

## Willingness to engage in physically challenging activities as a visitor-segmentation criterion: the case of five protected areas in Catalonia

Estela Inés Farías-Torbidoni, Demir Barić & Petra Anić

Keywords: *protected natural areas, visitor segmentation, physical activity*

### Abstract

Recreational and sports activities in protected natural settings have increased in recent decades. Despite the extensive literature addressing the segmentation of visitors in protected natural settings, to date, the willingness to engage in physically challenging activities has not been considered a potential segmentation criterion. Moreover, very few segmentation studies in the field provide additional empirical evidence about the extent to which the descriptors used influence the assignment to a particular segment. Therefore, drawing on results from 1 597 questionnaires collected from visitors in five protected areas (Catalonia, Spain), the main intention of this applied research was to add to current knowledge and provide a multi-dimensional perspective on the role that socio-demographic, trip, motivational and attitudinal characteristics play on visitors' willingness to engage in physically challenging activities. Our results revealed that in terms of the level of importance that they attributed to engaging in challenging physical activities, visitors in the areas studied are not a homogeneous group. Although the allocation of visitors to particular segments varied significantly according to the descriptors selected, logistic regression analysis revealed that motivational and trip behaviour descriptors had a stronger capacity to predict segment membership.

### Introduction

#### Theoretical framework and literature review

The health benefits of regular physical activity are generally known (CSD 2010). Nevertheless, a large portion of the population still does not meet the minimum recommended exercise levels, and inactivity has been identified as the fourth leading factor in mortality worldwide (WHO 2010). In Europe, both legislation and professional organizations call for governmental and non-governmental agencies to address the need for greater physical activity among citizens (European Commission 2013). In the last three decades, a considerable amount of published literature has acknowledged that wilderness and PAs play an important role not only in the conservation of natural ecosystems and provision of goods, but also in delivering services necessary to sustain the health and well-being of the human community (EUROPARC España 2013; Stolton et al. 2015). One of these non-material services is the provision of opportunities to engage in different outdoor forms of physical activity such as hiking, cycling or canoeing (Pretty et al. 2005). When comparing physical activity that takes place indoors or in an urban setting and physical activity that takes place in the natural environment, systematic review studies supported the finding that the latter provides an individual with more pleasurable experiences (Bowler et al. 2010; Bedimo-Rung et al. 2005). Romagosa et al. (2015) pointed out that despite the fact that urban parks have key attributes, such as good accessibility, infrastructure and facility provisions, PAs can generally provide more types of human health and well-being benefits than urban parks (i.e., physical, psychological, social and environmental) (Maller et al. 2008).

In recent decades, PAs have become important destinations for spending leisure time. At the same time, the application of different market-segmentation techniques to provide a multi-perspectival understanding of visitors' behavioural patterns has attracted considerable attention among researchers. The concept of market segmentation derives from the fields of economics and business (Dolnicar 2002) and is based on the premise that the market consists of subgroups of individuals characterized by different needs and preferences (Wedel & Kamakura 2002). To date, a number of segmentation criteria have been used to identify a variety of measurable and managerially useful visitor subgroups, classified by sociodemographic characteristics, desired benefits, motivation, values and attitudes (see e.g., Cochrane 2006; Marques et al. 2010; Farías-Torbidoni 2011; Kruger 2015; Barić et al. 2016). While segmentation based on visitors' activities has not often been studied in the past, it has recently become an important subject of study in the field (Mehmetoglu 2007; Farías-Torbidoni & Monserrat 2014; Barić et al. 2016). However, in spite of increased interest, few activity-based segmentation studies have considered the affinity for physical activity of visitors to PAs as a segmentation basis for examining the influence of chosen descriptors on segment membership. For instance, Mowen et al. (2012), who sampled the visitors at six parks in Pennsylvania (USA) and asked them about their participation in vigorous and moderate physical activity during their visit, found that demographics, preferred activity type and desired psychological experience played a significant role in shaping park-based physical activity levels, but their influence varied across the segment groups.

