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Latent Demand and Time Contextual Constraints to Outdoor Recreation in Sweden

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Abstract: This study analyzes the latent demand to outdoor recreation participation and identifies what factors are constraining people from realizing this demand. In Sweden, recreation in the outdoors is seen as a public right as articulated in public policy and much of the outdoor recreation centre around forested landscapes—over 60 percent of the land area is classified as forest. Using data from a nationwide survey of 43 recreation activities, the study takes a time-contextual approach to reveal variations in recreation constraints across weekdays, weekends and holidays. Results show that almost half the population has a latent demand to increase their participation in outdoor recreation. Three categories of time contextual constraints are identified and several of the constraints studied show variations across outdoor activities and socio-economic factors. Practical implications for the promotion of outdoor recreation participation by public agencies, recreation managers and tourism businesses are discussed based on the study findings.

Keywords: recreation; demand; constraints; national survey

1. Introduction

Following changes in forest use over time in Europe, social functions are increasingly recognized and include not only recreation, but also a wide range of benefits such as health, well-being and general quality of life [1]. In Sweden, much of the outdoor recreation participation centre around forested landscapes—over 60 percent of the land area is classified as forest—and opportunities for outdoor recreation are supported through the Right of Public Access [2]. Recreation in the outdoors is seen as a public right as articulated in legislation and public policy [3] and is recognized as a key aspect of the multi-functionality of forests [4]. A parallel to this development is also found in Swedish nature protection policies and the management of protected areas as the focus has shifted to include aspects related to the provision of recreation and resultant tourism benefits to rural communities [5].

Policies on outdoor recreation in Sweden have for a long time put emphasis on increasing activity participation throughout the country [6]. Traditionally, the focus was on understanding the supply component of recreation need with little emphasis placed on understanding demand aspects. This “build it and they will come” attitude has more recently been supplanted by a focus on better understanding recreation demand. The idea being that if recreation providers understood what the public demands were, then recreation needs would be more clearly identified and appropriate supply provided. Demand in this context was defined by current recreation participation, *i.e.*, those who are currently participating or have recently participated were identified as the focal point to where public policy should focus on providing opportunities. Such a supply and demand relationship places emphasis on *what people are currently doing* and not on *what they want to do in the future*. To address what people would like to do in the future, the concept of latent demand must be taken into account.

The consumption of outdoor recreation products and services has long been viewed as the opportunity to engage in a preferred activity in a certain place that provides the settings required to gain a desired experience [7]. As such, outdoor recreation demand can be interpreted as an individual’s preferences or desires based on whether or not he or she has the resources necessary to result in satisfactory outcomes. In this regard, demand reflects behavioral tendencies and assumes no constraints on recreation opportunities or access to them. In practice this is seldom the case. When outdoor recreation opportunities are less than ideal, people may participate below their theoretical level of demand would indicate. Therefore, latent demand can be interpreted as expressed demand that is unmet because of some constraint to participation. Such constraints could prevent an individual from initiating an activity or increasing the rate of current participation, and if those constraints were addressed, the probability of participation would increase.

One of the most important constraints identified in the literature is lack of available time for engagement [8,9]. Most of this research though examines time in general rather in context. Because of the manner that time is utilized for various purposes and the differing amounts of discretionary time available, it is hypothesized that people have time contextual recreation preferences that vary for weekdays, weekends and holidays. For example, during weekdays, going for a stroll, run or bike trip in a nearby forest for most people is probably much more accessible than participation in downhill skiing or backpacking. These latter activities are more favored on weekends or during holidays when there is more available discretionary time. Thus, this paper takes on a time contextual approach to examine constraints to increase outdoor recreation participation in an effort to better understand future demand

and more accurately identify areas of outdoor recreation needs. Taking into account that the effects derived from outdoor recreation are universally positive and beneficial to society [10], there are pragmatic reasons to monitor and promote participation. At the same time, this is of course a great challenge given fiscal constraints and changing behavioral patterns [11,12].

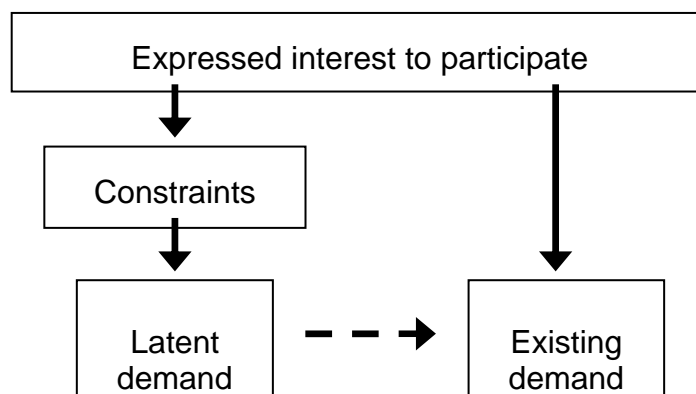
Hence, the aim of the current study is (i) to analyze the demand for increased outdoor recreation participation in Sweden, and (ii) to identify what factors are constraining people from realizing their full demand using a time contextual approach. In the next sections the concept of latent demand will be discussed followed by a short review of the leisure constraint theories. Combining these two frameworks has several practical implications and represents a novel approach to better understand how participation in outdoor recreation can be promoted in a northern European society rich in forest resources.

