotiated. The National Survey of Recreation and the Environment was designed in part to address this need.

National Survey of Recreation and the Environment

The National Survey of Recreation and the Environment (NSRE) is an on-going study of the outdoor recreation participation of people living in the United States. According to Cordell (1999), the NSRE represents the only on-going long-term comprehensive study of outdoor recreation trends in the US. In one portion of the survey, data were collected related to disabilities. Additionally, data related to constraints to participation were collected. Thus, the purpose of this paper is to: (a) report data describing the outdoor recreation participation patterns of people with mobility disabilities, (b) to compare these patterns to the patterns of people without

disabilities, and (c) to report differences in constraints to participation in favorite outdoor recreation activities between people with mobility disabilities and people without disabilities.

Methods

The survey consisted of questions concerning: (a) participation in 77 outdoor recreation activities, (b) constraints to participation (phrased "reasons for not participating" in the survey), and (c) biographical information, including information about disability status and age.

Variables Included in the Analysis

Activity participation. Respondents were read a list of activities, and asked whether they had participated in each during the previous 12 months. Although the NSRE survey included participation questions on 77 different activities, many of these were either relatively obscure or highly specialized versions of more generic activities (e.g., orienteering, backpacking to reach summit, migratory bird hunting) and had few affirmative responses. Thus, only the 35 activities in which at least 10% of respondents indicated they had participated in during the last 12 months were included within this analysis.

Disability status. The independent variable was derived from questions asking respondents if they had been diagnosed with an impairment that created mobility disabilities. Respondents who reported a disability that did not affect their mobility (e.g., chemical dependence, hearing impairments) were not included in the current analysis.

Age. Since age has previously been identified as a strong influence on both activity participation and physical disabilities (e.g., Crimmins & Sato, 1997), age was included as a potential explanatory variable.

Constraints. Respondents were presented with a list of 14 potential constraints to participation in outdoor recreation and asked whether or not each of these prevented them from participating in their favorite outdoor activity. This created a series of 14 dichotomous (yes/no) variables.

Participants

Respondents for the NSRE survey (N=17,224) were randomly selected through random digit dialing for participation in a nationwide telephone interview sponsored by the USDA Forest Service. From the pool of respondents reporting any disability or illness (n=2,187), those who reported a mobility disability (n=585) were chosen for the current analysis. While significant within-group differences exist among people with mobility disabilities, the authors narrowed the sample to only people with mobility disabilities for a number of reasons including the variety of disabilities included in the original sample.

The survey included a wide range of cognitive, learning, psychological, and mobility disabilities that often were unrelated to one another in many regards. Such differences would have made comparisons between people with and without disabilities difficult, and any detected differences between

such broad samples could have been misleading. The outdoor recreation experiences of people with learning disabilities and mobility disabilities may be as different from one another as the experiences of people with and without disabilities. Likewise, it is reasonable to assume that reasons for not participating in favorite recreation activities vary widely among people with different disabilities. For instance, constraints associated with canoeing for someone with paraplegia are quite different than the constraints faced by someone with a learning disability. Among all disabilities reported by respondents, a sufficient number of respondents with mobility disabilities insured appropriate statistical rigor. Thus, the sample was narrowed to respondents with mobility disabilities.

Data Collection

Participants were selected using random-digit-dialing telephone survey techniques. Respondents were 16 years of age and older and were asked to respond to one of two similar versions of the NSRE survey. Questions related to disability were asked only of respondents who indicated that they had been diagnosed with a disability. If a respondent indicated that a person with a disability lived in the home, then that person was also given an opportunity to be interviewed.

Data Analysis

Due to the nature of the data (i.e. dichotomous dependent variables and at least one continuous independent variable), a series of binary logistic regression analyses were performed to examine the relationship between the presence of a physical disability and activity participation while controlling for age. The model included: (a) whether or not a respondent had a mobility disability (dichotomous) and age (continuous) as independent variables and (b) activity participation (dichotomous) as the dependent variable.