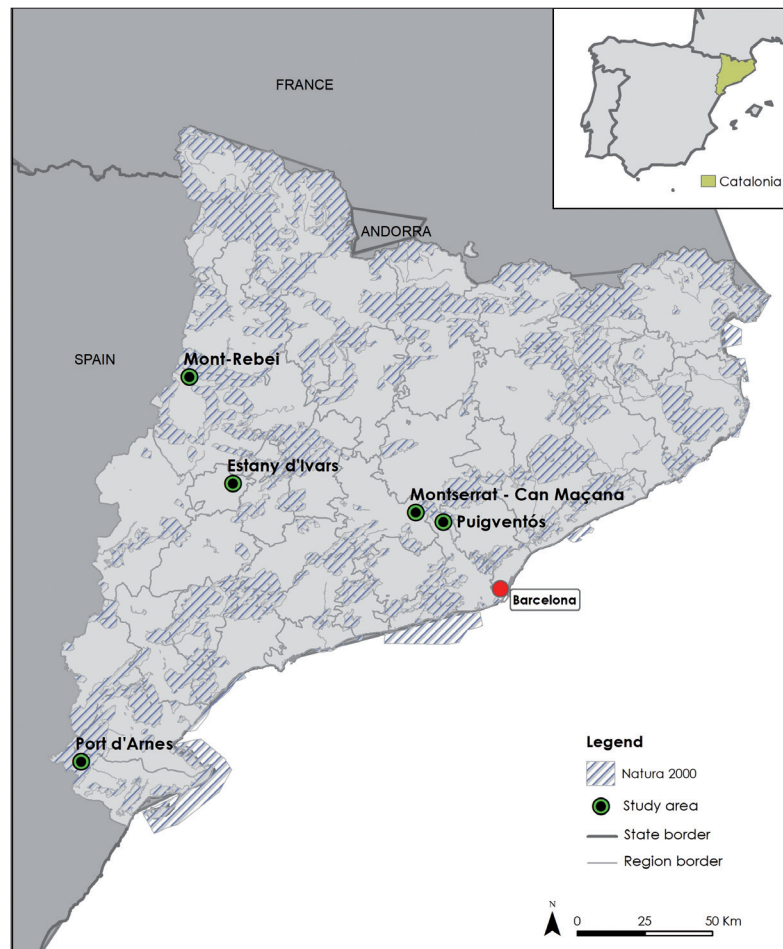


Figure 1 – Location of the protected areas studied in Catalonia.

### Aims of the study and research questions

To raise awareness among PA policymakers and managers about the promotion of physical activity in PAs, it is important to provide them with reliable and useful information about the relationship between visitor characteristics, behavioural patterns, needs and attitudes, and different physical activity levels. In spite of the increasing amount of applied research on visitor market typology in wilderness and PAs, there is still little research aimed at segmenting visitors according to the importance they place on engaging in challenging physical activity such as hiking, rock climbing or mountain biking. We believe that if park administrators had a better understanding of how visitor characteristics relate to physical activity interest and intensity level, they might be able to develop better-targeted programmes and promotional efforts to increase park-based physical activity.

Therefore, the main aims of this study are to segment visitors to five PAs in Catalonia (Spain) according to the importance they give to engaging in physically challenging activities, and then to examine the influence of sociodemographic, trip, motivational and attitudinal descriptors on the segmentation membership. In order to achieve these aims, some specific research questions were developed:

- What is the proportion of visitors characterized by a high affinity for challenging physical activity compared to those with a lower affinity?
- To what extent do identified visitor segments differ in terms of sociodemographic characteristics, trip behaviour, motivation, and attitudes concerning the condition of the recreational facilities and conservation level of the area in question?
- Which descriptors best predict visitors' likelihood of engaging or not in challenging physical activities?
- Could these predictors be useful in implementing facilities, programmes or services addressed to each group?

### Materials and methods

#### Areas studied

This study was carried out in five PAs in Catalonia, in the provinces of Barcelona, Lleida and Tarragona. Figure 1 shows the locations of these PAs, namely Congost de Mont-Rebei (CMR), Port d'Arnes (PDA), Puigventós (PUIG), Montserrat-Coll de Can Maçana (MCC) and Estany d'Ivars (EDI). The main characteristics considered in selecting these areas as representative were: (i) identical protection status (all belong to

Table 1 – Main territorial, geographical and recreational characteristics of the five protected areas. CMR – Congost de Mont-Rebei, PDA – Port d’Arnes, PUIG – Puigventós, MCC – Montserrat-Coll de Can Maçana, EDI – Estany d’Ivars.

