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Friluftslivets utövande, efterfrågan och hinder i Sverige

Sammanfattning

Tidigare forskning har visat att friluftsliv i olika former är en populär sysselsättning hos många svenskar. Men utövandet skiljer sig mellan olika grupper i samhället utifrån exempelvis kön, ålder, bostadsort, familjesituation och inkomst. Det finns många motiv varför människor ägnar sig åt friluftsliv, men både yttre och inre faktorer kan ibland utgöra hinder för att utöva aktiviteter i den utsträckning man önskar. Kunskap om friluftslivets utövande och hinder är därför värdefull för myndigheter och organisationer som vill underlätta för fler att komma ut i naturen och ägna sig åt friluftsliv. Kunskapen kan också vara värdefull för att identifiera nya marknader och ta fram strategier för att få fler kunder inom exempelvis naturturism eller friluftsprodukter. Följande rapport innehåller således en detaljerad studie av svenskarnas deltagande i friluftaktiviteter, deras efterfrågan att öka deltagandet, samt vilka faktorer som hindrar dem från detta. Vi har använt data från en nationell enkätundersökning omfattande 43 olika friluftaktiviteter som besvarades av 1 800 personer i åldrarna 18-75 år. Med hjälp av regressionsanalyser har vi analyserat vilka socioekonomiska faktorer som kan relateras till deltagande, efterfrågan och hinder.

När det gäller svenskarnas *deltagande i friluftsliv* finner vi att de mest populära aktiviteterna (deltagande minst en gång per år) är förhållandevis enkla och vardagliga såsom nöjespromenader, att ströva i skog och mark, trädgårdsarbete, bad och cykling. Över 70 % av alla svenskar har ägnat sig åt dessa åtminstone en gång under 12 månader. Typiskt kvinnliga aktiviteter är stavgång och hästridning, medan jakt, paintball, vattenskoter, dykning och fiske är typiskt manliga aktiviteter. Yngre personer ägnar sig i högre grad åt olika typer av brädsporter, orientering och löpning, men mindre åt trädgårdsarbete. Äldre däremot ägnar sig i högre grad åt skogspromenader, stavgång, turskidåkning, fågelskådning och andra naturstudier. Personer med utländsk bakgrund (utanför Norden) skiljer sig från de med Nordisk bakgrund för 9 av 43 aktiviteter, och vi finner att de i lägre grad ägnar sig åt bl.a. fiske, utomhusbad, båtsport och picknick. Att bo i en storstad ökar sannolikheten för utövande av rullskridskor, rullskidor och cykling, men innebär minskat deltagande i trädgårdsarbete, jakt, hästridning, promenad med hund och snöskoteråkning. Att ha barn under fem år innebär minskat deltagande i 11 av 43 aktiviteter, medan de med barn i åldern 6-12 är mer aktiva i utförsåkning. Utbildning har en positiv effekt på deltagande i samtliga aktiviteter förutom

fiske. En hög inkomst ökar sannolikheten för deltagande i bl.a. trädgårdsarbete, båtsporter, solbad och utförsåkning, medan personer med låg inkomst är mer aktiva i snowboard, mountainbike och turskidåkning.

När det gäller *efterfrågan att öka deltagandet* i friluftsliv finner vi att 46 % av svenskarna vill öka sitt deltagande i en eller flera av de studerade aktiviteterna. Medelålders och äldre är mindre benägna att efterfråga mer friluftsliv jämfört med yngre. Vi finner också att efterfrågan ökar med ökad inkomst. Vi redovisar i rapporten hur efterfrågan inom olika aktiviteter påverkas av socioekonomiska faktorer mer i detalj. När det gäller *hinder* för att realisera önskan att ägna sig mer åt friluftsliv finner vi att tidsbrist är vanligast, under såväl vardagar som helger och längre ledigheter. Därefter kommer familjesituationen, brist på lämpliga platser eller partner. För aktiviteter man ägnar sig åt på längre ledigheter är hög kostnad och fysisk ansträngning också betydelsefulla hinder. Om vi studerar hindren ur olika socioekonomiska perspektiv finner vi att avsaknad av partner eller bristande mod är typiskt kvinnliga hinder, medan män i högre grad är hindrade av höga kostnader. Yngre personer är främst hindrade genom brist på lämpliga platser, saknar partner eller utrustning, medan äldre är hindrade genom sjukdom och funktionshinder. Av de 43 aktiviteterna är 14 förenade med någon form av hinder. Exempelvis är de personer som önskar ägna sig mer åt nöjespromenader i högre grad hindrade av tidsbrist (på vardagar och helger). De som önskar ägna sig mer åt turskidåkning är hindrade av familjesituationen (vardagar) samt brist på lämpliga platser (helger och längre ledigheter). Personer som vill ägna sig mer åt hästridning är i högre grad hindrade av familjesituationen (vardagar), höga kostnader (vardagar och helger) samt brist på utrustning (helger). För utförsåkning däremot är det framför allt under längre ledigheter som människor är hindrade att öka deltagande på grund av höga kostnader och brist på lämpliga platser.

Abstract

This paper takes a broad approach to examine the participation-demand-constraint nexus in outdoor recreation using data from a Swedish national household survey. Results show that the most common activities among the Swedes are characterized by being easy accessible, 'ordinary' and 'simple', demanding no partner, no special equipment, no excessive physical strength or skills. These are also the activities most people demand more of. Both the choice of activity and the recognition of constraints to increase participation are associated with several socio-economic factors, the kind of favoured activity, and the time context within which the activity takes place. Such relationships are further elaborated in this report.

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Introduction

To succeed in adequately manage natural and cultural resources with respect to outdoor recreation benefits, it is crucial to collect relevant and accurate information on supply and demand. It has long been recognized that individuals' consumption of outdoor recreation goods and services is the opportunity to engage in a preferred activity at a certain place that provides the settings required to gain a desired experience (e.g. Driver & Brown, 1978), and that outdoor recreation demand can be interpreted as an individual's preferences or desires whether or not he or she has the resources necessary for their satisfaction. So defined, it reflects behavioral tendencies and assumes no constraints on recreation opportunities or access to them. In the real world, this is seldom the case – if outdoor recreation opportunities are less than ideal, people will participate less than their theoretical level of demand would indicate. Participation in outdoor recreation activities is thus a function of both demand and recreation opportunities, and research on non-participants will help to understand the factual nature of demand (Pigram & Jenkins, 2006).

Motivations to participate in leisure activities are diverse but relatively stable over time (e.g. Manfredo et al., 1996; Manning, 2011), and so are the benefits from participation to individuals and society (e.g. Driver & Burns, 1999). Outdoor recreation opportunities are produced by supply, and when combined with demand factors from the individual, they will result in an experience. The degree that such experiences meet certain expectations will result in a level of satisfaction and certain benefits to individuals and society. Over one hundred such leisure related benefits are identified by Moore & Driver (2005, p. 29) within the categories of personal, social/cultural, environmental and economic benefits. Not all of these apply to participation in outdoor recreation activities, but put differently, few leisure benefits are uniquely dependent on a particular location, outdoor or elsewhere.

Outdoor recreation can both be a public good or service available to residents and a private commodity prized by a market, often in the context of tourism. In the former case, provision of outdoor recreation opportunities is often perceived as a cost to society, and as such subject to political deliberations besides many other public commitments. In the latter case, outdoor recreation activities implies economic activities that may contribute to local development and job creation. In both cases, inappropriate management may result in undesired environmental or social impacts and consequently a non-optimal use of resources. Hence, research on

outdoor recreation participation and associated parameters provide in several ways important information in order to maximize the associated positive benefits while eventually negative impacts are minimized (e.g. Loomis & Walsh, 1997). Natural resource managers need such information for planning purposes to provide appropriate recreation opportunities and avoid associated conflicts. They also need this information to show decision makers the size of recreational benefits compared to costs. To nature based tourism entrepreneurs information on outdoor recreation participation will help identify and analyze market segments, and the success of the outdoor recreation equipment industry is of course depended upon people's interest to participate in these activities.