The binary logistic regression analyses provided statistical output that depicted the partial effect of each independent variable on the dependent variable while controlling for other variables in the model. Specifically, the analyses generated a measurement known as the Wald statistic for each independent variable along with an associated significance value. Also, the value labeled Exp(B) provided an additional measurement that can be thought of in terms of probability of an event occurring. The more the Exp(B) value diverged from 1, the greater the effect of the independent variable. Values less than 1 indicated that people with mobility disabilities were less likely to participate in the individual activities than people without disabilities, and values greater than 1 indicated that people with mobility disabilities were more likely than people without disabilities to participate. Following the initial analysis, a series of independent chi-square analyses was performed to determine if significant differences in constraints to participation in favorite outdoor recreation activities existed between people with mobility disabilities and people without disabilities.

Results

Differences in Participation

Results of the statistical analyses indicated clearly that significant differences in participation patterns between people with mobility disabilities and people without disabilities existed across many outdoor recreation activities. In general, greater percentages of people without disabilities reported having participated in outdoor activities than people with mobility disabilities. Of the 35 activities included in the analysis, people without disabilities were significantly more likely to participate in 19. The activities for which there were no significant differences in participation percentages included *sightseeing* (Wald = .989, p>.320), *visiting historic sites* (Wald = .241, p>.624), *viewing wildlife* (Wald = 1.37, p>.242), *viewing fish* (Wald = .188, p>.664), *driving off-road* (Wald = 2.45, p>.118), *visiting nature centers* (Wald = .114, p>.735), *fishing* (Wald = 2.22, p>.136), *attending concerts* (Wald = .211, p>.646), *bird watching* (Wald = 1.74, p>.187), *camping* (Wald = .814, p>.367), *sledding* (Wald = 2.57, p>.109), *horseback riding* (Wald = 1.29, p>.256), *backpacking* (Wald = .245, p>.620), and *canoeing* (Wald = 2.99, p>.083).

People with mobility disabilities were significantly more likely to participate than people without disabilities in only two activities: *visiting archeological sites* (Wald = 4.11, p<.043) and *nature study* (Wald = 21.08, p<.000). For the 19 remaining activities, people without disabilities were significantly more likely to have participated than people with mobility disabilities. Results depicting the individual effects of mobility disabilities on activity participation (while controlling for age) are presented in Table 1.

Constraints

People with mobility disabilities were significantly more likely than people without disabilities to identify constraints to participation in favorite outdoor recreation activities. Of the reasons given for non-participation, people with mobility disabilities were significantly more likely than people without disabilities to report the following reasons: *personal health* (χ^2 = 289.72, p<.000), *inadequate transportation* (χ^2 = 6.07, p<.014), *concerns with personal safety* (χ^2 = 44.91, p<.000, *inadequate facilities* (χ^2 = 24.61, p<.000), *poorly maintained areas* (χ^2 = 28.75, p<.000), *pollution problems* (χ^2= 5.84, p<.016), and *lack of assistance for mobility condition* (χ^2 = 4.17, p<.000). Only one constraint to participation was significantly more likely to be experienced by people without disabilities than by people with mobility disabilities: *not having sufficient time* (χ^2 = 80.15, p<.000). Results of the independent chi-square analyses related to reasons for not participating are presented in Table 2.