Protected area	CMR	PDA	PUIG	MCC	EDI
General Characteristics					
Geographic position	E00°41'49,40" N42°05'47,61"	E00°17'38,46" N40°54'03,82"	E01°53'26,52" N41°34'25,68"	E01°46'03,13" N41°36'35,17"	E00°57'24,12" N41°40'49,80"
Province	Lleida	Tarragona	Barcelona	Barcelona	Lleida
Location region	Noguera Ribagorçana	La Terra Alta	Baix Llobregat	L’Anoia	Alt d’Urgell
Study area [ha]	1 000	1 200	1 300	1 000	500
Protection status	Natura 2000 Espai d’Interés Natural de la Serra del Montsec	Natura 2000 Parc Natural els Ports	Natura 2000 Espai d’Interés Natural de Montserrat	Natura 2000 Parc Natural de la Muntanya de Montserrat	Natura 2000
Management	Catalunya-La Pedrera Foundation	Foundation and Els Ports Parc Natural Agency	Foundation and Olesa de Montserrat Council	Foundation and Montserrat Mountain Park Natural Agency	Foundation and Estany d’Ivars Natura 2000 Agency
Year in which the area acquired foundation	1999	2000–2006	2000	2004	2005
Specific physical, social and recreational characteristics					
Distance of reserve from the main road [km]	4	6	5	0	0
Number of main entrances	2	2	2	1	2
Total trail distance [km]	34	30	10	36	5
Available public facilities	Parking areas, picnic areas, toilet facilities, Mas Carlet private hut	Parking areas, picnic areas, toilet facilities, Terranyes mountain hut	Parking areas, picnic areas, no toilet facilities, no hut	Parking areas, picnic areas, no toilet facilities, Vicent Barbé mountain hut	Parking areas, picnic areas, toilet facilities, no hut
Recreational and sporting activities	Recreational hiking, hiking, mountain biking, climbing, canoeing, swimming	Recreational hiking, hiking, mountain biking, climbing, swimming	Recreational hiking, hiking, mountain biking	Recreational hiking, hiking, climbing	Recreational hiking, hiking, mountain biking, water activities
Number of visitors per year	100 000	22 000	15 000	30 000	50 000

Natura 2000 Ecological Network); (ii) similar size (no more than 1 000 ha); (iii) provision of a wide variety of opportunities for participation in physical activity; (iv) considerable numbers of visitors (from 15 000 to 50 000 visitors per year); (v) management by the central private organization Fundació Catalunya-La Pedrera, in partnership with various local public organizations and associations. All of them (except EDI) are located in medium mountain areas and are particularly attractive for participation in different nature-based activities, including physically challenging ones such as hiking, rock climbing, mountain biking or canoeing, and less challenging ones such as recreational hiking and water-based activities. Table 1 shows the main geographical and managerial characteristics of the five PAs studied.

### Sample and sampling strategy

The sample used in the research consisted of 1 597 visitors who were more than 18 years old, who visited the five study areas (274 in CMR, 150 in PDA, 289 in PUIG, 490 in MCC and 395 in EDI). The majority of the respondents were male (66.2%), young to middle-aged (50.9%), from the Catalonia region (97.7%), and possessed a university degree (56%).

The respondents were surveyed with self-administered questionnaires using a face-to-face approach. In total, 1 597 questionnaires were collected between 2004 and 2008. The fieldwork was carried out dur-

ing a calendar year to maximize the representativeness of the sample. Peak visiting periods, defined as the periods when most of the interviews took place, were recorded. Surveys were distributed proportionally among the areas according to the number of visitors at the time of the fieldwork. The interviews were held between 10 a.m. and 7 p.m. on 12 public holidays and 12 working days (one per month) for each area, throughout the fieldwork period. Potential respondents were approached randomly at the main entrances on their way out. Only one person per group of visitors was interviewed, and the average time spent on the interview was 5–10 minutes.

### The survey

The survey was structured into three main parts. The first comprised a series of closed questions about the visitors’ sociodemographic characteristics (e.g., gender, age and education level) and their trip characteristics (e.g., activities, and frequency and length of visits). In the second part, visitors were asked first to rate the importance of engaging in challenging physical activities and, next, to rate the level of importance of each of eight motivational statements as a reason for visiting the park. The ratings were completed using a 5-point Likert scale ranging from 1 (not at all important) to 5 (extremely important). The motivational statements were drawn from Recreational Experience Preference (REP) scales developed, conceptualized

Table 2 – Socio-demographic characteristics in the five protected areas. \* $p < 0.001$ . <sup>1</sup>Yates Continuity Correction (2x2). CMR – Congost de Mont-Rebei, PDA – Port d'Arnes, PUIG – Puigventós, MCC – Montserrat-Coll de Can Maçana, EDI – Estany d'Ivars.

