

Too many people in the mountains in the winter time?

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Introduction

Outdoor activities in natural landscapes have become very popular in recent decades. Especially new trends in winter outdoor activities such as backcountry skiing and snowshoeing attract a broad range of recreationists of all social groups (Lamprecht, Fischer et al. 2008). Therefore the crowding of such areas has become an increasing concern as it affects the perceived attractiveness of an area. Crowding situations also lead to alternate route choices and use conflicts with wildlife. Therefore, the carrying capacity question of “how much use or impact is too much”, arises (Manning 2002).

Method

Data used for this study has been collected in 2010 as part of a larger project which focuses on developing specific tools to monitor and manage recreational activities (mafreina). In an online survey, concerning winter recreational behaviour in the Swiss Alps, the perception of crowding was one focus. Among other questions, 934 recreationalists responded to four crowding situations during the winter, which were shown on photorealistic images. The method of “people at one time” (PAOT) was applied and respondents evaluated crowding on a 9-point-scale ranging from “too few people” (crowding level 1 to 3) over “pleasing number of people” (crowding level 4 to 6) to “too many people” (crowding level 7 to 9) with the ideal number of people set as the middle value of 5 (Manning 2007). At this point, the perception of the number of people has reached the highest acceptance (see Figure 1. Perception of crowding in the mountains in wintertime (y-values: 1 to 3 = too few people, 4 to 6 = pleasing number of people, 7 to 9 = too many people) Figure 1). For the statistical analysis, respondents were segmented by “snowshoe” and “ski/snowboard”.

Beside this PAOT-experiment the respondents had to answer a choice experiment too. With the choice experiment, the backcountry skiers were segmented into the four different groups “short tour group”, “solitude lovers”, “easy to view seekers” and “advanced specialists” (latent classes). Then the group means were analysed regarding the perception of crowding in the PAOT.

Results

When the mean responses are plotted along a curve, they represent a social norms curve, which has been applied in many similar carrying capacity studies (Manning 2002; Needham and Rollins 2005; Vaske and Shelby 2008). In Figure 1, the perceived-means of the number of people are shown with their respective standard errors (+/-1 se).

If the number of people falls below a crowding level of 3, the pictured situation would be evaluated negatively (Arnberger 2003). This was never the case in this study, as even with zero people in the picture, the situation was perceived

as a “pleasing number of people”. This indicates that there is no negative perception associated with “too few people” within our sample. The change in perception from “pleasing number of people” to “too many people” occurs when with more than 8 people in the scene, clearly suggesting the existence of a perceived crowding situation among ski-/snowboarders and snowshoers at the high end of the spectrum.

For the statistical analysis, respondents were segmented by activity, gender and age-group: Most variables do not show a normal distribution (Shapiro Test: $p < 0.05$). Therefore, a Kruskal Wallis Test (H) was applied for group comparisons. The two activity groups of “snowshoers” and “skiers/snowboarders” show no significant difference concerning perceived crowding ($H=0.47$, $df=1$, $p=0.49$). A significant difference emerged with crowding and age ($H=30.11$, $df=6$, $p < 0.001$) as the older age-group (>65 years; $n=187$) tends to be more tolerant with a high number of people than the 24 to 30 year olds. The highest variability of sample means was associated with the youngest age-group (<20 years; $n=40$) who seems to be less determined in their perception concerning the number of people. Generally there is a higher acceptance of other people in the picture with increasing age among the respondents.

To test the effects of distance, the people shown on the pictures were arranged in four different spatial compositions “none” (no people), “foreground” (groups in foreground), “background” (groups in background) and “both” (equal distribution of groups in fore- and background). Significant differences among the spatial compositions emerged ($H=457.1$, $df=3$, $p < 0.001$). As expected, the lowest ratings on the crowding scale are observed with no people in the picture. Background and foreground compositions show similar ratings whereas the distributions of people in foreground and background at the same time (“both”) get a significant higher rating than the other arrangements. Therefore it can be said, that the perception of crowding also depends on the distribution of people in the visible area.