As shown in Table 2, there were no significant differences between participants with mobility disabilities and participants without disabilities for nearly half of the constraints included in the survey. Although differences were not significant between participants for the constraints of *not*

Table 1
Effect of Mobility Disabilities on Outdoor Activity Participation Rates,Controlling for Age

Activity	No Disability		Mobility Disability		Wald's	Exp(B)	Sig
	N	%	N	%			
People without mobility disabilities more likely to participate in							
Jogging	4459	29.7	44	8.3	50.03	.334	.000
Downhill Skiing	2064	13.7	18	3.4	20.56	.341	.000
Golf	2751	18.3	41	7.7	32.14	.398	.000
Tennis	2126	14.4	25	4.7	15.21	.450	.000
Walk	11091	73.8	293	55.1	45.50	.550	.000
Spend Time Outdoors	13044	86.7	373	70.1	32.39	.561	.000
Team Sports	4333	28.8	61	11.5	14.31	.593	.000
Bicycling	6420	42.7	129	24.2	22.08	.617	.000
Day Hike	4893	32.5	103	19.4	12.63	.678	.000
Non-pool-swim	6603	43.9	146	27.4	14.41	.685	.000
Pool-swim	7421	49.4	167	31.4	12.86	.712	.000
Attend Sports	7739	51.5	200	37.6	13.07	.721	.000
Water-ski	1839	12.2	20	3.8	11.61	.452	.001
Boating	5992	39.8	146	27.4	9.64	.740	.002
Yard Games	6835	45.5	165	31	9.62	.745	.002
Visit Beach	10040	66.8	280	52.6	7.87	.779	.005
Picnicking	9248	61.5	268	50.4	5.06	.822	.025
Family Gathering	10166	67.7	295	55.5	4.95	.820	.026
Hunting	2152	14.3	44	8.3	4.77	.716	.029
People with mobility disabilities more likely to participate in							
Nature Study	2195	14.6	108	20.3	21.08	1.635	.000
Visit Arch Sites	3193	21.2	125	23.5	4.11	1.231	.043
No differences between groups							
Canoeing	1282	8.5	22	4.1	2.99	.696	.083
Sledding	2366	15.7	45	8.5	2.57	.781	.109
Drive Off-Road	3076	20.5	91	17.1	2.45	1.195	.118
Fishing	5575	37.1	154	28.9	2.22	.867	.136
Bird Watching	4457	29.6	181	34	1.74	1.128	.187
View Wildlife	5325	35.4	190	35.7	1.37	1.111	.242
Horse Riding	1883	12.5	40	7.5	1.29	.829	.256
Sightseeing	9382	62.4	301	56.6	.989	.916	.320
Camping	3998	26.6	107	20.1	.814	.906	.367
Backpacking	1591	10.6	37	7	.245	.918	.620
Visit Historical Sites	7339	48.8	237	44.5	.241	1.044	.624
Attend Concerts	5417	36.4	158	29.7	.211	.958	.646
View Fish	2256	15	78	14.7	.188	1.054	.664
Nature Centers	7786	51.8	245	46.1	.114	.971	.735

enough money and *no companions*, nearly half of participants with mobility disabilities (47.5%) reported a lack of money as a constraint, and more than a quarter of participants with mobility disabilities (27.7%) reported a lack of companions as a constraint.

A similar pattern was evident for several other constraints. For instance, although there was no significant difference, *inadequate information* was a constraint for roughly a quarter of both people with mobility disabilities (26.7%) and a fifth of people without disabilities (21.2%). Likewise, *crowded areas* and *outdoor pests* were equally constraining factors across

Table 2
Constraints to Participating in Favorite Outdoor Recreation Activities

Constraint	No Disability		Mobility Disability		Chi Square	Sig.
	N	%	N	%		
Personal health	1095	26.7	153	86	289.72	.000
No assistance for mobility condition	488	12	117	67.6	417.98	.000
Not enough money	1749	42.8	84	47.5	1.49	.222
Not enough time	2649	64.8	56	31.6	80.15	.000
Personal safety problems	516	12.8	53	30.6	44.91	.000
Inadequate facilities	632	15.9	52	30.2	24.61	.000
Poorly maintained areas	536	13.7	48	28.4	28.75	.000
No companions	1137	27.9	49	27.7	.006	.938
Inadequate information	850	21.2	46	26.7	3.03	.082
Crowded activity areas	848	21.1	41	24.1	.902	.342
Outdoor pests	1130	27.8	40	23.4	1.58	.209
Inadequate transportation	605	14.8	38	21.6	6.07	.014
Pollution problems	515	13	33	19.4	5.84	.016
Household member with disability	270	6.7	14	8.1	.563	.453

participants and appeared to have little to do with disability. While having a *household member with a disability* was equally constraining to all participants, it was a relatively rare factor for people with mobility disabilities (8.1%) and for people without a disability (6.7%).