Socio-demographic characteristics	Natural areas					$\chi^2$
	CMR	PDA	PUIG	MCC	EDI	
	[%]					
Gender <sup>1</sup>						30.777**
Female	42.7	34	24.6	29.6	39.6	
Male	57.3	66	75.4	70.4	60.4	
Age						80.927**
Under 21	4.7	4.0	5.2	2.4	2.3	
22–31	28.5	26.0	21.8	19.6	20.4	
32–41	28.5	31.7	29.1	32.4	26.9	
42–51	23	27.7	22.8	26.9	26.1	
52 and older	15	10.7	21.1	18.6	22.5	
Place of residence <sup>1</sup>						131.074**
Catalonia region	83.2	80.7	100	96.3	98	
Other places	16.8	19.3	0	3.7	2	
Education <sup>1</sup>						16.962
Completed secondary education	45.6	40	37.4	47.6	40.9	
University degree	54.4	60	62.6	52.4	59.1	

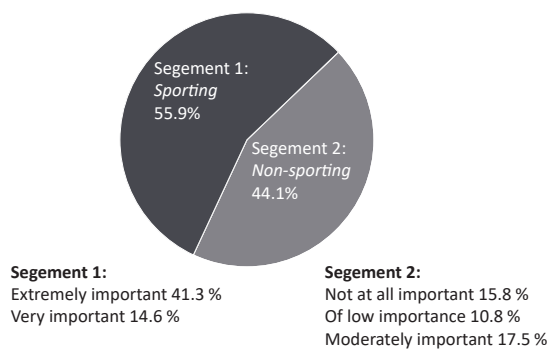


Figure 2 – Segmentation procedure based on rating the importance of engaging in challenging physical activities during the visit.

and empirically tested by Driver et al. (1991). The third part was aimed at assessing the visitors' opinions about the condition of the specific facilities and conservation level of the area in question. For this last issue, three specific questions were asked, with a 4-point Likert scale that ranged from 1 (poor) to 4 (very good).

### Data analysis

The data gathered were transformed and coded using the Statistical Package for Social Science (SPSS) 18.0. Cross-tabulations and Chi-square goodness of fit at a 95% accuracy level were used to examine the differences in terms of sociodemographic and trip characteristics between the resultant segments. An independent sample *t*-test was employed to compare the mean scores of the extracted segments for the motivational statements and visitor attitudes towards park facilities and conservation level. Finally, a series of logistic regression analyses were performed to inves-

tigate the influence of a number of predictor factors on the dependent variable *segment membership* (*Sporting* vs. *Non-sporting*). To render them comparable, all the independent nominal variables (e.g., sociodemographic variables) were recoded as dummy variables. The independent variables entered into each model were evaluated for potential collinearity; the tolerance and variation inflation factor (VIF) indicated no risk of collinearity among the predictor variables.

## Results

### Main differences in visitors' sociodemographic characteristics across the five areas studied

The results revealed that visitors' sociodemographic characteristics differed significantly with respect to the areas visited. As shown in Table 2, local, middle-aged and male visitors were more numerous in PUIG and MCC in comparison to the other parks. The proportion of non-local visitors was greatest in CMR and PDA. There were higher numbers of females in CMR and EDI than in other parks.

### Visitor segmentation: procedure and labelling

The segmentation procedure was based on rating the importance of engaging in challenging physical activity during the visit. Initially, two, three and four solutions were examined to determine the most appropriate number of segments. A solution with two segments was deemed most appropriate because it displayed the most suitable characteristics in terms of interpretability, measurability and managerial applicability. As Figure 2 shows, the first segment accounted for 55.9% (893) of the visitors and was labelled *Sporting*. This segment characterized those visitors who felt that engaging in specific physically challenging activities was very important (14.6%) to extremely important (41.3%). The second segment represented 44.1% (704) of the cases and was labelled *Non-sporting*. For this group of visitors, the importance of participating in physically challenging activities ranged from moderate (17.5%) to unimportant (15.8%).