This paper takes on a broad approach to better understand outdoor recreation participation using data from a Swedish national household survey. The aim is to examine the participation-demand-constraint nexus, with the main research questions being what socio-economic factors are associated with; (i) participation in outdoor recreation and (ii) the demand for increased participation, and (iii) what are the perceived constraints to such increases?

Social correlates of outdoor recreation participation were in focus already in the 1950s and 60s when research on outdoor recreation started to build up as leisure became more generally available, and several studies have shown that socio-economic characteristics only provide a moderate basis for predicting outdoor recreation participation (Kelly, 1980; Manning, 2011). In the current study, we go beyond the description of participation alone and look at the interrelated demand to increase participation and associated constraints, providing new knowledge on the participation-demand-constraint nexus. In the next section, we provide an introduction to some of the theoretical frameworks of relevance for this study, followed by an overview of outdoor recreation statistics in Sweden and a description of the data collection and modeling approach. In the result section, statistically significant determinants are presented with the help of several tables and the paper ends with a discussion on some of the main findings.

Outdoor recreation participation and non-participation

Why do people engage in outdoor recreation, and why do they not? These are two fundamental questions closely linked to the understanding of recreation behaviour. At a first glance the answer to the first question is simply that people select and participate in recreation activities to satisfy certain need and to meet associated goals, but further understanding of contemporary outdoor recreation patterns requires awareness about which these needs and goals are, and even more important – what can possibly prevent them to be fulfilled. For example, based upon Maslow's (1943) widely recognised theory of human needs, Beard and Ragheb (1983) developed a leisure motivation scale which illustrates the broad range of motivations for leisure activities. This model included intellectual components (e.g. learning, exploring, discovery, thought or imagery), social components (e.g. friendship or esteem of others), competence-master components (e.g. achieve, master, challenge, and compete), and stimulus-avoidance components (e.g. desires to escape and get away from over-stimulating life situations). The motivations for outdoor recreation also depend on a wide range of external factors related to e.g. resource availability, access to the physical environment, and as the motivations vary, so does the choice of, and demand for, outdoor recreation participation.

According to Pigram and Jenkins (1999) the term “recreation demand” can be equated with an individual's preferences, whether or not the individual has the economic and other resources necessary for the actual satisfaction. Therefore demand do not refer solely to existing levels and patterns of recreation activity but to a “...*conditional statement of the participation that would result... under a specific set of conditions and assumptions about an individual... and the availability of recreation resources...*” (US Bureau of Outdoor Recreation 1975, pp 10-22). This specific set of conditions can be linked to several types of determinants internally related to the individual, such as demographic, socioeconomic, and situational characteristics (e.g. age, income and time resources) in addition to external factors such as the availability and accessibility of recreation resources. These determinants decide not only the type of recreation activity to be engaged in, but also the level of participation, and they can consequently either facilitate or pose constraints upon people's desires to participate. According to Jackson (1988), the latter can be described as “*anything that inhibits peoples' 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*”.

Motivations and constraints have emerged as central themes in leisure research over the past decades (e.g. Jackson, 2005; Manfredo et al. 1996). Much of this research encircles three categories of constraints – intrapersonal, interpersonal and structural – suggested by Crawford and Godbey (1987). Intrapersonal constraints are defined as individual psychological states such as stress, anxiety, attitudes and perceived self-skill that might inhibit one from participating in leisure activities. Interpersonal constraints result from social interaction with friends, family and others. Structural constraints include economic resources, availability of time and accessibility. Constraints are not to be seen as fixed barriers that lead to non-participation. Involvement in leisure activities is rather dependent on a successful negotiation through the different types of constraints, often including a modification of the level of participation and leisure preferences (Crawford & Godbey, 1987; Jackson et al., 1993; White, 2008). Consequently, there is a close relationship between activity participation, motivations and constraints, and to better understand the former we need to include also the many aspects of non-participation.

Research on motivation and recreation constraints has been applied to many different socio-demographic aspects of contemporary society, such as gender, ethnicity and aging (Jackson, 2005; Manfredo et al., 1996), but also to many different outdoor recreation contexts (Walker & Virden, 2005). For example, the constraint model described above or similar approaches, have been applied in studies of angling (Aas, 1995), hiking (Bialeschki & Henderson, 1988), downhill skiing (e.g. Gilbert & Hudson, 2000) and mountain recreation (Fredman & Heberlein, 2005).

Statistics on outdoor recreation

Surveys on outdoor recreation participation are reported from several countries around the world (e.g. Anon, 2006; Cordell, 2004; Sievänen et al., 2008). A recent European inventory of nation-wide recreation monitoring shows that national household surveys are undertaken in 14 of 25 surveyed countries (Sievänen et al., 2008), and a total of 66 surveys are reported since 1970. In the United States, the national survey on recreation and the environment (NSRE) started in the mid 1960s and have been repeated five times since then. The principal purpose of the NSRE is to describe and explore participation in a wide range of outdoor recreation activities by people 16 or older nationwide (Cordell, 2004).

A primary source of statistics on outdoor recreation in Sweden at a national level is the data collected by Statistics Sweden as part of the national census on living conditions (Statistics Sweden, 2004 and 2009). These surveys have been repeated five times since 1976, but are less comprehensive in terms of activity participation as they only include eight activities (walking for pleasure, forest hiking, gardening, outdoor swimming, boating, fishing, mountain backpacking and hunting). Results from the surveys reported by Statistics Sweden include participation of different socioeconomic groups and trends over time. For example, measures of these activities show that forest hikes, walking for pleasure and gardening are the top three outdoor recreation activities with participation rates above 70 percent (measured as participation at least once during 12 months). These surveys also show that non-native Swedes are participating less in outdoor recreation than native Swedes, and that people living in the north of Sweden are participating more frequently in general.

In addition to the national census, general population surveys on outdoor recreation in Sweden have also been done within various research projects with more specific focuses, e.g. mountain tourism (Heberlein et al. 2002; Fredman & Heberlein, 2003), forest recreation (Lindhagen, 1996; Hörnsten & Fredman, 2000), visits to protected areas (Fredman & Sandell, 2009), hunting and fishing (Mattsson et al., 2008; Fiskeriverket, 2009). During the last decade, the need to better integrate social values in the forest- and environmental policies have been emphasized (e.g. Swedish Government Writ 2001/02:173), and nature tourism has received an increased attention when promoting tourism development. Data from such studies have thus been very useful to facilitate input to natural resources agencies (e.g. the National Board of Forestry, the Swedish Environmental Protection Agency, the National Board of Fishery), outdoor recreation organizations as well as and to tourism organizations. Most of these studies, however, target specific research questions and are restricted to certain activities and/or natural environments and do not provide comprehensive national participation data across a broad range of activities.

Data collection and modeling

The study reported here combines the approaches of the academic studies cited above and the national census of Statistics Sweden. Data for the study is from a national survey on outdoor recreation participation in 43 activities collected by the research program “Outdoor

Recreation in Change” (www.friluftsforskning.se), financially supported by the Swedish Environmental Protection Agency and the state owned forest company Sveaskog. A postal survey was distributed to a national sample of 4700 Swedish citizens (aged between 18-75) from October 2007 to January 2008 with a final response rate, after three reminders (two including a new questionnaire), of 40% (n=1792). A follow-up telephone survey directed to 433 non-respondents indicated that the likelihood of answering the questionnaire was not correlated with the interest for outdoor recreation. See Fredman et al (2008a) for details of the national survey.