Discussion

It is clear from the analysis of the NSRE survey data that people with mobility disabilities participated less frequently in outdoor recreation activities than people without disabilities. Additionally, larger percentages of people with mobility disabilities identified constraints to participation than people without disabilities.

Outdoor Recreation Participation Patterns

Results indicated that people with mobility disabilities are less likely than people without disabilities to participate in more than half of the outdoor recreation activities included in the NSRE. Patterns can be discerned in the nature of the activities chosen by people with mobility disabilities compared with people without disabilities including the physical nature of activities, the degree of adaptation needed for participation, the social expectations, self-perceptions, and social fears associated with certain activities, the financial costs of activities, and the accessibility of sites where activities take place.

Physical nature of activities. Activities in which people with mobility disabilities were more likely to participate compared with people without disabilities were those generally less physically demanding. For instance, *visiting archeological sites* and *nature study* were the two activities in which people with mobility disabilities were more likely than people without disabilities to participate. Participation in these activities does not require

extraordinary physical effort. These results support those found by Coyle and McKinney (1990) who reported that relatively few people with physical disabilities participate in sports.

In comparison, people without disabilities were significantly more likely than people with mobility disabilities to participate in such activities as *hiking, bicycling,* and *swimming.* Such activities as *viewing wildlife* may provide the opportunity for people to appreciate nature without facing extraordinary barriers (e.g., unpaved hiking trails). Considering the extra effort often needed to participate in many outdoor recreation activities, many people with mobility disabilities may decide that benefits of an activity do not outweigh the associated costs (Henderson & Bedini, 1995).

Adaptations needed. Relatively few adaptations were needed for participation in many of the activities in which there was no significant difference in participation between people with mobility disabilities and people without disabilities. For instance, *visiting historic sites* might be accomplished with little or no adaptation whereas *downhill skiing* or *camping* might require extensive and costly adaptive equipment.

Social expectations, self-perceptions, and social fears. Social expectations and social fears may have influenced the likelihood that people with mobility disabilities would engage in certain activities. Significantly fewer people with mobility disabilities reported participating in *team sports* than did people without disabilities, but there was no significant difference in participation in *viewing wildlife.* Social expectations, self perceptions, and social fears may explain these results. Wilhite, Devine, and Goldenberg (1999) reported that people with disabilities can feel uncomfortable in environments that are inconsistent with self-perceptions. Thus, if people with mobility disabilities perceive a cultural norm discouraging active outdoor recreation (e.g., "People with disabilities do not play team sports."), they may feel uncomfortable participating in such activities. Frequency of participation in certain types of activities may thus be mitigated by perceived prevailing attitudes toward people with disabilities. In their study of women with disabilities participating in physical activity, Henderson and Bedini (1995) described how "acceptance by others was important to many of the women interviewed" (p. 158) and how participation was affected by stigmatization and discrimination based on disability.

Financial costs of activities. Although *not enough money* was not a constraint experienced significantly more often by participants with mobility disabilities, it is important to remember that roughly a third of people with disabilities live below the poverty level compared to a tenth of people without a disability (LaPlante, Kennedy, Kaye, & Wenger, 1996). The current study examined constraints only to favorite outdoor activities, and available financial resources may have affected which activities became favored in the first place. Thus, while no differences were reported concerning financial constraints to participation in favorite activities, income disparity may still have affected those activities consistently chosen

as favorites by participants with mobility disabilities and participants without disabilities.