### Differences between segments in terms of socio-demographic characteristics, trip characteristics, motivation, and attitudes towards facilities and conservation level

The results revealed that the segments differed significantly for a number of sociodemographic, trip, motivational and attitudinal descriptors. As shown in Table 3, there were significant differences among the segments concerning the place of residence ( $p < 0.05$ ) and gender ( $p < 0.01$ ), where local visitors (Catalonia region) and males prevailed within the *Sporting* segment. The segments also differed significantly in terms of all trip characteristic descriptors at a  $p < 0.001$  probability (Table 4). Contrary to the members in the *Sporting* segment, the majority of the members in the *Non-sporting* segment were first-time visitors

(47.9% vs. 27.8% for the *Sporting* segment), who were more likely to visit those PAs (i.e., CMR and PDA) characterized by greater accessibility by public infrastructure, and recreational facilities that allow participation in less physically challenging activities, such as water-based activities. The members of the *Sporting* segment were more likely to stay for a full day, in comparison to the *Non-sporting* segment members who visited the areas for not more than six hours (80.5% vs. 75.9% for the *Sporting* segment). In addition, the *Sporting* segment members were more likely to engage in challenging physical activity such as rock climbing or hiking. Moreover, they were more likely to visit the different areas with a group of friends, whereas the *Non-sporting* segment members were mainly accompanied by a partner or a family group. The members of the *Non-sporting* segment showed a greater preference to arrive by motorized vehicles, while the members of the *Sporting* segment were more likely to seek overnight accommodation (82.2% vs. 70.3% for the *Non-sporting* segment).

An independent *t*-test was performed to ascertain whether or not the two segments differed in terms of motivation and attitudes towards each area's specific facilities and conservation level. With respect to the former (Table 5), the results indicated significantly different mean scores for seven of the eight motivational statements. The members of the *Sporting* segment placed significantly higher importance on all motivational items except for the statement "To learn more about the natural environment" ( $M = 3.14$  vs.  $M = 3.35$  for the *Non-Sporting* segment) and "To get to know new places" ( $M = 3.17$  vs.  $M = 3.33$  for the *Non-Sporting* segment). With respect to visitors' attitudes towards specific facilities and conservation level (Table 6), the findings showed that the segments differed significantly in terms of opinions regarding the condition of the sites ( $p < 0.05$ ) and conservation level ( $p < 0.001$ ). Specifically, the *Sporting* segment members expressed a more positive evaluation of the condition of the signposting ( $M = 3.02$ ) than the *Non-sporting* segment members ( $M = 2.93$ ). In contrast, the mean score for conservation level was higher within the *Non-sporting* segment ( $M = 3.34$  vs.  $M = 3.24$  for the *Sporting* segment).

#### Logistic regression: The influence of socio-demographic, trip, motivational and attitudinal descriptors on segment membership

A series of direct logistic regression analyses (Table 7) were performed to assess the influence of a number of sociodemographic, trip, motivational and attitudinal descriptors on the likelihood of belonging to the *Sporting* or *Non-sporting* group (i.e. membership of the *Sporting* segment). The results revealed that female and non-local respondents were less likely to belong to the *Sporting* segment. The odds ratio of 0.99 for age was found to be less than 1, indicating that for every additional year, the likelihood of visitors participating in physically challenging activities decreased by 1%.

Table 3 – Segment difference in socio-demographic characteristics. \* $p < 0.01$ ; \*\* $p < 0.001$ . <sup>1</sup>Yates Continuity Correction (2x2)

Socio-demographic characteristics	Non-sporting [%]	Sporting [%]	$\chi^2$
<b>Gender<sup>1</sup></b>			11.589**
Female	38.4	30.2	
Male	61.6	69.8	
<b>Age</b>			8.671
Under 21	2.6	4.1	
22–31	21.4	21.2	
32–41	27.4	31.2	
42–51	25.6	24.9	
52 and older	23	18.6	
<b>Place of residence<sup>1</sup></b>			5.648*
Catalonia region	92	95	
Other places	3.4	2	
<b>Education<sup>1</sup></b>			0.067
Completed secondary education	55.7	56.3	
University degree	44.3	43.7	

Table 4 – Segment differences in trip characteristics. \* $p < 0.01$ . <sup>1</sup>Yates Continuity Correction (2x2)