For the purpose of our study, *participation* in each activity is defined as *at least once over the last 12 months* except for activities with a participation rate exceeding 70% where *participation* is defined as *at least six times during the last 12 months* (applies 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 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).

Northern Sweden: Living in the northern part of Sweden (where the climate and thus the conditions for outdoor recreation are different from the southern part; defined as postal codes 78 and above); Living outside the northern part of Sweden.

Population centre: Living in a population centre; Living in the countryside (where people are in more direct contact with nature).

Children: No children in the household; Children in the household aged 0-5; 6-12; 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 (10 SEK equals approximately 1 Euro).

Hiking boots: Access to hiking boots (as a marker for interest in outdoor recreation generally); No access to hiking boots.

In our analyses of demand to increase participation we also used multivariate logistic regression with the same independent variables as for the participation model described above. The demand to increase participation in specific activities was estimated only for those

activities that at least 50 respondents had chosen, and in these models the present level of participation for each activity was included as an independent variable. In a similar mode, regression models were estimated to analyze constraints to increase participation to the level demanded, contextualized by estimating separate models for weekdays, weekends and holidays respectively. Gender, age, non-Nordic origin, children in household and household income were used as explanatory variables along with the activities that at least 50 respondents had marked as activities they particularly would like to increase their participation in. Statistical analyses were done in SPSS 15.0, and results presented will focus on odds ratios (OR) for those variables or categories where we found significant ($p < 0.05$) effects.

Results

Outdoor recreation participation

Participation frequencies of the 43 activities studied are reported in Table 1. The most common outdoor activity among the Swedish population, measured as participation at least once a year, is walking for pleasure or exercise, followed by hiking in forest and nature, gardening, sunbathing, outdoor bathing in lake/sea, and biking on roads. These activities all have participation rates exceeding 70 % each. Then there is a big jump in participation rate down to less than 40 % where we find activities such as fishing, cross- or back country skiing, outdoor bathing in pool, bird watching, nature studies, walking with dog, motor-boating, and jogging, running in nature in the 30-40 % interval. Camping, ice-skating, mountain hiking, golf, mountain biking, kayaking, canoeing, diving, snorkeling, and snowmobiling are reported at least once by 10-20 %, while almost half of all activities surveyed are reported by less than 10 % of the population.

Table 1. Logistic regression of participation (at least one^a or six^b times the last 12 months) in outdoor recreation activities. Only significant ($p < .05$) odds ratios (OR) are shown

Activity	Participation at least one time last 12 months	Female	Age	Non-Nordic origin	Northern Sweden	Population centre	Children in the household	Education ¹⁾	Household income ²⁾	Access to hiking boots
Reference category (OR=1)		Male	31-45 years old	Nordic origin	Living in the south of Sweden	Living in the country side	No children	Compulsory school	Low income	No hiking boots
Walking for pleasure or physical activity ^b	92.1%	1.8**						Use: 1.7** Univ: 2.2**		2.0**
Hiking in forest or nature ^b	88.6%	1.6**	46-60: 1.4* 61+ : 2.2**			0.61**				2.8**
Gardening ^b	82.4%	1.3*	-30: 0.40** 46-60: 1.7** 61+ : 3.9**		0.63**	0.31**			Mid: 2.4** High: 2.9**	1.6**
Sunbathing ^b	79.6%	1.9**			0.66**		13-18 yrs: 1.4*		High: 1.8**	
Outdoor bathing in lake/sea ^b	73.9%		-30 : 1.7**		0.68**			Univ: 1.9**	Mid: 1.4* High: 1.9**	1.6**
Biking on roads ^b	72.9%		46-60: 0.66** 61+ : 0.62**		1.4*	1.4**	0-5 yrs: 0.63** 13-18 yrs: 1.3*			1.3*
Fishing ^a	39.2%	0.44**	46-60: 0.68**	0.61*	2.4**		0-5 yrs: 0.68*	Univ: 0.64*	High: 1.4*	1.5**
Cross- or back-country skiing ^a	39.2%		46-60: 1.7** 61+ : 1.7*		2.7**		0-5 yrs: 0.67**	Univ: 2.9**		2.2**
Outdoor bathing in pool ^a	38.2%	0.80*	-30 : 1.7** 46-60: 0.58** 61+ : 0.45**	0.65*			0-5 yrs: 0.64** 13-18 yrs: 0.61**		High: 1.4**	
Bird watching, nature studies ^a	37.8%	1.3**	46-60: 1.6** 61+ : 2.4**			0.72**		Use: 1.4* Univ: 1.7**		1.8**
Walking with dog ^a	37.5%	1.6**	-30 : 2.4** 46-60: 0.71*	0.62*		0.60**	0-5 yrs: 0.71*	Use: 1.4*		1.5**
Motor-boating ^a	36.3%	0.62**	-30 : 1.5* 46-60: 0.69**	0.43**	1.5**			Use: 1.5* Univ: 1.4*	High: 1.8**	1.4**
Jogging / running in nature ^a	34.9%	0.58**	-30: 2.5** 46-60: 0.54** 61+ : 0.27**				0-5 yrs: 0.65**	Use: 1.8** Univ: 2.5**		1.7**
Hiking on trail outside mountain region ^a	29.6%		-30 : 2.0** 61+ : 1.5*					Use: 1.8** Univ: 2.1**	Mid: 1.4*	3.0**
Riding a sledge ^a	27.0%		46-60: 0.42** 61+ : 0.29**				6-12 yrs: 1.7** 13-18 yrs: 0.34**			1.4*
Nordic walking ^a	24.9%	4.5**	46-60: 2.1** 61+ : 2.8**		1.6**	0.67**	13-18 yrs: 1.5*	Use: 1.6*		1.4*

Table 1 cont.