2. Outdoor Recreation Latent Demand

In economic terms, outdoor recreation experiences are produced by individuals combining the supply of natural resources and facilities with their own input in terms of, e.g., time, skill, equipment and money [13]. The amount of input that individuals can contribute will influence the degree of participation, and they will choose to participate in those activities that provide the most benefits [14]. The demand for outdoor recreation is typically measured as the number of trips, visits to specific sites or the duration of recreation time. One of the most important determinants of demand is price, usually depicted graphically as a demand curve, which represents the quantity consumed at different price levels. In terms of outdoor recreation consumption, price is influenced by a number of other determinants including demographics (such as income, age, gender, ethnicity), the attractiveness or quality of recreation sites, availability of substitutes and alternative recreation opportunities, travel time, congestion or crowding, tastes and preferences.

The term ‘recreation demand’ can be equated with an individual’s preferences, whether or not the individual has the financial and/or other resources necessary for the actual participation [15]. As defined, it is important to make a distinction between the actual participation taking place and what people would ideally want (prefer) to do. People who currently take part in an activity represent existing demand, while people who express an interest but do not participate because of a particular constraint represent potential or latent demand. Figure 1 show the basic relationships between the expressed interest to participate, constraints and latent demand, where the latter can be considered a residual of non-realized demand beyond the current level of participation. The concept of latent demand is not new. It was recognized by Clawson and Knetsch [16] in their pioneering work on the economics of outdoor recreation and by Kotler in the field of marketing [17]. Latent demand has later been acknowledged in, for example, studies of social welfare modeling [18], heritage attractions [19] and downhill skiing market analyses [20]. A key aspect of latent demand is the difference between the expressed interest to participate and actual participation, or put differently, the challenges of transforming latent demand into actual demand (dotted line in Figure 1). Understanding this difference contributes to theorizing the demand-participation nexus, and can provide valuable information to policymakers and organizations promoting outdoor recreation participation.

Figure 1. Relationships between expressed interest to participate, constraints, latent demand and existing demand.



3. Constraints to Participation

Recreation demand does not refer solely to existing levels of recreation activity but to a set of conditions that can be linked to several types of determinants related to participation. These can be internally related to the individual, such as demographic, socioeconomic and situational characteristics (e.g., age, income and time resources), or externally generated factors such as the availability and accessibility of recreation resources. Such determinants influence not only the type of recreation activity to engage in, but also the level of participation. Consequently, they can either facilitate or pose constraints upon people's desires to participate. Research on constraints has emerged as a central theme in leisure studies over the past decades [21]. Constraints can be described 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"* [22].

Much of the constraint research has focused on three categories of constraints—intrapersonal, interpersonal and structural—originally proposed by Crawford and Godbey [23]. Intrapersonal constraints are defined as individual psychological conditions such as stress, anxiety, attitudes and perceived competency that might inhibit one from participating in leisure activities. Interpersonal constraints result from social interaction with friends, family and others. Structural constraints include such aspects as financial resources, availability of time and accessibility. Research on constraints was, to a large extent, developed within social-psychology and applied to different socio-demographic aspects of contemporary society, such as gender, ethnicity and age [21], as well as to participation in outdoor recreation activities [24]. For example, different variations of the constraint model described above were applied in studies of angling [25], hiking [26], alpine skiing [27], and mountain recreation [28].

When examining latent demand, constraints should not be seen as fixed barriers that lead to non-participation, but rather a potential involvement in leisure activities dependent on a successful negotiation through different types of constraints [29,30]. This negotiation process first occurs in decision making (including intra and inter personal constraint mitigation) and secondly involves removing barriers related to structural constraints. Once participation does or does not occur, the recreationist evaluates his or her experience to determine how to respond to future opportunities [24]. This decision making process of negotiation and weighing of costs and benefits will then affect the future perception the recreationist has of the various constraints as well as the motivations to

participate in a particular activity at a particular setting. In essence, it is the barriers to participation and the ability of the individual to remove those barriers that are important rather than just the constraint itself. This negotiated process has been described as behavioral control, which is grounded in self-efficacy theory [14]. If a person believes that a barrier is present to participation, and he or she has the ability and control to remove that barrier (now or in the future), then demand will usually be expressed as high. On the other hand, if the person believes that he or she does not have control over the removal of the barrier then demand will most likely be expressed as low, even though increased participation may be desired.

Most of the constraint research in outdoor recreation has focused on structural constraints, and key constraints identified include physical accessibility, economic cost and available time [24]. The issue of time has received considerable attention in the constraint literature [9]. In a more philosophical perspective, time is the frame of our existence and it constraints our lives—from how long we live to how many hours can be devoted to a particular activity at a particular place. We divide our lives into time categories such as work time and leisure time, and we try to save time through multi-tasking, fast food, lunch meetings, airplanes, high speed trains and the Internet. While time has increasingly become a scarce resource in the modern world, the amount of “free” time that eventually can be used for outdoor recreation has never been greater than it is today. This is a paradox that calls for further investigation. In his comprehensive review of time as a constraint to leisure, Godbey [9] conclude, “...the simple divisions of work and free time, weekday-weekend, home and workplace blur into obscurity... ..The logistics of life become more complex, the intrusion of work into the night, the weekend, the holiday and the distant location makes time feel scarce”. Hence, to better understand how constraints (including time) enter our outdoor lives under different time contexts, the current study was designed to separate for weekdays, weekends and holidays.

4. Data Collection and Modeling

For the purpose of this study, a set of ten constraints (five structural, four intrapersonal and one interpersonal) were used to analyze latent demand across a broad set of outdoor recreation activities under different time contexts. These constraints were selected based on previous constraints studies in field of outdoor recreation [23,24,27,28] and in dialogue with a reference group of 15 professionals working with outdoor recreation policy, management and research in Sweden. Hence, important criteria in the selection process were based on both theoretical and practical relevance. The research design was delimited to a set of ten constraints since the data collection effort was designed for a large national survey of outdoor recreation participation that addressed other topics besides recreation constraints.