Travel characteristics	Non-sporting [%]	Sporting [%]	$\chi^2$
<b>Protected area</b>			270.56*
Congost de Mont-Rebei	20.7	14.3	
Port d'Arnes	12.8	6.7	
Puigventós	8.2	25.9	
Montserrat-Coll de Can Macana	18.5	40.3	
Estany d'Ivars	39.8	12.8	
<b>Participated activities</b>			344.942*
Staying close to entrance	28.4	8.5	
Recreational hiking (<30')	37.1	5.4	
Hiking (>30')	21.6	57.7	
Rock Climbing	1.6	14.1	
Mountain biking	0.7	7.8	
Water based activities	5.5	1.3	
Canoeing	1.3	1.7	
Other activities	2.8	2.2	
<b>Frequency of visits<sup>1</sup></b>			68.500*
First time	47.9	27.8	
Repeated visits	52.1	72.2	
<b>Group composition</b>			25.666*
Partner	28.1	20.6	
Family	24.4	19.6	
Friends	32.1	38.9	
Organized group	2.4	3.5	
Alone	9.4	12	
Other	3.6	5.5	
<b>Transport mode</b>			105.629*
Motorized vehicle	90.1	70.2	
Bicycle	1.1	9.1	
On foot	6.3	17.8	
<b>Length of the visit</b>			18.695*
Half day (up to 6 hours)	80.5	75.9	
One day (7–24 hours)	11.2	18.5	
More than one day	10.8	8.5	
<b>Accommodation<sup>1</sup></b>			31.343*
Required	70.3	82.2	
Not required	29.7	17.8	

Table 5 – Segment differences in visit motivations. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Motivational statements	Segments		df	t
	Non-sporting	Sporting		
	M	M		
To enjoy the natural environment	4.46	4.57	1376.47	2.71**
To relax and switch off	4.09	4.44	1289.73	6.20***
To get close to nature	4.49	4.57	1394.96	2.04*
To enjoy new experiences	2.5	2.77	1595	3.57***
To do something different	3.59	4.22	1294.22	10.63***
To get to know new places	3.33	3.17	1477.35	0.36
To improve physical condition and health	2.46	4.00	1438.59	23.65***
To learn more about the natural environment	3.35	3.14	1595	1.47*

Table 6 – Segment differences in attitudes towards the condition of facilities and conservation level. \* $p < 0.05$ ; \*\* $p < 0.001$ .

Attitudes	Non-sporting	Sporting	df	t
	M	M		
	Signposting	2.93		
Conservation level and tidiness	3.34	3.24	1595	3.52**
Condition of the infrastructure	3.12	3.11	1486.42	0.19

In terms of trip characteristics, descriptor results indicated that people who visited the area repeatedly, stayed for more than half a day, sought accommodation and did not use motorized vehicles as a mode of transport were more likely to be classified in the *Sporting* segment. Yet, the increase in the number of accompanying people had a negative association with the importance placed on engaging in physically challenging activities.

Significant associations were observed for motivational statements and segment membership as well, such that the respondents who were more motivated to do something different and to improve their physical condition and health had greater odds of being in the *Sporting* segment. On the other hand, there was a positive association between those who placed greater importance on visiting new places and learning more about the natural environment, and being classified in the *Non-Sporting* segment.

The results revealed a significant association between membership of the *Sporting* segment and positive evaluation of the condition of the signposts. On the contrary, individuals who had a more positive attitude to the conservation level and tidiness of the natural area were less likely to be in the *Sporting* segment. Finally, the results of Nagelkerke's pseudo R-squared ( $R^2$ ) statistics for the regression models indicated that motivational descriptors ( $R^2 = 0.362$ ) explained the highest degree of the overall variation in reporting

segment membership, followed by trip descriptors ( $R^2 = 0.117$ ). Sociodemographic ( $R^2 = 0.02$ ) and attitudinal descriptors ( $R^2 = 0.02$ ) explained only a small degree of the overall variation in reporting the segment membership.

## Discussion and conclusions

The main intention of this research was to examine the influence of sociodemographic, trip, motivational and attitudinal descriptors on segment membership. Overall, the study provided a series of interesting findings worth discussing in more detail.

The segmentation procedure was based on the issue of the importance of engagement in physically challenging activities and identified two segments: the *Sporting* segment and the *Non-sporting* segment. The level of homogeneity, measurability and applicability to managerial needs of the segments identified was confirmed in most of the study findings, revealing numerous differences in their sociodemographic characteristics, behavioural patterns, needs and attitudes. In general, the chosen segmentation approach reinforced the notion that, in terms of the importance they attribute to engaging in different levels of physical activity, visitors to PAs do not represent a homogeneous group (Mehmetoglu 2007; Mowen et al. 2012; Fariás-Torbidoni & Montserrat 2014; Barić et al. 2016), and these areas represent an important setting for the enhancement of physical fitness and health (Romagosa et al. 2015).