Activity	Participation at least 1 time last 12 months	Female	Age	Non-Nordic origin	Northern Sweden	Population centre	Children in the household	Education ¹⁾	Household income ²⁾	Access to hiking boots
Reference category (OR=1)		Male	31-45 years	Nordic origin	Living in the south	Living in the country side	No children	Compulsory school	Low income	No hiking boots
Downhill skiing ^a	22.3%	0.74*	46-60: 0.69* 61+ : 0.39**		1.5*		0-5 yrs: 0.43** 6-12 yrs: 1.5*	Univ: 2.4**	High: 1.5*	1.6**
Picnic, barbeque ^a	21.5%	1.7**	46-60: 0.51* 61+ : 0.47**	0.52**		0.72*	0-5 yrs: 0.63*	Use: 1.7** Univ: 2.1**		1.7**
Camping ^a	19.5%	0.70**	46-60: 0.70* 61- : 0.44**							1.8**
Ice-skating ^a	19.4%	0.73*	46-60: 0.71* 61+ : 0.59*		1.6**		0-5 yrs: 0.65*	Use: 2.2** Univ: 3.1**		2.0**
Mountain hike ^a	15.7%				2.1**			Use: 1.7* Univ: 1.8*		3.7**
Golf ^a	14.5%	0.52**	46-60: 0.62** 61+ :0.61*				13-18 yrs: 1.6*	Use: 1.7* Univ: 2.0**	High: 1.7**	
Mountain biking ^a	13.4%	0.61**	46-60: 0.67*					Use: 1.7* Univ: 2.3**	Mid: 0.60** High: 0.54**	1.7**
Kayaking, canoeing ^a	12.2%	0.69*	-30 : 1.6* 61+ : 0.37**					Univ: 2.6**		2.1**
Diving, snorkelling ^a	11.1%	0.44**	46-60: 0.41** 61+ : 0.27**				0-5 yrs: 0.55**			2.2**
Snowmobiling ^a	10.5%	0.54**			8.7**			Use: 2.2**		1.6*
Meditate, yoga ^a	9.8%	2.1**		1.8*				Use: 1.9*	Mid: 0.61* High: 0.58**	1.6*
Sailing, windsurfing, surfing ^a	8.9%	0.65*						Univ: 3.8**	High: 1.9**	1.5*
Hunting ^a	8.5%	0.18**			1.8**	0.35**				2.8**
Horse-back riding ^a	7.4%	4.0**	46-60: 0.57* 61+ : 0.17**			0.57**				1.6*
Rock-climbing, mountaineering ^a	7.2%		61+ : 0.37**						Mid: 0.46**	2.5**
Rollerblades, roller-skies ^a	6.8%	0.64*	46-60: 0.25** 61+ : 0.18**			1.8*				1.9**
Orienteering ^a	5.5%		-30 : 2.7**	2.4**	1.8*					2.4**
Water-ski, wakeboard ^a	4.7%	0.52**	-30 : 3.2** 61+ : 0.32*				0-5 yrs: 0.45*			2.2**
Paintball, outdoor play ^a	4.3%	0.23**	-30 : 5.8** 46-60: 0.30** 61+ : 0.22*							

Table 1 cont.

Activity	Participation at least 1 time last 12 months	Female	Age	Non-Nordic origin	Northern Sweden	Population centre	Children in the household	Education ¹⁾	Household income ²⁾	Access to hiking boots
<i>Reference category (OR=1)</i>		<i>male</i>	<i>31-45 years</i>	<i>Nordic origin</i>	<i>Living in the south</i>	<i>Living in the country side</i>	<i>No children</i>	<i>Compulsory school</i>	<i>Low income</i>	<i>No hiking boots</i>
Snowboarding ^a	3.8%		-30 : 5.6** 46-60: 0.25** 61+ : 0.06*		3.3**				High: 0.41*	
Water-scooter, jetski ^a	2.6%	0.34**								
Skateboard ^a	2.2%		-30: 4.7**				0-5 yrs: 0.24**			
Snowshoeing ^a	1.8%			4.0**	5.2**					2.4*
Fly sail- or sportsplane ^a	1.7%									
Geocaching ^a	1.3%			3.6*						
Hang-gliding, base-jumping, parachuting ^a	1.3%						13-18 yrs: 0.27*			
Dog-sledging ^a	1.1%									

¹⁾ Use=upper secondary school; Univ=university education; ²⁾ Low=up to 20 000 SEK/month, Mid(dle)=21-30 000 SEK/month, High=more than 30 000 SEK/month (1 USD ≈ 7 SEK); * P<.05; ** P<.01

Figures reported above are helpful to get the broad picture of outdoor recreation participation in Sweden, but give no information regarding variations among sub-groups of the surveyed population. To bring some light on these matters regression models were estimated for participation in each activity respectively, using the nine socio-economic factors described above as independent variables.

First, looking at gender, we find significant relationships with participation in almost two thirds of all activities analyzed. Activities with a strong female dominance ($OR > 2$) are Nordic walking, horse-back riding and meditation, yoga, while typical male activities ($OR < 0.5$) are hunting, paintball, outdoor play, water-scooter, jetski, diving, snorkeling, and fishing. Gender neutral activities with relatively high participation rates ($> 25\%$) are outdoor bathing, biking on roads, cross- or backcountry skiing, hiking on trail outside the mountain region, and riding a sledge.

Besides gender, age is the factor that has impact on participation to most activities. Using individuals in age 31-45 years as the reference category, younger people do considerable more ($OR > 2$) of paintball, outdoor play, snowboarding, skateboarding, water-skiing, wakeboarding, orienteering, walking with dog, jogging/running in nature, and hiking on trail outside the mountain region. The only activity which is significantly less done by the younger group is gardening. For jogging, running as well as outdoor bathing in pool, camping and snowboarding there is a trend of decreasing participation by age, whereas we observe the opposite for gardening. Other activities that are more popular with increasing age are hiking in forest or nature, Nordic walking, cross- or back-country skiing, and bird watching, nature studies. Relatively common activities that are not significantly affected by age are walking for pleasure or exercise, sunbathing, and mountain hiking.

For 80 % of all activities analyzed, respondents of a non-Nordic origin (or with parents of a non-Nordic origin) do not differ compared to native Swedish respondents. Lower participation rates are found for fishing, outdoor pool bathing, walking with dog, motorboating, and picnic, barbeque, while participation in meditation, yoga, orienteering, snowshoeing and geocaching is higher compared to native Swedish respondents.

People living in the northern parts of Sweden are more likely to participate in typical winter activities such as snowmobiling, snowshoeing, snowboarding and cross-country skiing, but are less likely to do gardening, sunbathing and outdoor bathing in lake or sea. People in the north are also more likely to participate in extractive activities like fishing and hunting compared to people living in the south of Sweden.

Living in population centers increase the likelihood of participation in rollerblades, roller-skies and biking on roads, but decrease the probability of participation in activities such as gardening, hunting, horse-back riding, walking with dog, and snowmobiling.

People with small children (0-5 years old) in the household are less likely to participate in eleven of the activities, e.g. skateboarding, downhill skiing, water-skiing, diving, and biking on roads. Those having children in the age of 6-12 years old are more active in downhill skiing than others, but do less in sledge-riding. Having 13-18 years olds in the household also decrease participation in outdoor bathing in pool, and hang-gliding, base-jumping or parachuting, but increase the probability of participation in golf, Nordic walking, walking with dog, biking on roads, and sunbathing.

Education had an effect on half of all activities studied, and for all of these, except fishing, education had a positive effect on participation rates. People with education above the compulsory school are more likely to go walking, hiking and jogging generally. Those with upper secondary school are, compared to people with less education, in particular more into ice-skating, snowmobiling, hiking on trail outside mountain region, jogging/running in nature, mountain biking, golf, mediation, yoga, and downhill skiing (OR>1.7). People with a university degree are characterized to be more likely into sailing, wind-surfing, surfing, ice-skating, kayaking, canoeing, cross- or back-country skiing, jogging, running in nature, mountain biking, downhill skiing, walking for pleasure or physical activity, hiking on trail outside the mountain region, picnic, barbeque, outdoor bathing in lake/sea and golf (OR>2.0).

Thirteen activities were affected by income, and most of them positively associated with higher incomes, e.g. gardening, outdoor bathing in lake/sea, sailing, windsurfing, surfing, motor-boating, sunbathing, golf and downhill skiing (OR>1.5). Low income respondents are

more likely to participate in snowboarding, mountain biking, meditation, yoga, and cross- or back-country skiing.

Considering access to hiking boots as a marker for outdoor recreation personalities, we find three quarters of all activities studied positively associated with this item. Different forms of hiking are perhaps the most obvious examples, but other activities with high likelihood of participation among those with access to hiking boots are hunting, rock-climbing and mountaineering (OR>2.5). There is no activity which people with access to hiking boots are less likely to participate in.

Demand for increased participation

When asked about the desire to increase participation in outdoor recreation activities, 46% of the respondents answered they want to increase their participation in at least one of the 43 activities studied (Table 2). Middle aged and older people, as well as those with a non-Nordic origin, are less likely to demand an increase, while education is positively associated with an increased demand.