The national survey on outdoor recreation participation was conducted by the research program ‘Outdoor Recreation in Change’ [31]. A postal survey was distributed to a national sample of 4,700 Swedish citizens (between 18 and 75 years old) from October 2007 to January 2008 with a final response rate, after three reminders (two including a new questionnaire), of 40% (n = 1,792). A follow-up telephone survey directed at 433 non-respondents indicated that the likelihood of answering the questionnaire was not correlated with an interest in outdoor recreation [31]. A key objective of the survey was to measure participation rates and associated socio-economic correlates across a broad

range of outdoor recreation activities. Forty-three activities were covered and participation in these was followed up in subsequent questions examining latent demand and constraints. The included activities were identified from previous outdoor recreation research [1,6,32], with emphasis on Scandinavian conditions, and in dialogue with the external reference group. The data collection was designed to produce a “total analysis” of outdoor recreation in Sweden based on activity participation [31]. Several of the questions in the national survey were also contextualized, differentiating the answers for weekdays, weekends and holidays. The choice of these time frames was experience-based in dialogue with the reference group. Looking at contemporary outdoor recreation behaviour in Sweden [6], it is believed, however, that these categories significantly reflect three distinct time contexts that separate participation opportunities.

For the purpose of our analysis, *participation* in each activity was defined as *at least once over the last 12 months* except for activities with a participation rate exceeding 70% where *participation* was defined as *at least six times during the last 12 months* (applied to hiking in forest or nature, walking for pleasure or physical activities, biking on roads, outdoor swimming in lake/sea, sunbathing and gardening). These dichotomous participation measures were created to have a good balance between categories (participation vs. “non”-participation) and were then used as the dependent variable in logistic multivariate regression models, using the following independent variables (reference categories underlined):

Gender: Male, Female;

Age: 18–30, 31–45, 46–60, 61–75 years;

Ethnicity: Nordic, Non-Nordic (either the respondent or at least one of the respondent’s parents grew up outside Sweden, Norway, Denmark, Finland or Iceland);

Children: No children in the household, Children in the household (aged 0–5, 6–12 or 13–18 years);

Education: Compulsory school, Upper secondary school, University education;

Household income: Low \leq 20,000 SEK per month, Medium 21,000–30,000 SEK per month, High $>$ 30,000 SEK per month; (9 SEK \approx 1 Euro).

Multivariate logistic regression was used to estimate the demand to increase participation for those activities with a sample size of 50 or more. In these models the present level of participation for each activity was also included as an independent variable in addition to the socio-economic variables specified above. In a similar way, regression models were used to analyze constraints of increased participation to the level preferred for weekdays, weekends and holidays respectively. In these analyses, gender, age, ethnicity, children, and income were used as explanatory variables along with those activities that had a sample size of 50 or more among those respondents who had expressed preferences for an increased participation. Logistic regression was used because it enables the study of latent demand through predictions of both demand and constraints to increase participation in outdoor recreation activities. The odds ratios (OR) from the regression models measured the effect size, *i.e.*, in our case, the strength of association between increased activity participation and constraints, and socio-economic predictors. The use of odds ratio provides an easy to understand relationship among the variables studied. One limitation of this approach, however, is that odds ratios based on dichotomous response do not take into account the wide range of potential responses. Statistical analyses were done

with SPSS statistical software, and the results presented are focused on the estimated odds ratios for independent variables having significant effects ($p < 0.05$) on each dependent variable.

5. Results

5.1. *The Demand for Increased Participation*

Walking for pleasure or physical activity, hiking in forest or nature, gardening, outdoor swimming, and biking on roads are among the most commonly reported outdoor recreation activities among the Swedish population (Table 1, second column). All these activities are reported by over 70% of the population respectively. When asked about the desire to increase participation in outdoor recreation activities, 46% of the respondents want to increase their participation in one or more of the 43 activities studied.

Looking at the desire to increase participation as a function of present activity participation, it was found that hiking in forest or nature along with walking for pleasure or physical activity are not only the most frequent activities but also the activities that most people would like to do more of regardless of the present participation level (Table 1, fourth column). Similarly, other activities in this category also include biking on roads, outdoor swimming in lake/sea and gardening. All the other activities studied that people would like to increase are dependent upon present participation. The odds ratios for jogging/running in nature, alpine skiing and horseback riding are quite stable across the different levels of present participation, while for fishing, cross- or backcountry skiing, and golf, the odds ratios increase considerably with present participation levels. Consequently, among the former group of activities there is a more stable demand to increase participation once a person is into the activity (participated at least once), while for the latter groups a higher participation rate resulted in a demand for even more participation.

5.2. *Socio-Economic Variations to Increased Participation*

Considering socio-economic factors correlated with increased participation, results show that people aged 46 or above and respondents with a non-Nordic origin are less likely to demand an increase in participation (odds ratios below one), while respondents holding a university degree are three times more likely to demand an increase compared with those holding only a compulsory school education. Looking into the different activities, it was found that women (in comparison with men) are over four times more likely to demand an increase in horseback riding, more than twice as likely to demand an increase in hiking in forest and nature, and almost twice as likely to demand an increase in hiking on trails outside the mountain region and walking for pleasure and physical activity. In terms of fishing, women are about five times less likely to demand an increase compared with men. Respondents in the upper age categories are less likely to demand increased participation compared to the middle aged in respect to several of the activities analyzed. For example, respondents above age 60 are six times less likely to demand an increase in downhill skiing compared with respondents aged 31–45. With the exception of jogging/running in nature, there are no differences between the reference category and the low age category (18–30). The low age group is, however, almost twice as likely to demand increase participation in jogging/running in nature compared with those age 31–45.