While income disparity does not explain all of the discrepancies reported here, numerous outdoor recreation activities may be prohibitively expensive or otherwise inaccessible to many people with disabilities. One factor determining the expense of an activity is the amount of specialized or adaptive equipment that is required to participate. As discussed, relatively little adaptive equipment is required of the activities that people with mobility disabilities were more or equally likely to engage in. *Bird watching* and *nature study* require little more than a pair of binoculars and related literature. By contrast, *rock climbing* requires expensive and highly specialized equipment. Additionally, transportation may be required to reach areas where people participate in outdoor recreation such as state and national parks. Often such opportunities are in remote and rural environments with limited access (McAvoy, 2001). Thus, participation in activities such as *canoeing* and *backpacking* may be more of a challenge for people with mobility disabilities at least in part due to their distance from cities and towns.

Physical accessibility. Activities engaged in as frequently by people with mobility disabilities as by people without disabilities often shared the quality of accessibility. With paved parking lots, visitor centers, walkways, and proximity to public transportation, *historic* and *archeological sites* are more likely to be physically accessible than many other outdoor recreation facilities such as wilderness trails. While differences in actual rates of participation vary between people with mobility disabilities and people without disabilities, Brown et al. (1999) reported that despite severity of impairment, "individuals with mobility impairments are no different than anyone else in the kinds of settings they would like to experience" (p. 218). Henderson and Bedini (1995) reported that environmental factors of facilities (e.g., physical accessibility) are more likely to limit participation than disabilities in and of themselves. Despite the similarity of preferences for characteristics of outdoor recreation experiences, various factors interfered with the ability of people with mobility disabilities to experience many outdoor recreation activities. Such factors have been extensively reported in recreation literature as constraints.

Constraints

Participants were asked about 14 different constraints in the survey used in this study. Using Crawford and Godbey's (1987) categories, each of the constraints included in the survey were structural in nature. Intra- and interpersonal constraints were not examined.

No statistically significant differences were found between participants with mobility disabilities and participants without disabilities for six of these constraints. Of the remaining eight, seven were more likely to affect people with mobility disabilities, and only one was significantly more of a constraint for people without disabilities than for people with mobility disabilities.

No significant differences. No significant differences were found between participants with mobility disabilities and participants without disabilities for nearly half of the constraints included in the survey. Crawford et al. (1991) concluded that people move through a hierarchy of constraints, and structural constraints are the final obstacles to participation. Additionally, they concluded that people who experience lower-order constraints (e.g., intra- and interpersonal) are less likely to experience structural constraints. It is possible that the lack of significant differences for many of the constraints in the current study was due to the influence of intra- and interpersonal constraints. For instance, if a participant with a mobility disability did not participate in an activity because of an interpersonal constraint (e.g., perceived lack of skill), then he or she might have been less likely to report a structural constraint as a significant barrier to participation.

Two of the constraints included in the survey, *not enough money* and *no companions,* are commonly discussed as constraints of people with disabilities (e.g., Dattilo, 1999). Although there were no significant differences between the samples in the current study, it is worth noting that large numbers of people with and without disabilities reported feeling constrained by a lack of money and friends. Thus, although much of the focus of the concern for these constraints has been related to people with disabilities, a lack of money and companions continue to be sizeable obstacles for both people with and without disabilities.

Constraints significantly more likely to affect people with mobility disabilities. As discussed, half of the constraints listed in the survey were more likely to affect people with mobility disabilities than people without disabilities and could thus be assumed to be related to the disabling conditions themselves. That people with mobility disabilities were more likely to encounter *personal health* issues as a constraint is not surprising. Henderson and Bedini (1995) observed that people with mobility disabilities may have health issues that can affect energy levels and stamina not experienced by other people. Similarly, conditions such as arthritis may make participation in many outdoor recreation activities too painful.