Looking at the desire to increase participation as a function of present activity participation, we find that hiking in forest or nature along with walking for pleasure or physical activity are not only the most frequent activities, they are also the activities that most people would like to do more of (10% and 9% respectively of the respondents), regardless of the present participation level (including those that did not participate at all). Other activities that people would like to increase regardless of the present level of participation are biking on roads, outdoor bathing in lake/sea and gardening – all activities that many people do in their home region with little demand for specific equipment or facilities.

Other activities that people would like to increase are dependent upon present participation. For example, those that participated in mountain hiking 1-5 times would like to increase their participation compared to those that did not hike at all, but there is no equivalent demand to increase participation among those that already participate six times or more. The odds ratios for jogging / running in nature, downhill skiing and horse-back riding do not change very much with present level of participation, while they increase with present participation for fishing, cross- or back-country skiing, and golf. Consequently, for the former group of

activities there is a more even demand to increase the participation once you have tried them (participated at least once) while for the latter group higher participation rates seem to trigger a demand for even more participation.

Age affect the demand for an increased participation primarily in a negative way. The only activity where age is having a positive effect on the demand for an increased participation is for jogging / running in nature among respondents of age 30 or below. People in the interval 46-60 years old are less likely to demand an increase in downhill skiing, fishing and gardening (compared to those of age 31-45), and people of age 60 or older are less likely to demand an increase in walking for pleasure or physical activity, mountain hike, jogging / running in nature, downhill skiing and fishing.

Looking at differences between men and women, we find that women in particular wish to increase their participation in horse-back riding, hiking in forest and nature, hiking on trail outside the mountain region and walking for pleasure and physical activity, but they are significantly less interested to increase their participation in fishing. The effect of education on the demand to increase participation is positive for activities such as hiking in forest or nature, walking for pleasure or physical activity, mountain hike and outdoor bathing in lake / sea.

People in households with middle level of income are significantly more interested to increase their participation in fishing and golf compared to those with lower or higher income. A demand to increase participation in mountain hike is more likely among low income respondents, while middle and high income respondents are less likely to demand an increased participation in this activity. The high income respondents are significantly more likely to demand an increased participation in jogging / running in nature (OR=2.3) than other income groups.

Table 2. Logistic regression of the demand to increase participation in outdoor recreation activities. Only significant ($p < .05$) odds ratios (OR) are shown

Activity	Demand an increased participation (n=1792)	Present participation	Female	Age	Non-Nordic origin	Northern Sweden	Population centre	Children in the household	Education ¹⁾	Household income ²⁾	Access to hiking boots
Reference category (OR=1)		No participation	Male	31-45 years old	Nordic origin	Living in the south of Sweden	Living in the country side	No children	Compulsory school	Low income	No hiking boots
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	10%		2.4**						Use: 2.4* Univ: 2.5*		
Walking for pleasure or physical activity	9%		1.8**	60+ :.46**			1.9**		Use: 2.3* Univ: 2.4*		
Mountain hike	7%	1-5: 3.0**		60+ :0.45*		1.7*			Univ: 3.3**	Mid: 0.56* High: 0.47**	
Jogging / running in nature	7%	1-5: 3.7** 6+ : 3.5**		-30: 1.9** 60+ : 0.22**						High: 2.3**	
Downhill skiing	6%	1-5: 2.0* 6+ : 2.4**		46-60: 0.36** 60+ : 0.13**							
Fishing	5%	1-5: 2.3* 6+ : 7.4**	0.19**	46-60: 0.50* 60+ : 0.35**						Mid: 2.0*	0.47**
Biking on roads	4%										
Cross- or back-country skiing	4%	1-5: 2.9** 6+ : 4.8**									
Horse-back riding	4%	1-5: 10.2** 6+ : 13.3**	4.4**								2.2**
Golf	3%	1-5: 11.0** 6+ : 28.0**								Mid: 3.0*	
Outdoor bathing in lake/sea	3%				2.4*				Univ: 3.2*		
Hiking on trail outside mountain region	3%	1-5: 3.5**	1.9*								
Gardening	3%			46-60: 0.43*			0.49*				0.46*

¹⁾ Use=upper secondary school; Univ=university education; ²⁾ Low=up to 20 000 SEK/month, Mid(dle)=21-30 000 SEK/month, High=more than 30 000 SEK/month (1 USD ≈ 7 SEK); * P<.05; ** P<.01

The only significant activity for respondents with other than a Nordic origin is outdoor bathing in lake or sea – this group being more likely to demand an increased participation in this activity. People living in the north of Sweden are more likely to demand an increase in mountain hike compared to people living elsewhere in Sweden. People living in population centers are more interested to increase their participation in walking for pleasure or physical activity, but less interested to increase their participation in gardening. We found no significant effect from having children in the household with respect to the demand to increase participation in the outdoor recreation activities studied. People with access to hiking boots are more likely to demand an increase in horse-back riding, but less likely to demand an increase in fishing and gardening.

Constraints to increase participation

Next, our results will focus upon perceived constraints to increase participation in the activities reported above. Table 3 reports regression results for each of the ten constraints studied separated for three different context; weekdays, weekends and holidays. First, looking at the proportion of the respondents (with a demand to increase participation in one or more activities; n=802) that score the different constraints during weekdays, weekends and holidays respectively, we find that lack of time is by far the most frequently reported constraint. For weekdays, 48% report this constraint, while 37% report it for weekends and 26% for holidays. The second most reported constraint for both weekdays and weekends is family situation followed by lack of appropriate places/areas and lack of partner. For holidays, the second most reported constraints are related to costs and physical demands.

The family situation is perceived less of a constraint among those of age up to 30 years old, and those of age 46 and older. People with children in the household of age 6-12 years old and teenagers (13-18 years old) also consider the family situation less of a constraint. The family situation is, however, considered a constraint among those with kids of age 0-5 years old during weekends. Looking at the activities, the family situation is perceived as a constraint among those who want to increase their participation in fishing, cross- or backcountry skiing or horse-back riding on weekdays, and mountain hiking or diving, snorkeling on holidays. It is not a constraint for any particular activity during weekends.

The economic constraint (too expensive) is less reported for weekends among women and people with children aged 0-5 years in the household. It is significantly less considered a constraint among those with high income during weekdays and during weekends, and the later also holds for those with middle level income. Walking for pleasure or physical activity, jogging/running in nature and hiking in forest and nature are not sensitive to the economic constraint, while horse-back riding, golf, diving, snorkeling and downhill skiing are. None of the demographic variables analyzed are associated with the economic constraint during holidays.

As expected, too physical demanding is related to age, but not as obvious as disability and sickness. We find that people in the age group 46-60 years old to a larger extent report this constraint for weekdays, and that people in the age group 60 years old or above to a larger extent report this constraint both for weekdays and weekends. Interestingly, we also find that respondents of age up to 30 years old report too physical demanding to a larger extent during weekdays. Respondents with a non-Nordic origin also report this as a constraint to a larger extent than respondents with a Nordic background for weekdays and weekends. Just like for disability or sickness, high income groups report the physical demand as a constraint to a lesser extent during holidays. Those that want to increase their participation in jogging/running in nature are more constrained by the physical demands for weekdays, and the same conclusion is valid for hiking in forest or nature during holidays. Overall, this constraint is reported more frequently for holidays compared to weekdays.