Regarding sociodemographic descriptors, the results revealed that place of residence, gender and age played significant roles in segment differentiation: visitors who were male, younger and local were more likely to be classified in the *Sporting* segment. The results for place of residence were not surprising, given that the majority of the sample were from the Catalonia region. It is reasonable to conclude that the PAs in Catalonia represent important recreational settings for the local community. The results for gender and age were consistent with those observed in earlier studies, which found that interest in specialized and challenging activities was greater within a younger male population (Mehmetoglu 2007; Mowen et al. 2012; Barić et al. 2016).

Concerning visitor attitudes towards facilities and conservation level, the findings showed a positive relationship between attitudes towards the condition of signposts and the *Sporting* segment. On the other hand, visitors who gave higher ratings for the general level of conservation were more likely to be engaged in less challenging physical activities. These results might be explained by the fact that the members of the *Sporting* segment, as they are more familiar with the parks, tend to be less aware of the signposting of the different paths; however, they are more demanding with regards to environmental conditions. The findings, though valuable, must be interpreted with caution because this

research examined visitor attitudes towards only one aspect of the total park inventory (i.e., signposting) and their general perception of the level of conservation. Therefore, to provide more accurate information about the role that attitudes towards specific facilities, services and environmental issues play on visitor affinity for engagement in different physical activity levels, the creation of a more extensive and site-relevant measurement instrument is recommended. Overall, results of Nagelkerke's pseudo R-squared ( $R^2$ ) statistics for the regression models showed that sociodemographic and attitudinal descriptors exhibited limited capacity in reporting segment membership.

In contrast to sociodemographic and attitudinal descriptors, trip and motivational ones exhibited a higher degree of overall variation in reporting segment membership. The results suggested that visitors who are more inclined to visit the area frequently stay for longer periods, use non-motorized transport, and seek personal experiences (i.e., to do something different or improve physical fitness and health) are more likely to be classified in the *Sporting* segment. On the other hand, the probability of being classified as a *Non-sporting* visitor is greater for first-time visitors, visitors who stay for a shorter period of time, use motorized transport, are accompanied by a partner or family group, and are more likely to want interpretational experiences. It is also important to highlight that the members of the *Sporting* segment gave a higher mean score for all motivational statements, except for those related to learning more about the natural environment and to getting to know new places. These findings may be explained by *Sporting* segment members being more likely to engage in so-called affective nature experiences, i.e. experiences that allow them to enjoy engaging in activities in a natural environment, or simply to be close to nature without showing any intellectual interest in interpretational experiences. This interesting finding strongly supports findings in earlier research which showed that visitors with greater aspirations towards challenging physical activities exhibit weak interest in interpretational experiences (Farías-Torbidoni & Monserrat 2014; Barić et al. 2016).

It is important to highlight that this research provides new information for managers of the study areas. For instance, people in the *Non-sporting* segment are more likely to be female, older and non-local; they also tend to visit an area with a partner or family group and seek interpretational experiences. Using this knowledge, managers could create specific educational hiking routes (more than 30 minutes' walk) or canoeing trips, which would result in an increase in physical activity while not adversely affecting these people's primary motives for the visit. The findings may also help park managers to shift management priorities towards formulating and promoting specific interpretation and educational programmes associated with the *Sporting* segment. To stimulate rock climbers' or mountain bikers' desire for information, park

Table 7 – Logistic regression: the influence of socio-demographic, trip, motivational and attitudinal descriptors on segment membership. \* $p < 0.01$ ; \*\* $p < 0.001$ .

Independent variables	B	S.E.	e <sup>B</sup>
<b>Sociodemographics<sup>1</sup></b>			
Place of residence (Ref: Outside of Cataluña)	-0.52*	0.21	0.59
Gender (Ref: Female)	-0.39***	0.11	0.68
Age	-0.01*	0.004	0.99
Level of education (Ref: University degree)	-0.04	0.10	0.96
Constant	0.828		
<b>Trip characteristics<sup>2</sup></b>			
Frequency of visits (Ref: Repeated visits)	0.67***	0.11	1.95
Number of accompanying persons	-0.02	0.01	0.99
Need for accommodation (Ref: No need for accommodation)	-0.59***	0.13	0.55
Transport mode (Ref: Non-motorized vehicle)	1.26***	0.15	3.52
Length of the visit (Ref: >half day)	0.63***	0.14	1.88
Constant	-0.35		
<b>Motivational statements<sup>3</sup></b>			
To enjoy the natural environment	-0.066	0.083	0.936
To relax and switch off	0.035	0.061	1.035
To get close to nature	-0.096	0.088	0.908
To enjoy new experiences	0.014	0.048	1.015
To do something different	0.288**	0.058	1.334
To get to know new places	-0.129*	0.043	0.879
To improve physical condition and health	0.810**	0.048	2.248
To learn more about the natural environment	-0.150**	0.046	0.860
Constant	-2.072		
<b>Attitudes towards facilities and conservation level<sup>4</sup></b>			
Signposting	0.25**	0.08	1.28
Conservation level	-0.43***	0.10	0.65
Condition of the general infrastructure	0.04	0.09	1.04
Constant	0.80		