Many outdoor recreation activities and settings present exceptional challenges (e.g., uneven terrain, inaccessible facilities) to people with mobility disabilities. Thus it might be expected that participants with mobility disabilities were more likely to be constrained by a lack of *assistance for mobility condition* and *personal safety problems.* Although many people with mobility disabilities are completely or nearly independent in their daily functioning, extraordinary conditions inherent in many outdoor recreation activities may create a need for some assistance. The expense and effort of using personal assistants or the unwillingness to rely on a family member for personal assistance could limit the choice of outdoor recreation activities to those in which one could participate independently. Activities such as *boating* and *downhill skiing* may present extraordinary risks that many people with mobility disabilities are unwilling to accept.

Results indicated that *inadequate facilities* continue to prevent the inclusion of almost a third of people with mobility disabilities. A related constraint affecting more than a quarter of the sample was *poorly maintained areas*. Although such an area can be a nuisance to many visitors to outdoor recreation areas, seemingly minor disrepair can prohibit access to people with mobility disabilities. For instance, poorly maintained sidewalks or pavement can be a hazard to people who use wheelchairs. Likewise, litter or debris that can be stepped over or around by many people can become serious barriers to people with mobility disabilities. Access to outdoor recreation facilities (that are often remote) was limited for more than a fifth of people with mobility disabilities by *inadequate transportation*. Clearly, additional efforts are needed to increase access to outdoor recreation facilities and services.

Constraints significantly more likely to affect people without disabilities. Only *not enough time* was a constraint more likely to affect people without disabilities. This may be due in large part to the discrepancy in employment rates between people with and without disabilities. Only 22% of working-age Americans who use wheelchairs are employed (University of California, San Francisco Center for Disability Statistics) while 94.2% of the general American population is employed (U.S. Bureau of Labor Statistics, n.d.). Undesired unemployment is a seemingly difficult way to acquire discretionary time. Additionally, unemployment may or may not correlate with having more discretionary time for recreational activities when one considers such factors as the extra time needed for certain activities needed by many people with mobility disabilities. Other factors such as time needed to seek employment could limit the ability to participate in other activities. Thus, while an unemployed person may not have the time-related constraints of a job, this additional time alone may be insufficient to facilitate increased participation in outdoor recreation.

While work is the source of identity and meaning for many people, leisure-related activities such as outdoor recreation may serve the same function for people without jobs or who have jobs with little intrinsic value. Regardless, despite the apparent availability of discretionary time, people with mobility disabilities did not participate in more than half of the activities included in the survey as often as people without disabilities, other constraints appear to have limited the variety and frequency of participation in outdoor recreation activities.

Enhancing Participation of People with Mobility Disabilities

The data from the current study clearly indicate that significant constraints to participation in outdoor recreation exist for people with mobility disabilities. In a critique of the constraint negotiation literature, Samdahl et al. (1999) drew an important distinction between the concepts of negotiation and accommodation of constraints. Negotiation results in two or more parties changing and coming to some mutual cooperative agreement while accommodation implies that "individuals accept or adapt to existing conditions which are not challenged or changed" (p.2). While

outdoor recreation managers and programmers appear to have made sincere efforts to offer adaptive programs, there remain significant differences in rates of participation in outdoor recreation between people with mobility disabilities and people without disabilities. In the spirit of negotiation, the onus rests not only on people with mobility disabilities to find ways around existing constraints but on both parties to find additional ways to make participation possible.

Increasing access to outdoor recreation programs does not mean "paving the wilderness." After all, "Like other nature lovers, persons with disabilities want aesthetic qualities and wilderness maintained" (Schleien, McAvoy, Lais, & Rynders, 1993, p. 28). To increase accessibility, facility managers and programmers might consider taking certain actions to enhance and expand participation. For instance, offering and promoting inclusive outdoor recreation programs could address lingering social stigma associated with mobility disabilities and outdoor recreation. Inclusive programs not only increase the skills and confidence of people with disabilities (McAvoy et al., 1989), they also carry important benefits for people without disabilities such as increased empathy and understanding (Dattilo, 2002).