Table 3. Logistic regression of constraints to increase participation in outdoor recreation activities. Only significant ($p < .05$) odds ratios (OR) are shown

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 old</i>	<i>Nordic origin</i>	<i>No children</i>	<i>Low income</i>	<i>Not demanding an increase in specific activity</i>
Lack of time	Weekdays	48%		60+ : 0.38**			High: 1.9**	Walking for pleasure or physical activity: 1.9**
	Weekend	37%		60+ : 0.31**			High: 2.7**	Hiking in forest or nature: 1.8* Walking for pleasure or physical exercise: 1.9*
	Holiday	26%		60+ : 0.31**			Mid: 1.7* High: 2.1**	Outdoor bathing 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* Horse-back riding: 3.4*
	Weekend	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**	
	Holiday	16%		-30: 0.23** 46-60: 0.45**		6-12 yrs: 0.54* 13-18 yrs: 0.36**	Mid: 2.3* High: 3.0**	Mountain hike: 1.8* Diving, snorkelling: 2.9**
Too expensive	Weekdays	7%					High: 0.28**	Walking for pleasure or physical activity: 0.36* Jogging/running in nature: 0.14** Horse-back riding: 10.4**
	Weekend	14%	0.59*			0-5 yrs: 0.52*	Mid: 0.55* High: 0.41**	Hiking in forest or nature: 0.10** Golf: 2.4* Horse-back riding: 7.4**
	Holiday	24%						Hiking in forest or nature: 0.14** Diving, snorkelling: 5.0** Downhill skiing: 3.8**
Too physical demanding	Weekdays	7%		-30: 3.4* 46-60: 3.4* 60+ : 16.5**	3.1*			Jogging/running in nature: 8.0**
	Weekend	14%		60+ : 5.7**	4.7**			
	Holiday	24%					High: 0.23*	Hiking in forest or nature: 3.4*

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 increase of specific activity</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*
	Weekend	15%		-30: 1.8* 60+ : 0.40*				Walking for pleasure or physical activity: 0.29* Cross- or back-country skiing: 3.6** Horse-back riding: 0.13*
	Holiday	15%		-30: 1.9*		0-5 yrs: 0.48*		Outdoor bathing in lake/sea: 2.5* Diving, snorkelling: 3.0* Cross- or back-country skiing: 4.9** Downhill skiing: 2.3*
Lack of partner	Weekdays	11%		-30: 2.7**				
	Weekend	15%	1.8**			0-5 yrs: 0.54* 13-18 yrs: 1.8*		
	Holiday	15%		-30: 2.3**		0-5 yrs: 0.54*		Mountain hike: 2.0* Hiking on trail outside mountain region: 3.7**
Lack of equipment	Weekdays	6%		-30: 2.5*		0-5 yrs: 0.23**		Walking for pleasure or physical activity: 0.23* Jogging/running in nature: 0.24* Biking on roads: 2.8* Horse-back riding: 5.2*
	Weekend	12%		-30: 2.2*	0.27*	0-5 yrs: 0.50*	High: 0.52*	Walking for pleasure or physical activity: 0.21*
	Holiday	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*	
	Weekend	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*
	Holiday	7%		46-60: 2.3* 60+ : 3.5**	2.5*		Mid: 0.41* High: 0.38**	Hiking in forest or nature: 2.7*
Lack of knowledge / education	Weekdays	3%				0-5 yrs: 0.25*		
	Weekend	6%		-30: 2.5*				
	Holiday	7%		60+ : 0.19**		6-12 yrs: 2.4*		
Lack of courage	Weekdays	4%			3.8**			
	Weekend	3%				6-12 yrs: 3.5*		
	Holiday	4%	2.6*			0-5 yrs: 0.30* 6-12 yrs: 2.8*		

¹⁾ Low=up to 20 000 SEK/month, Mid(dle)=21-30 000 SEK/month, High=more than 30 000 SEK/month (1 USD ≈ 7 SEK); ²⁾ Activities with a demand for increase; * P<.05; ** P<.01

A perceived lack of appropriate places/areas is more common among the youngest age category (up to 30 years old) for all three contexts (weekdays, weekends and holidays), while it is significantly less of a constraint for those above 60 years old during weekends. Lack of suitable places is also perceived as a constraint among people with a non-Nordic origin during weekdays, while those having children of age 0-5 years old in the household to a lesser extent perceive this as a constraint during holidays compared to those with no kids under age of 18. Looking at the demand to increase participation in specific activities, a perceived lack of suitable places/areas is 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 horse-back riding (weekends). It is, however, perceived as a constraint among those who want to increase their participation in outdoor bathing in lake/sea (holidays), cross- or back-country skiing (weekends and holidays), diving, snorkeling (holidays), and downhill skiing (holidays).

Participation in some of the outdoor recreation activities will benefit from a partner, and a lack of partner is perceived as a constraint among females (weekends) and for people 30 years of age or younger (weekdays and holidays). Having teenagers (13-18 years old) in the household will also imply that lack of partner is perceived as a constraint, while those with small kids (age 0-5 years old) perceive lack of partner less of a constraint during weekends and holidays. A lack of partner do not seems to be a constraint during weekdays and weekends for any particular activity, but for holidays people interested to participate more in mountain hiking and hiking on trails outside the mountain region report this as a constraint more than for other activities.

Lack of equipment is perceived as a constraint among people of age 30 or below, while it is less of a constraint among people with kids in the age of 0-5 years old in the household. During weekends, we also find that respondents with a non-Nordic origin and those with a high income report lack of equipment to a lesser extent. A lack of equipment is less of 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 considered a constraint to a larger extent among those who want to increase their participation in biking on roads or horse-back riding during weekdays, and sailing, windsurfing or surfing during holidays.

It is quite obvious that disability or sickness is a constraint related to age, during weekdays as well as weekends and holidays. For the age group 46-60 years old the odds ratios are in the interval 2.0-3.3 and for the group of age 60 or above they are in the 3.5-8.0 intervals. We also find that disability or sickness is less of a constraint among the high income groups. Looking at the activities, we find that those demanding an increase in hiking in forest or nature during weekends and holidays, and those demanding an increase in walking for pleasure or physical activity during weekends do to a larger extent report this constraint. More adventurous activities with higher physical demands such as jogging, downhill skiing, diving etc are not particularly mentioned in this context.

Lack of knowledge/education is reported by relatively few respondents and is not connected to any specific activity. It is perceived more of a constraint among people of age 30 and below (weekends) as well as individuals in households with kids in the age 6-12 years old (holidays). It is considered less of a constraint among people of age 60 or above (holidays) and individuals in households with kids in the age 0-5 years old (weekdays).

Finally, lack of courage is another constraint that relatively few respondents have reported. Females are more constrained by this with respect to holidays and respondents with a non-Nordic origin for weekdays. Individuals living in households that have kids in the age 6-12 years old do also report this constraint to a larger extent (weekends and holidays), while kids in the age 0-5 years old seems to imply lack of courage to be less of a constraint during holidays. We find no activities being significantly related to this constraint.

Looking at the constraints from a socio-economic perspective, we find that lack of partner (weekends) and lack of courage (holidays) appear as *female constraints*, while the economic constraint is more likely to affect males. *Younger individuals* (age 30 or below) are primarily constrained by lack of appropriate places / areas, lack of partner, and lack of equipment, while *older people* (age 60 or above) are mostly constrained by disability/sickness and physical demands. Individuals with a *non-Nordic origin* are primarily constrained by lack of appropriate places / areas, physical demands and lack of courage during weekdays and weekends, while disability / sickness may limit this group for holidays. Having *children in the household* seems to be less of a constraint, except for those individuals living in households with 6-12 years olds where lack of education and lack of courage is more likely a constraint.