Note: Model Fit Statistic Codes: Nagel  $R^2$  = Nagelkerke's pseudo  $R^2$ . Reference groups are provided in parentheses for each predictor categorical variable. The dependent variable in this analysis corresponds to segment membership: 0 = no (*Non-sporting* visitors) and 1 = yes (*Sporting* visitors).

<sup>1</sup>N = 1597;  $\chi^2 = 23.623$ ,  $df = 4$ ,  $p < .001$ ; Nagel.  $R^2 = 0.02$

<sup>2</sup>N = 1597;  $\chi^2 = 181.750$ ,  $df = 5$ ;  $p = .001$ ; Nagel.  $R^2 = 0.204$

<sup>3</sup>N = 1597;  $\chi^2 = 1243.758$ ,  $df = 3$ ;  $p = 0.001$ ; Nagel.  $R^2 = 0.362$

<sup>4</sup>N = 1597;  $\chi^2 = 26.210$ ,  $df = 3$ ,  $p = 0.204$ ; Nagel.  $R^2 = 0.02$

planners might offer special tours led by park staff to introduce basic information about the impacts of climbing and/or mountain biking on the natural environment. By encouraging an interest in education and raising awareness about the footprint these visitors produce when engaging in such sporting activities, managers could indirectly influence their attitudes towards the conservation of the biotopes they use. Finally, this study could be of great help to managers of other similar areas, as it highlights a positive, collaborative style of management, demonstrating how scientific knowledge may contribute not only in

the development of rational recreational strategies but also to a better understanding of the social significance of PAs.

The study's limitations must also be acknowledged. The use of 10-year-old data raises the question of possible changes in visitors' motivational tendencies with regards to the intensity level of physical activity in the studied areas. Therefore, the current findings, although valuable, should be interpreted with caution and be re-evaluated by new empirical evidence as soon as possible. This opens up a range of possibilities for further research. For instance, current data could be used as a valuable reference point for the long-term evaluation of the importance visitors place on engaging in challenging physical activity. It would also be interesting to consider the applicability of the proposed segmentation to other similar areas. Data obtained from such comparative studies could be used as valuable input for the development of a comprehensive framework for monitoring, evaluating and reporting the effectiveness of management of PAs at site, national, regional and trans-boundary levels.

### Acknowledgement

We wish to thank Susana Monserrat-Revillo for her valuable help in imput data and Fundation Catalunya – La Pedrera and National Institute of Physical Education of Catalunya for their financial support.

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## Authors

### Estela Inés Farías-Torbidoni<sup>1</sup>

is an Associate Professor of Health and Sport Management at the National Institute of Physical Education (Lleida). She holds a PhD in Sport Sciences (University of Lleida) and a Master's degree in Protected Natural Areas (University of Madrid). Her main research areas are sport management, the sociology of sport, outdoor activities, and protected natural areas.

### Demir Barić<sup>1</sup>

is a Postdoctoral fellow at the Institut Nacional d'Educació Física de Catalunya (INEFC). He is a spe-

cialist in visitor monitoring in protected natural areas, with a particular interest in the development of performance-based methods for effective visitor management strategies.

### Petra Anić<sup>2</sup>

is Senior Assistant Lecturer at the University of Rijeka, Faculty of Humanities and Social Sciences, Department of Psychology. She is a specialist in the psychology of leisure and positive psychology.

<sup>1</sup> Grup d'Investigació Social i Educativa de l'Activitat Física i l'Esport (GISEAFE), INEFC, Universitat de Lleida, Partida la Caparrella s/n, E-25154, Lleida, Spain.

<sup>2</sup> Department of Psychology, Faculty of Humanities and Social Sciences, Sveučilišna avenija 4, 51000 Rijeka, Croatia.