Respondents with a non-Nordic origin are less likely to demand an increased participation in general. The only specific activity which features a significant odds ratio among this group is outdoor swimming in lake or sea where people with a non-Nordic origin are two times more likely to demand an increase compared with respondents from Nordic countries. The results show no significant effect of having children in the household while education has a positive impact upon the demand in four of the activities studied. Holding a university degree implies an increase in odds ratio of 2–3 times for hiking in forest or nature, walking for pleasure or physical activity, mountain hiking, and outdoor swimming compared with those having completed only compulsory education. Jogging, running, fishing and golf are 2–3 times more likely to be demanded by medium or high income respondents compared to those with low incomes, while mountain hiking is about two times more likely demanded among low income respondents compared with medium and high income groups.

5.3. Constraints to Increased Participation

Given that almost half of the sample did report a demand for an increased participation ($n = 802$), the results will next focus upon the perceived constraints to realize this latent demand, *i.e.*, the non-realized demand beyond the current level of participation. Tables 2 and 3 report regression results for each of the ten constraint variables studied for weekdays, weekends and holidays respectively. First, looking at the distribution among the constraints across these three time contexts (Tables 2 and 3, third column), lack of time is by far the most frequently reported constraint regardless of the time context. The second most reported constraint for both weekdays and weekends is the family situation followed by shortage of appropriate places/areas and lack of partner. In respect to holidays, the second and third most reported constraints are related to costs and physical demands (24% each). Among the less frequently reported constraints are disability and sickness, lack of knowledge and instruction, and lack of courage. Lack of time is the only constraint being less reported for holidays and considerably more reported for weekdays. In contrast, too expensive, too physically demanding, shortage of equipment, and lack of knowledge and instruction are more frequently reported for holidays and less so for weekdays. All other constraints are about equally reported for weekdays, weekends and holidays.

Table 1. Logistic regression analyses of the demand to increase participation in outdoor recreation activities. Significant ($p < 0.05$) odds ratios (OR) are shown in the table.

Activity	Participation at least once last 12 months	Demand an increased participation (n = 1792)	Present participation	Female	Age	Non-nordic origin	Children in household	Education ⁽¹⁾	Household income ⁽²⁾
<i>Reference category (OR = 1)</i>			<i>No participation</i>	<i>male</i>	<i>31–45 years old</i>	<i>Nordic origin</i>	<i>No children</i>	<i>Compulsory school</i>	<i>Low income</i>
Demand an increased participation		46%			46–60: 0.54** 60+: 0.29**	0.64*		Use: 1.6* Univ: 3.0**	
Hiking in forest or nature	88.6%	10%		2.4**				Use: 2.4* Univ: 2.5*	
Walking for pleasure or physical activity	92.1%	9%		1.8**	60+: 0.46**			Use: 2.3* Univ: 2.4*	
Mountain hiking	15.7%	7%	1–5: 3.0**		60+: 0.45*			Univ: 3.3**	Med: 0.56* High: 0.47**
Jogging/running in nature	34.9%	7%	1–5: 3.7** 6+: 3.5**		–30: 1.9** 60+: 0.22**				High: 2.3**
Alpine skiing	22.3%	6%	1–5: 2.0* 6+ : 2.4**		46–60: 0.36** 60+: 0.13**				
Fishing	39.2%	5%	1–5: 2.3* 6+: 7.4**	0.19**	46–60: 0.50* 60+: 0.35**				Med: 2.0*
Biking on roads	72.9%	4%							
Cross- or backcountry skiing	39.2%	4%	1–5: 2.9** 6+: 4.8**						
Horseback riding	7.4%	4%	1–5: 10.2** 6+ : 13.3**	4.4**					
Golf	14.5%	3%	1–5: 11.0** 6+: 28.0**						Med: 3.0*
Outdoor swimming in lake/sea	73.9%	3%				2.4*		Univ: 3.2*	
Hiking on trails outside mountain region	29.6%	3%	1–5: 3.5**	1.9*					
Gardening	82.4%	3%			46–60: 0.43*				

⁽¹⁾ Use = upper secondary school; Univ = university education; ⁽²⁾ Low = up to 20,000 SEK/month, Medium = 21–30,000 SEK/month, High = more than 30,000 SEK/month (10 SEK \approx 1 EUR); * $P < 0.05$; ** $P < 0.01$.

Table 2. Logistic regression analyses of constraints to increase participation in outdoor recreation activities. Significant ($p < 0.05$) odds ratios (OR) are shown in the table.