Individuals living in households with a *high income* level are more likely to be constrained by lack of time and the family situation, but less likely constrained by expenses, lack of equipment and disability / sickness.

Activity related constraints

Considering the outdoor recreation activities studied, we find that 14 activities are associated with at least one constraint. These relationships are summarized in Table 4. For example, the demand to increase participation in walking for pleasure or physical activity is more likely to be constrained by lack of time (weekdays and weekends) and disability / sickness (weekends), while it is less likely to be constrained by large expenses (weekdays), lack of appropriate places / areas (weekdays and weekends) or lack of equipment (weekdays and weekends). The demand to increase participation in cross- or backcountry skiing is, consequently, more likely to be constrained by the family situation (weekdays) and lack of appropriate places / areas (weekends and holidays), the demand to increase mountain hiking is constrained by the family situation and lack of partner (both during holidays), while the an increased participation in golf is more likely constrained by high expenses (weekends). An increased participation in jogging and running in nature, as an example of a quite 'simple' less equipment demanding 'weekday'-activity, is less likely to be constrained by costs, lack of appropriate places / areas or equipment, but mote likely to be constrained by physical demands. Contrary, an increased demand for horse-back riding is more likely constrained by the family situation (weekdays), high costs (weekdays and weekends) and lack of equipment (weekdays), while it is less likely constrained by a lack of appropriate places or areas during weekends.

Table 4. Significant relationships between demands to increase activity participation and constraints (A: OR>1 during weekdays; a: OR<1 during weekdays; B: OR>1 during weekends; b: OR<1 during weekends; C: OR>1 during holidays; c: OR<1 during holidays)

Activity	Lack of time	Family situation	Too expensive	Too physical demanding	Lack of appropriate places / areas	Lack of partner	Lack of equipment	Disability / sickness
Walking for pleasure or physical activity	A, B		a		a, b		a, b	B
Hiking in forest or nature	B		b, c	C				B, C
Outdoor bathing in lake/sea	c				C			
Biking on roads					a		A	
Fishing		A						
Cross- or back-country skiing		A			B, C			
Jogging / running in nature			a	A	a		a	
Hiking on trail outside mountain region						C		
Downhill skiing			C		C			
Mountain hike		C				C		
Golf			B					
Diving, snorkeling		C	C		C			
Sailing, windsurfing, surfing							C	
Horse-back riding		A	A, B		b		A	

Discussion

In this paper we have taken a broad approach to examine the participation-demand-constraint nexus of outdoor recreation in Sweden. We have identified several socio-economic factors associated with participation and demand for an increased participation as well as constraints to such increases and how they are related to different socio-economic groups in the Swedish society. There are many results from this kind of study that can be highlighted, and some of them should preferably be subject to additional investigation. One objective of our approach is to provide an empirical overview that can function as a point of departure for further research. By surveying participation in 43 outdoor recreation activities nationwide we attain a comprehensive set of data that cover a much wider spectrum of activities than the national census does with better opportunities to analyze these in relation to more specific topics included in the survey questionnaire.

A general conclusion we make is that the most common outdoor recreation activities among Swedes are ‘ordinary’ and ‘simple’, demands no partner, no special equipment, no excessive physical strength or skills, and these activities are in many aspects easily accessible. However, the pattern of participation is diversified and socio-economic characteristics seem to determine the choice of activity to a large extent. Women are for example more into simple activities without much need for equipment (except for animal related activities like horse-back riding), while men prefer faster and more adventurous activities with a greater need for equipment. There are also important dissimilarities related to age, and place matters since the natural conditions for outdoor activities in Sweden differ geographically. Younger people are evidently more into physically demanding activities in comparison to older people, and individuals living in the northern part of the country are more into snow-related activities. To generalize, younger people with no children but access to hiking boots, with high income and a high education are more likely to participate in outdoor recreation than other groups. Even though the Swedish participation levels in an international comparison are relatively high (Cordell 2004, Sievänen, 2008), almost half of the respondents in our survey report a desire to increase their participation, and our results support the hypothesis that demand reflects behavioral tendencies and that participation is a function of both demand and recreation opportunities. Regardless of the present participation level, the most popular activities (walking and hiking) are also the ones people would like to do more of, and we also find a greater demand for easily accessible activities. Other activities that people would like to

increase are dependent upon the present level of participation, and these are all activities that require a certain level of skill and/or investment in special equipment. In the case of mountain hiking and hiking on trails outside the mountain region, a moderate participation level triggers a demand for more participation compared to those who do not participate or already participate a lot who are less likely to demand an increase. Hence, people trying out these activities are likely to get hooked.

Just like the patterns of participation the recognition of constraints to increase participation vary along with different socio-economic factors. In general, we find that structural and interpersonal constraints seem to be more common than intrapersonal constraints. Among the constraints studied, lack of time is by far the most reported one. Lack of time, however, is hard to give a straight interpretation, has multiple meanings (Godbey, 2005), and may follow from other types of constraints, but nevertheless reflects a common dilemma in modern societies. Explanations such as “I don’t have time” may simply be short hand for saying one is not sufficiently interested or that one’s motivation is low. We all have 24 hours in the day and the lack of time may be an allocation issue. The family situation is also quite frequently reported as a constraint to outdoor recreation, in particular during weekdays and weekends. Just like lack of time, the family situation could mirror several related constraints not measured in this study. The view upon the preferred activity as being too physical demanding is also an apparent limitation for many people.

We also find that socio-economic factors alone do not explain the variations in constraints as they are also activity related and time contextual (weekdays, weekends, and holidays). The economic constraint (too expensive) for example, is gradually constraining people more the longer the time off, i.e. least for weekdays and most for holidays. This factor is also perceived as a constraint for more expensive activities such as horse-back riding and golf, but not for simple activities such as walking or hiking. Lack of a partner is, interestingly, perceived as a constraint especially for hiking during holidays and something that people prefer not to do alone. Both a lack of partner and a lack of appropriate places are manageable to a certain degree which should send a message to public agencies and nature tourism organizations – particularly those dealing with public beaches, cross- and back country skiing, downhill skiing and hiking. Yet another activity related conclusion to make from this study is that organizations looking for more participation in fishing, cross country skiing, mountain hiking,

diving, snorkeling and horse-back riding should consider to become more family oriented in their supply, while those dealing with downhill skiing, golf, diving and horse-back riding probably can increase participation if the price is lower.

The merits of the broad cross-sectional approach taken in this paper will of course come together with several limitations. There are most likely additional socio-economic factors that could affect participation not included in this study, and the number of constraints was limited to ten categories. Another definition of participation for the dependent variable in the logistic regressions may also have produced different results. Neither will the study capture the dynamics of outdoor recreation participation other than indirectly. For example, current changes in the Swedish society with respect to urbanization, immigration, public health and regional economic development could very well be associated with changing recreation patterns, but in order to study such relationships one need longitudinal data. Indications of changing outdoor recreation behaviors are indeed reported from several sources (e.g. Gartner & Lime, 2000; Fredman & Heberlein, 2003; Pergams & Zaradic, 2006; Cordell, 2008; Kardell, 2008; Odden, 2008) and the baseline data collected for this study will provide opportunities to better monitor changes in outdoor recreation participation, demand and constraints in the future.