Outdoor recreation managers could consider consulting with individuals with mobility disabilities and advocacy groups to help identify those factors specific to a program or site (e.g., poorly maintained facilities) that limit participation. Without the perspective of a person with a mobility disability, it can be difficult for people without disabilities to consider the range of factors negatively impacting participation in recreation programs. Simple solutions such as lowering interpretive displays cost little or nothing and increase the ability of people with mobility disabilities to independently participate.

Outdoor recreation facility managers and programmers could help remove certain constraints (e.g., lack of assistance for physical condition, personal safety problems) through relatively simple changes in programs and facilities. For example, staff members could undergo training in working with people with mobility disabilities and additional adaptive equipment could be made available for use. With a little effort and a willing attitude, recreation facility personnel and people with mobility disabilities can work together to enhance the quality and frequency of participation in outdoor recreation.

Limitations

These data were collected as part of the 1994/1995 version of the NSRE. As such, the data reflect the experiences of participants nearly a decade ago. In that time, there may have been changes in access, attitudes, and physical environments. The effect of these changes and their implications on the results reported here are unknown.

Analysis options were limited due to the dichotomous nature of variables of interest. More sophisticated analyses would have been possible had the survey been constructed differently. In particular, survey items

providing frequency of participation for outdoor recreation activities would have supplied more insightful data than the responses to "Have you participated?"

The study was a comparison of outdoor recreation participation patterns and constraints of people with mobility disabilities and people without disabilities. Despite the enormity of the NSRE, this research can largely be viewed as exploratory since so little understanding exists of the outdoor recreation patterns of people with mobility disabilities. Thus, the current study was focused on foundational understanding and does little to address wider issues related to disability such as the socially-constructed understanding of disability and its implication for leisure research. Devine (1997) posited that the common understanding of disability is a social construction that does not necessarily reflect an objective reality and that the conceptualization of disability as "flaw" may serve as a primary constraint to leisure participation. Thus, comparing constraints of people with and without disabilities without considering the socially constructed nature of disability may perpetuate negative stereotypes about people with disabilities. This and other issues could be explored in future research.

Implications for Future Research

Numerous avenues for future research are suggested by the results of the current study. In future surveys, it would be helpful to have disabilities specifically defined. As noted previously, there may be relatively little in common in the issues faced by people with learning disabilities and people with mobility disabilities when participating in outdoor recreation. More specific definitions would allow the comparison of people with different types of disabilities and additional comparisons of people without disabilities to people with a variety of different disabilities. Raymore et al. (1993) reported data confirming the existence of the three distinct types of constraints first identified by Crawford and Godbey (1987). Future researchers could consider examining intra- and inter-personal constraints to participation in outdoor recreation experienced by people with mobility impairments rather than examining only structural constraints.

While the identification of constraints to participation is informative, researchers are encouraged to investigate ways in which people with disabilities negotiate constraints. As suggested by Jackson, Crawford, and Godbey (1993), negotiation of constraints is a stronger predictor of participation than the barriers themselves.

A number of scholars and advocates (e.g., Dattilo, 2002) have suggested adaptations to programs. However, little research has been conducted to determine if these adaptations improve access and help people with disabilities negotiate barriers to participation. It would be helpful to study the efficacy of inclusive outdoor education programs, marketing efforts, and other efforts.

Conclusions

While there have been legal (e.g., the Americans with Disabilities Act) and institutional (e.g., National Park Service's Special Programs and Populations Branch) advancements toward the inclusion of people with disabilities into outdoor recreation activities and programs, a number of serious constraints limiting access of people with mobility disabilities exist. For a host of possible reasons, people with mobility disabilities do not participate in as many outdoor recreation activities as people without disabilities. The reasons for this disparity appear to be at least partially structural and thus can be positively affected by outdoor recreation programmers and managers. Taking such actions is both a legal and an ethical obligation that will make possible the delivery of services to a group of people who can benefit from them.

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