Constraint	Context	Perceived constraint (n = 806)	Female	Age	Non-Nordic origin	Children in household	Household income ⁽¹⁾	Outdoor activity ⁽²⁾
<i>Reference category (OR = 1)</i>			<i>Male</i>	<i>31–45 years old</i>	<i>Nordic origin</i>	<i>No children</i>	<i>Low income</i>	<i>Not demanding any increases</i>
Lack of time	Weekdays	48%		60+: 0.38**			High: 1.9**	Walking for pleasure or physical activity: 1.9**
	Weekends	37%		60+: 0.31**			High: 2.7**	Hiking in forest or nature: 1.8*
	Holidays	26%		60+: 0.31**			Med: 1.7* High: 2.1**	Walking for pleasure or physical activity: 1.9* Outdoor swimming in lake/sea: 0.20*
Family situation	Weekdays	15%		–30: 0.39** 46–60: 0.43**		13–18 yrs: 0.21**		Fishing: 3.8** Cross- or back-country skiing: 2.9* Horseback riding: 3.4*
	Weekends	18%		–30: 0.22** 60+: 0.41*		0–5 yrs: 1.9** 6–12 yrs: 0.51** 13–18 yrs: 0.37**	High: 2.1**	
	Holidays	16%		–30: 0.23** 46–60: 0.45**		6–12 yrs: 0.54* 13–18 yrs: 0.36**	Med: 2.3* High: 3.0**	Mountain hiking: 1.8* Diving, snorkeling: 2.9** Walking for pleasure or physical activity: 0.36*
Too expensive	Weekdays	7%					High: 0.28**	Jogging/running in nature: 0.14** Horseback riding: 10.4**
	Weekends	14%	0.59*			0–5 yrs: 0.52*	Med: 0.55* High: 0.41**	Hiking in forest or nature: 0.10** Golf: 2.4* Horseback riding: 7.4**
	Holidays	24%						Hiking in forest or nature: 0.14** Diving, snorkeling: 5.0** Alpine skiing: 3.8**

Table 2. *Cont.*

Constraint	Context	Perceived constraint (n = 806)	Female	Age	Non-Nordic origin	Children in household	Household income ⁽¹⁾	Outdoor activity ⁽²⁾
Too physically demanding	Weekdays	7%		–30: 3.4* 46–60: 3.4* 60+: 16.5**	3.1*			Jogging/running in nature: 8.0**
	Weekends	14%		60+: 5.7**	4.7**			
	Holidays	24%					High: 0.23*	Hiking in forest or nature: 3.4*

⁽¹⁾ Low = up to 20,000 SEK/month, Medium = 21–30,000 SEK/month, High = more than 30,000 SEK/month (10 SEK ≈ 1 EUR); ⁽²⁾ Activities with a demand for an increased participation; * P < 0.05; ** P < 0.01

Table 3. Logistic regression analyses of constraints to increase participation in outdoor recreation activities. Significant (p < 0.05) odds ratios (OR) are shown in the table.

Constraint	Context	Perceived constraint (n = 806)	Female	Age	Non-Nordic origin	Children in the household	Household income ⁽¹⁾	Outdoor activity ⁽²⁾
<i>Reference category (OR = 1)</i>			<i>Male</i>	<i>31–45 years</i>	<i>Nordic origin</i>	<i>No children</i>	<i>Low income</i>	<i>Not demanding any increases</i>
Lack of appropriate places / areas	Weekdays	12%		–30: 2.4**	2.9**			Walking for pleasure or physical activity: 0.20** Jogging/running in nature: 0.38** Biking on roads: 0.16*
	Weekends	15%		–30: 1.8* 60+: 0.40*				Walking for pleasure or physical activity: 0.29* Cross- or back-country skiing: 3.6** Horseback riding: 0.13*
	Holidays	15%		–30: 1.9*		0–5 yrs: 0.48*		Outdoor swimming in lake/sea: 2.5* Diving, snorkeling: 3.0* Cross- or back-country skiing: 4.9** Alpine skiing: 2.3*

Table 3. Cont.

Constraint	Context	Perceived constraint (n = 806)	Female	Age	Non-Nordic origin	Children in the household	Household income ⁽¹⁾	Outdoor activity ⁽²⁾
Lack of partner	Weekdays	11%		−30: 2.7**				
	Weekends	15%	1.8**			0–5 yrs: 0.54* 13–18 yrs: 1.8*		
	Holidays	15%		−30: 2.3**		0–5 yrs: 0.54*		Mountain hiking: 2.0* Hiking on trails outside mountain region: 3.7** Walking for pleasure or physical activity: 0.23* Jogging/running in nature: 0.24* Biking on roads: 2.8* Horseback riding: 5.2*
Lack of equipment	Weekdays	6%		−30: 2.5*		0–5 yrs: 0.23**		
	Weekends	12%		−30: 2.2*	0.27*	0–5 yrs: 0.50*	High: 0.52*	Walking for pleasure or physical activity: 0.21*
	Holidays	14%		−30: 2.6**		0–5 yrs: 0.49*		Sailing, windsurfing, surfing: 4.2**
Disability / sickness	Weekdays	9%		46–60: 2.0* 60+: 4.3**			High: 0.52*	
	Weekends	7%		46–60: 3.3* 60+: 8.0			High: 0.41*	Hiking in forest or nature: 2.5* Walking for pleasure or physical activity: 3.2*
	Holidays	7%		46–60: 2.3* 60+: 3.5**	2.5*		Med: 0.41* High: 0.38**	Hiking in forest or nature: 2.7*
Lack of knowledge / instruction	Weekdays	3%				0–5 yrs: 0.25*		
	Weekends	6%		−30: 2.5*				
	Holidays	7%		60+: 0.19**		6–12 yrs: 2.4*		
Lack of courage	Weekdays	4%			3.8**			
	Weekends	3%				6–12 yrs: 3.5* 0–5 yrs: 0.30*		
	Holidays	4%	2.6*			6–12 yrs: 2.8*		

⁽¹⁾ Low = up to 20,000 SEK/month, Medium = 21–30,000 SEK/month, High = more than 30,000 SEK/month (10 SEK ≈ 1 EUR); ⁽²⁾ Activities with a demand for an increased participation; * P < 0.05; ** P < 0.01

5.4. Socio-Economic Variations Amongst Constraints

Table 3, which features the four most frequently reported constraints, shows that *lack of time* is significantly less reported among more senior people (for weekdays, weekends and holidays) but more common among individuals with high income regardless of the temporal context. Respondents above age 60 are about three times less likely to report lack of time as a constraint compared with those of age 31–45, while high income respondents are 2–3 times more likely to report this constraint compared with low income respondents. The *family situation* as a constraint is primarily related to age, children and income. The reference group (age 31–45) is, in general, more constrained compared to respondents in both younger and older age groups. For example, people of age 18–30 are about 4–5 times less likely to report the family situation as a constraint during weekends and holidays compared with those of age 31–45. Having young children (age 0–5 years old) in the household is a constraint for weekend activities, while older children (age 6–12) and teenagers are not. Respondents with teenagers in the household are five times less likely to report the family situation as a constraint for weekdays and almost three times less likely to report it as a constraint for weekends and holidays.