References

- Aas, O. (1995). Constraints on sport fishing and effect of management actions to increase participation rates in fishing. *North American Journal of Fisheries Management* 15:631-638.
- Anon. (2006). *Monitoring Outdoor Recreation in the Nordic and Baltic Countries*. Tema Nord, 2006:530. Nordic Council of Ministers, Copenhagen.
- Beard, J. & Raghob, M. G. (1983). Measuring leisure motivation. *Journal of Leisure Research*, 15 (3), 219-228.
- Bialeschki, M. D. & Henderson, K. A. (1988). Constraints to Trail Use. *Journal of Park and Recreation Administration*, 6:20-28.
- Cordell, H. K. (principal author) (2004). *Outdoor recreation for 21st century America*. State College, PA: Venture Publishing; 293 pp.
- Cordell, K. (2008). The Latest Trends in Nature-based Outdoor Recreation. *Forest History Today*, Spring 2008: 4-10.
- Crawford, D. & Godbey, G. (1987). Reconceptualizing barriers to family leisure, *Leisure Sciences*, 9, pp.119-127.
- Driver, B., & Brown, P. (1978). *The opportunity spectrum concept in outdoor recreation supply inventories: A rationale*. Proceedings of the Integrated Renewable Resource Inventories Workshop. USDA Forest Service General Technical Report R55,24-31.
- Driver, B.L. & Burnes, D.H. (1999). Concepts and Uses of the Benefits Approach to Leisure. In: Jackson, E.L. & Burton, T.L. (Eds.) *Leisure Studies. Prospects for the Twenty-First Century*. Pennsylvania: Venture Publishing.
- Fiskeriverket, (2009). *Fem studier av fritidsfiske 2002-2007*. Fiskeriverket informerar, Finfo 2009:1, Göteborg, Sverige.
- Fredman, P., Gössling, S. & Hultman, J. (2006). Sweden: Where Holidays Come Naturally. In: Gössling, S. & Hultman, J. (Eds.) *Ecotourism in Scandinavia: Lessons in Theory and Practice*. Wallingford: CAB International.
- Fredman, P. & Heberlein, T.A. (2003). Changes in Skiing and Snowmobiling in Swedish Mountains. *Annals of Tourism Research*, 30(2), 485-488.
- Fredman, P. & Heberlein, T. (2005). Visits to the Swedish mountains: Constraints and motivations. *Scandinavian Journal of Hospitality and Tourism*, 5(3), 177-192.
- Fredman, P., Karlsson, S-E, Romild, U. & Sandell, K. (red.) (2008a). *Vilka är ute i naturen? Delresultat från en nationell enkät om friluftsliv och naturturism i Sverige*. Forskningsprogrammet Friluftsliv i förändring, rapport nr. 1: www.friluftsforskning.se
- Fredman, P. & Sandell, K. (2009). "Protect, Preserve, Present" – The Role of Tourism in Swedish National Parks. In: Warwick, F. & Hall, C.M. *Tourism and National parks. International Perspectives on Development, Histories and Change*. Routledge, Contemporary Geographies of Leisure, Tourism and Mobility. 357 pages.
- Gartner, W.C. & Lime, D.W. (2000). *Trends in Outdoor Recreation, Leisure and Tourism*. CABI Publishing, New York.
- Gilbert, D. & Hudson, S. (2000). Tourism Demand Constraints. A Skiing Participation. *Annals of Tourism Research*, 27(4):906-925.
- Godbey, G. (2005). Time as a Constraint to Leisure. In: Jackson, E.L. (Ed.) *Constraints to Leisure*, Venture Publishing, State College, Pennsylvania. 249 p.
- Heberlein, T.A., Fredman, P. & Vuorio, T. (2002). Current Tourism Patterns in the Swedish Mountain Region. *Mountain Research and Development*, 22(2):142-149.

- Hörnsten, L. & Fredman, P. (2000). On the distance to recreational forests in Sweden. *Landscape and Urban Planning*, 51:1-10.
- Jackson, E.L. (1988). Leisure constraints: A survey of past research, *Leisure Sciences* 10, 203-15.
- Jackson, E.L. (2005). *Constraints to Leisure*. Venture Publishing, State College, Pennsylvania. 249 p.
- Jackson, E.L., Crawford, D.W. & Godbey, G. (1993). Negotiation of leisure constraints. *Leisure Sciences*, 15,1: 1-11.
- Kardell, L. (2008). *Friluftsutnyttjande av tre stadsnära skogar kring Uppsala 1988-2007. Stadsskogen Vårdsätterskogen Nåntunaskogen*. The Swedish University of Agricultural Sciences, Department of Environmental Forestry, Report 106, Uppsala, Sweden.
- Kelly, J. (1980). Outdoor recreation participation: A comparative analysis. *Leisure Sciences*, 3: 129-54.
- Lindhagen, A. (1996). *Forest Recreation in Sweden. Four Case Studies Using Quantitative and Qualitative Methods*. Sveriges lantbruksuniversitet, Institutionen för skoglig landskapsvård, rapport 64.
- Loomis, J.B. & Walsh, R.G. (1997). *Recreation Economic Decisions: Comparing Benefits and Costs*. Venture Publishing, State College, Pennsylvania.
- Mattsson, L., Boman, M. & Ericsson, G. (2008). *Jakten i Sverige – Ekonomiska värden och attityder jaktåret 2005/06*. Rapport från Adaptiv förvaltning av vilt och fisk, rapport nr. 1, Umeå, Sverige.
- Manfredo, M.J., Driver, B.L. & Tarrant, M.A. (1996). Measuring Leisure Motivation: A Meta-Analysis of the Recreation Experience Preference Scales. *Journal of Leisure Research*, 28(3), 188-213.
- Manning, R.E. (2011). *Studies in Outdoor Recreation. Search and Research for Satisfaction*. Oregon State University Press, Corvallis, 3rd edition.
- Maslow, A. (1943). A theory of human motivation *Psychological review*, vol. 50 pg:370
- Moore, R.L. & Driver, B.L. (2005). *Introduction to Outdoor Recreation. Providing and Managing Natural Resource Based Opportunities*. State College, PA: Venture Publishing.
- Odden, A. (2008). *Hva skjer med norsk friluftsliv? En Studie av utviklingstrekk i norsk friluftsliv 1970-2004*. Trondheim: NTNU.
- Pergams, O.R.W. & Zaradic, P.A. (2006). Is love of nature in the US becoming love of electronic media? 16-year downtrend in national park visits explained by watching movies, playing video games, internet use, and oil prices. *Journal of Environmental Management*, 80, 387-393.
- Pigram, J.J. & Jenkins, J.M. (2006). *Outdoor recreation management*. London: Routledge
- Sievänen, T., Arnberger, A., Dehez, J., Grant, N., Jensen, F.S. & Skov-Petersen, H. (2008). (eds.) *Forest Recreation Monitoring – a European Perspective*. Working Papers of the Finnish Forest Research Institute, 79.
- Statistics Sweden (2004). *Fritid 1976-2002. Levnadsförhållanden*. Rapport nr. 103. Statistiska Centralbyrån, Stockholm.
- Statistics Sweden (2009). *Fritid 2006-07. Levnadsförhållanden*. Rapport nr. 118. Statistiska Centralbyrån, Stockholm.
- Swedish Government Writ 2001/02:173. *En samlad naturvårdspolitik*.
- US Bureau of Outdoor Recreation (1975). *Committee on Assessment of Demand for Outdoor Recreation Resources*, Dept. of the Interior, Washington. 123 p.
- Walker, G. J. & Virden, R.J. (2005). Constraints to Outdoor Recreation. In: Jackson, E.L. (Ed.) *Constraints to Leisure*, Venture Publishing, State College, Pennsylvania. 249 p.
- White, D.D. (2008). A structural model of leisure constraints negotiating in outdoor recreation. *Leisure Sciences*, Vol. 30, No. 4, 342-359.

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