The PAOT analysis of the four groups from the choice experiment endorses that “advanced specialists” and “solitude lovers” show the highest crowding mean values, whereas “short tour group” and “easy to view seekers” indicate significant lower crowding mean values ($H=9.66$, $df=3$, $p=0.022$). Moreover, the activity group “solitude lovers” is significantly younger than the other activity groups. Especially “easy view seekers” and “advanced specialists” show significantly higher mean values in age, than the other activity groups ($H=27.84$, $df=3$, $p=3.9e-06$). Regarding the gender mix, the fraction of males is high with “solitude lovers” and “advanced specialists” whereas the share of males is significantly lower with “short tour group” and “easy to view seekers” ($H=46.73$, $df=3$, $p=3.9e-10$). Thus, these findings

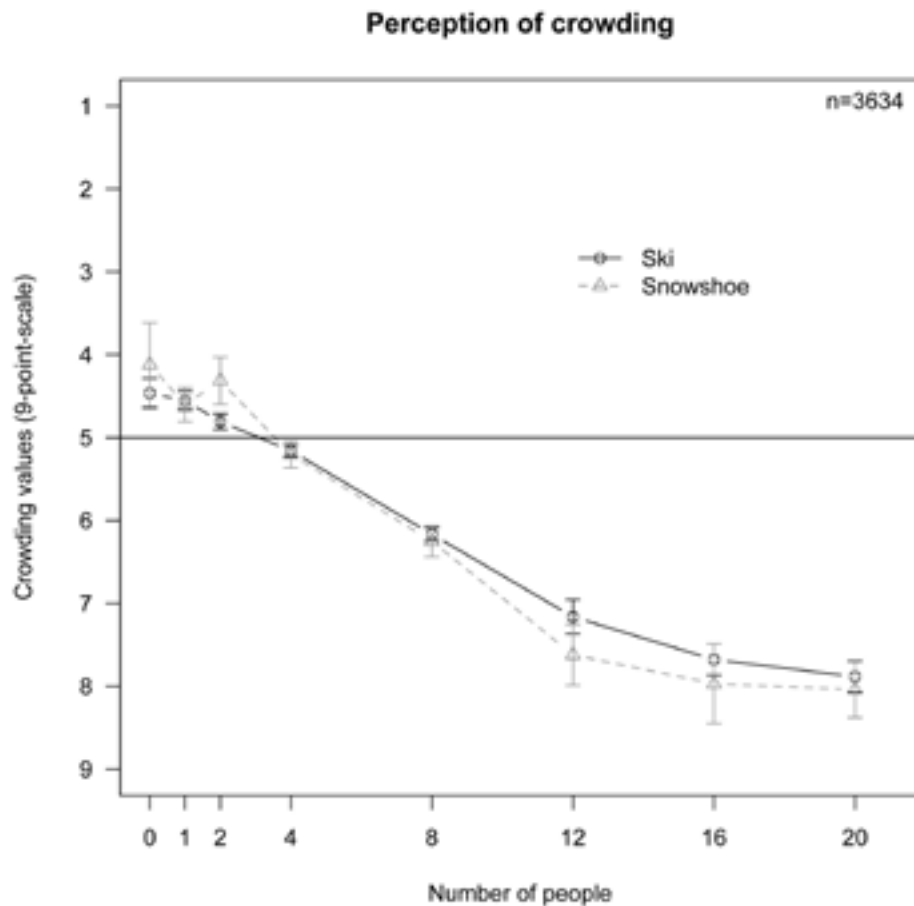


Figure 1. Perception of crowding in the mountains in wintertime (y-values: 1 to 3 = too few people, 4 to 6 = pleasing number of people, 7 to 9 = too many people)

show that the perception of crowding strongly depends on the activity type, which needs to be taken into account when evaluating crowding situations.

Conclusion

In this study, the question if there are too many people in the mountains in wintertime cannot generally be answered, but it allows a deepened understanding of the perception of crowding situations. The study shows that for winter activities, the perception of crowding strongly depends on the tour type as well as on the distribution of people in the visible area. Unlike summer activities (Arnberger 2003), the winter activity-type does not show a significant influence. Thus the perception of crowding in the mountains in wintertime is perceived differently than in summertime. The

findings of this study provide a new source of information regarding leisure and tourism management which can be helpful in assessing management implications for park areas and wildlife protection zones. Further data analysis in the framework of mafreina will provide more information on the crowding topic.

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