Participation being *too expensive*, which is primarily a weekend and holiday related constraint, features few differences across the socio-economic groups studied. As expected, however, this constraint is associated with income. High income respondents are almost four times less likely to report it for weekdays and over two times less likely to report it for weekends compared with low income respondents. No significant differences in odds ratios are found for holidays. Participation in outdoor recreation being *too physically demanding* is associated with increasing age (weekdays and weekends), with the exception that respondents aged up to 30 are more than three times more likely to report this constraint during weekdays compared with the reference category aged 31–45 years. People aged over 60 are 16 times more likely to report too physically demanding as a constraint during weekdays and almost six times more likely to report it during weekends compared with the reference group. Respondents with a non-Nordic origin also report the physical aspect as a constraint three times more for weekdays and almost five times more for weekends than respondents with a Nordic background.

Table 3 describes those constraints being less commonly reported. A perceived *lack of appropriate places or areas* is 2–3 times more commonly reported among respondents up to 30 years of age in all three time contexts, while it is significantly less of a constraint among those of age 60 or more during weekends. Lack of appropriate place is also three times more likely to be perceived as a constraint among people with a non-Nordic origin during weekdays compared with Nordic respondents. Participation in some of the outdoor recreation activities studied will benefit from the presence of a *partner*, and a lack thereof is twice as likely perceived as a constraint among females for weekends (compared with men), and 2–3 times more likely perceived as a constraint among people 30 years of age or younger for weekdays and holidays compared with the reference group. *Lack of equipment*, which primarily is a weekend and holiday constraint, is also highly youth related. It is 2–3 times more likely to be perceived as a constraint among people of age 30 or below compared with those aged 31–45, while it is 2–4 times less likely reported as a constraint among people with children in the age of 0–5 years old in the household compared with those with no children. It comes as no surprise that *disability or sickness* is a constraint related to age (for all three time contexts). For example, respondents

older than 60 are four times more likely to report this as a constraint for weekdays, eight times more likely to report it for weekends, and 3.5 times more likely to report it for holidays compared with respondents aged 31–45. Disability or sickness is also found to be more commonly reported among respondents with a non-Nordic origin for holidays (compared with Nordic respondents), but 2–3 times less likely reported among high income respondents compared with low income respondents across all three time contexts. Finally, *lack of knowledge or instruction* and *lack of courage* are reported by relatively few respondents (less than 8%). Lack of knowledge or instruction is more likely perceived as a constraint among young people during weekends while it is five times less likely reported as a constraint among people of age 60 or above during holidays compared with respondents aged 31–45. Females are almost three times more constrained by lack of courage during holidays compared with men, and respondents with a non-Nordic origin almost four times more likely constrained by lack of courage during weekdays compared with respondents from the Nordic countries. Having children of age 6–12 years in the household implies that lack of courage is 3–4 times more likely to be reported for both weekends and holidays compared with those having no children.

5.5. Activity Related Constraints

Several of the outdoor recreation activities studied are associated with specific constraints across the three temporal contexts. The last columns of Tables 2 and 3 show that *lack of time* is seen as a constraint particularly to those demanding an increase in walking for pleasure or physical activity during weekdays and weekends, and hiking in forest or nature during weekends. The *family situation* is 2–4 times more likely reported as a constraint among those who want to increase their participation in fishing, cross-country or backcountry skiing or horseback riding on weekdays, and mountain hiking, diving or snorkeling on holidays compared with those who do not demand any increases in activity participation. Respondents who demand an increase in horseback riding, golf, diving, snorkeling, and alpine skiing are constrained by the *cost*, while walking for pleasure or physical activity, jogging/running in nature and hiking in forest and nature are all activities where expenses are less likely reported as a constraint. People who demand an increase in horseback riding are, for example, ten times more likely constrained by costs during weekdays compared with those who do not want any activity increases, while people who demand an increase in alpine skiing during holidays are almost four times more likely constrained by costs. It was also found that people who want to increase their participation in jogging/running in nature are eight times more likely constrained by the *physical demands* during weekdays, and those who want to increase their hiking in forest or nature during holidays are more than three times more likely to report this constraint compared with those who do not demand any increases.

A perceived *lack of suitable places or areas* is considerably less of a constraint among those who want to increase their participation in walking for pleasure or physical activity (both weekdays and weekends), jogging/running in nature (weekdays), biking on roads (weekdays), and horseback riding (weekends). It is, however, 2.5 times more likely reported as a constraint among those who want to increase their participation in outdoor swimming in lake/sea (holidays), almost five times more likely reported among those who want to increase cross-country or backcountry skiing (weekends and holidays), three times more likely to be reported for those demanding an increase in diving or snorkeling (holidays), and over two times more likely to be reported among those who wish to increase

their participation in alpine skiing (holidays). *Lack of a partner* is not a constraint during weekdays and weekends for any particular activity, but for holidays, people interested in participating more in mountain hiking and hiking on trails outside the mountain region are 2–4 times more likely to report this as a constraint compared with respondents who do not want to increase their participation. A *lack of equipment* is 4–5 times less likely reported as a constraint among those wanting to do more walking for pleasure or physical activity (weekdays and weekends) or jogging/running in nature (weekdays), but is 3–5 times more likely reported a constraint among those who want to increase their participation in biking on roads or horseback riding during weekdays, together with sailing, windsurfing or surfing during holidays. Finally, respondents who demand an increase in sailing or windsurfing (weekdays), those looking for more hiking in forest or nature (weekends and holidays), and those demanding an increase in walking for pleasure or physical activity (weekends) are 2–4 times more likely to report *disability and/or sickness* as a constraint. More adventurous activities with higher physical demands such as jogging, alpine skiing and diving are not particularly mentioned in this context.

6. Discussion

This paper has taken a broad approach to examining latent demand and its relationship between increased outdoor recreation participation and associated time contextual constraints. By surveying 43 outdoor recreation activities nationwide, this study covers a much wider spectrum of activities compared to the Swedish national census [33] and the comprehensiveness is greater than past demand studies which have typically been designed for more specific topics and/ or geographical regions [6,10]. Even though Swedish participation levels in outdoor recreation are relatively high as compared to other countries [32,34], almost half of the respondents in this survey report a desire to increase their participation in the activities studied. This conclusion should be viewed against contemporary concerns regarding decreasing participation rates in nature-based recreation, lack of physical activities, and indoorization of outdoor sports [12,35]. Given the importance to better understand current trends in outdoor recreation, more focus should conceivably be given to stated demand preferences in addition to the more traditional approaches to monitor actual behavior.

Using latent demand (by activity) and constraints as dependent variables respectively, several socio-economic correlates were found that extend the knowledge how different groups in society are restricted from participating at preferred levels. This information has also practical implications for organizations and institutions dealing with the use and management of natural resources such as public agencies, recreation managers and nature-based tourism businesses. Outdoor recreation participation can both represent a *means* to achieve certain tangible public or private values (e.g., physical health, regional development, environmental awareness) and an intrinsic value to the participant regardless of the tangible outcomes. Public institutions can use such information to stimulate participation among certain socio-economic groups in society to promote, e.g., identity, wellbeing and physical health. Outdoor recreation organizations, forest managers and nature-based tourism businesses, which are often more activity oriented in their approach, can use the information to develop interpretation and marketing tools, product packages and infrastructure to attract more participants, contributing to social inclusion, improved access and regional development.

One key aspect of understanding latent demand is the relationship between expressed interests to participate by those who are not participating and interest for increased participation by those who are current participants (Figure 1). This study found that the most popular activities (defined by current participation) are the ones that non-participants want to engage in most in the future. These activities are also the ones that are the most accessible, partly due to the Swedish Right of Public Access [36], and with the lowest cost of entry: hiking, biking, walking, swimming and gardening. Given that the economics of demand, as expressed by Clawson and Knetsch [16], often drive participation, it is interesting to note that the most demanded activities are also the ones that are the least monetarily defined and there were no significant differences between household incomes for these activities. On the other hand, those activities that are more expensive may have posed a structural constraint to initial entry [23], but once engaged in it may be easier to negotiate subsequent reentry and continued participation [30]. For example, to go skiing or horseback riding requires special equipment that many cannot afford, but once purchased, this barrier is reduced and it is easier to participate at a preferred level in this activity.

To many people holidays imply more discretionary time to engage in outdoor recreation away from home as expressed through tourism. As such, important determinants of demand often include relative prices, transportation cost, ‘quality’ factors of the destination and income [37]. Participation being too expensive often reflects consumers’ budget restrictions, one of the fundamentals of economic analysis. Previous research on constraints applied to nature-based tourism also shows that shortage of money is perceived as the most important constraint [38]. Increasing income (wage rate) could lead to either that people can afford to participate in more recreation activities (income effect), or that the opportunity cost of earnings lost by taking time off from work for leisure encourages people to demand less recreation activities. In this study, it was found that high income is associated only with mountain hiking, jogging, fishing and golf, and it appears that mountain hiking is an *inferior* good (less demanded the higher the income) while jogging and running show normal characteristics (more demanded the higher the income).

6.1. Time Contextualized Constraints to Latent Demand

The study results reveal three categories of constraints with respect to the time contextual approach used for this study (Tables 2 and 3). In the first category constraints were found that are *positively* associated with time, *i.e.*, more commonly reported for holidays versus weekends and weekdays. This category includes (in decreasing order of relative perception): economic costs, physical demands, lack of equipment, and lack of knowledge or instructions. It can be argued that these constraints are somehow related and connected with more expensive activities requiring travel, equipment and knowledge. These activities are typically associated with periods with greater discretionary time rather than everyday periods where time-constrained activities are engaged in. The second category includes constraints which are *neutral* with respect to time. This category includes: the family situation, lack of appropriate places or areas, lack of partner, disability or sickness, and lack of courage. The third category identified includes constraints that are *negatively* associated with time, *i.e.*, more commonly reported for weekdays vs. weekends and holidays. This third category includes only one constraint:

lack of time. However, among the constraints studied, lack of time is by far the most reported one, which has support from many previous studies [39-43].

Lack of time is often difficult to understand and articulate as it has multiple meanings and may follow from other types of constraints. Explanations such as “I don’t have time” may simply be shorthand for saying one is not sufficiently interested or that one’s motivation is low. It can even be so that those who report having the least time are the most active [44]. All people have 24 hours in the day and the lack of time can be seen as an allocation issue coupled with socio-demographic structures such as income. Hence, to better understand the role of time as a constraint to outdoor recreation the current study applied a time contextual approach. The availability of free time is not simply a personal construct including trade-offs between different priorities and benefits to the individual. The irony of modern life is that the amount of free time is increasing while at the same time many people feel that there is never enough time [9]. Godbey argues that we are in the process of moving from being ‘specialists’ in regard to time use (work, family responsibilities, leisure etc.) to becoming ‘generalists’ who multi-task. The logistics of life becomes more complex as the division between work and free time becomes more and more blurred, putting more stress on the individual and the time available feels more limited. These arguments are supported by our results as they show that lack of time is much more of a weekday phenomenon than a holiday constraint and primarily so for more ordinary activities such as walking for pleasure or physical activity and hiking in forest or nature. This finding may appear axiomatic, but is important to consider since it indicates that time is indeed a time contextual constraint, and future research in this field is advised to take temporal circumstances into consideration.

Jackson shows how the relative intensity of time constraints varies across stages in the life cycle, being most significant during middle age combining children, family and work responsibilities [45]. Considerable interest has also been paid to research on women’s lack of time for leisure caused by, e.g., household responsibilities [46]. In this study, no effects on time as a constraint with respect to children in the household were found, but looking at the family situation as a constraint itself, we find it associated with middle aged respondents, which has support in earlier research [42,45].

6.2. *Managing Constraints*

Looking into some of the practical considerations of this study, it is obvious that some constraints are more manageable than others. The family situation, costs, partners, appropriate places or areas, equipment, knowledge and courage are all items that public agencies, forest managers, outdoor organizations and/or tourism businesses should consider in their supply of outdoor recreation opportunities. Measures to make outdoor recreation more gender-equal should be related to information, instruction and social interaction given that the lack of partner and lack of courage appear as female constraints, while the financial constraint is more likely to affect males.

To promote participation among young people one should consider access to appropriate venues, equipment and social interaction, while ways of supplying better opportunities for the elderly imply access to less physically demanding activities. As expected from previous research on constraints related to age [47], physical demands as a constraint are related with increasing age. An interesting observation from this study is also that young people in general perceive many constraints, and perhaps most noticeably, report physical demands as a significant constraint for weekdays. One would

expect young people to be less constrained by physical demands, especially for typical weekday activities such as walking and jogging which are easily accessible with respect to place and cost. Physical inactivity is an important concern in modern society, and future research should look further into this topic. Yet another contemporary issue is the participation in outdoor recreation among different ethnic groups [48]. People with a non-Nordic origin may have significantly different experiences and views of using nature as a place for recreation compared with people from the Nordic countries. Based upon our findings of constraints perceived by individuals with a non-Nordic origin, the measures to improve opportunities for this segment include access to appropriate venues or areas, less physically demanding activities and instruction in order to raise courage.

This study also showed that 14 activities are associated with at least one of the constraints studied. These results provide guidance on how to address latent demand for specific outdoor recreation activities, many of which feature geographical differences in a country like Sweden. Hiking in forests or nature can, for example, be promoted through facilities targeted specifically for disabled people and people with less physical capabilities. Those supplying opportunities for cross-country skiing, hiking in the mountains or on trails in the forest areas outside the mountains, all typical weekend and holiday activities, should consider various social dimensions and target family and group activities. To get more skiers on the slopes, players on the golf courses and horse-back riders, associated organizations should consider their pricing policy since expenditures are found to be a constraint. Finally, the perceived lack of appropriate places for outdoor bathing, cross-country skiing, downhill skiing and diving should provide incentives for investments in new facilities so that recreation supply can better meet demand.

6.3. Conclusions and Future Research

Recreation planning is future oriented which suggests that emphasis should be placed on understanding latent demand and associated barriers to participation. It is not sufficient to assume that present participation equates to future participation, as a variety of constraints will affect demand and subsequent participation. This paper has shown the importance of time contextual temporal constraints as related to latent demand. In this regard, constraints are related to, but not the same as, latent demand. In many constraint models, the aspect of constraint is shown to directly affect demand. However, in reality, many exogenous inputs also affect the constraint-demand relationship such as how income is related to opportunity costs. This study showed that the constraint of time is important to all, but when contextualized, time affects some people more than others based on perception and a number of related social-demographic variables.

The use of stated choice methods as a means to ascertain future participation can, however, be limiting in itself as the choice of constraint variables and how this is interpreted by the individual may be a delimiter to expressed demand. For example, if a person wants to participate more but knows that he or she cannot because of lack of money, this may be expressed as both a structural constraint or an intrapersonal constraint, or not a constraint at all. It is suggested that future research into latent demand incorporate aspects of perceived behavioral control in a more mixed-method approach. In this manner, combining quantitative and qualitative approaches will help to better understand how barriers lead to constraints and to subsequent expression of latent demand.

As for the future, it is also likely that geographical dimensions of outdoor recreation demand and supply will change due to increased urbanization and climate change [49]. Typical winter activities have to be maintained through artificial support and even go indoors as is the case further south in Europe [35]. Concentration of people to larger cities in the south of Sweden will make it more cost efficient for the society to provide green spaces and outdoor recreation opportunities close to where most people live. This can also be an effective means to reach those who would benefit the most from an increased participation in outdoor exercises. Our study has focused on those 46% of the national sample that wish to increase their participation, but without considering what would be the benefits to society. It is often taken as an implicit assumption that participation in outdoor recreation is beneficial beyond the physical activity it involves, but to what extent and under what circumstances that is the case is difficult to measure. We suggest that future research should also take this dimension into account.

Conflict of Interest

The authors declare no conflict of interest.

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