Visitor density, recreation motive, crowding and attractiveness

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Recreation planning in the Netherlands is partly based on the policy goal of offering enough nearby outdoor recreation opportunities to accommodate the local demand for such opportunities, at least for basic activities such as walking and cycling. Models have been developed to assess to what extent local supply and demand are in balance. In such models assumptions are made with regard to the social carrying capacity of certain types of natural areas: how many visitors can use the same area or path at the same time, without that this affects the quality of the recreational experience (too) negatively? However, the empirical foundation of the carrying capacities that are used in such models is weak, and largely indirect (see e.g. Sijtsma et al, 2012). This study focuses on the relationship between visitor density and crowding perceptions, and the extent to which this relationship depends on the motive behind the recreational activity and the type of area in which it is carried out. It also deals with the importance of crowding perceptions for the attractiveness of the setting, and how this depends on the same factors.

Method

In an online experiment over 1600 members of an internet panel, aged 18 years or over, rated several 20-second movie scenes. Twelve realistic scenes were shot using 'actors' as visitors, with each scene depicting a recreational setting. Visitor density (2, 4, 8, 16 persons visible on a 100 metres stretch of path) was crossed with type of area (river foreland, forest, urban park). Moreover, two quite common recreation motives were selected: to experience peace and quiet, and to socialize with family and/or friends (Goossen, 2009). Participants rated six of such scenes on crowdedness, as well as on attractiveness as setting for a recreational walk, three with one motive in mind and three with the other motive in mind. For perceived crowdedness the scale introduced by Heberlein & Vaske (1977) was used, but with lower scores indicated more crowding. Motive, subset of scenes and order of the scenes within the subset were randomly determined for each participant. Since participants did not rate all twelve movies for both motives, the incomplete within-subjects design was analysed using multilevel regression analysis (Maas & Snijders, 2003). After the experimental part subjects were asked questions about crowdedness in their living environment, and the way they reacted to (anticipated) crowded situations.

Results

Visitor density strongly influenced perceived crowding. Recreation motive had an equally significant ($p < 0.001$), albeit much smaller effect. Actually, this effect only occurred at higher densities (interaction $p < 0.001$): in those cases crowding was perceived to be stronger when the assigned motive was peace & quiet than when it was socializing (see figure 1). Other factors and interactions showed less significant or no effects. Perceived crowding, in turn, strongly influenced attractiveness negatively. Recreation motive affected attractiveness, with the scenes being rated more attractive in the case of socializing. Additionally perceived crowding and recreation motive interacted: the effect of perceived crowding on attractiveness was stronger for peace and quiet than for socializing. Type of area also had a significant effect, with the forest being rated more attractive than the city park, and the river foreland in between. In addition type of area interacted with recreation motive: when the assigned motive was socializing, especially the forest and the city park were considered more attractive. The additional results showed that in the Netherlands 45% of the people that at least sometimes go for a walk in a green environment frequently adjust their walking behaviour to the (anticipated) level of crowding in favoured green areas. In addition 36% of these people indicated that they also frequently experience crowding during their visit. Moreover, 52% of the people that at least sometimes experience crowding during a visit, indicated that during those visits the crowding level is usually closer to extremely crowded than to just a little crowded.

Conclusions

Results indicate that crowding in green areas is a common phenomenon in the Netherlands, which affects recreational experiences quite negatively. Although perceived crowding, and its effect on attractiveness, is influenced by the motive with which one goes for a walk, the differences between the two investigated motives appear to be relatively minor. Even when the motive is socializing with family and/or friends, high visitor densities have a strong effect on perceived crowding and thereby on the attractiveness of the setting. Also the effect of type of area seems to be relatively minor. Or, put differently, visitor density and perceived crowding have quite similar effects in different types of areas. One of the goals behind the study was to gain more insight in the extent to which social capacity figures used in normative supply and demand models are reasonable. Although basing social carrying capacities on a single experimental study obviously is a hazardous undertaking, we did so anyway, if only to see what the outcome is. Arguably almost all green areas in the Netherlands may be considered frontcountry settings. For such settings, Vaske and Donnelly (1997) suggest to take scores from 6 to 9 on the crowdedness scale as indicating an acceptable level and scores from 1 to 5 as indicating too high a level of crowding (values adapted to our reversed scale). Based on this suggestion and the experimental results we took four visitors per 100 metres of path as the upper limit for acceptable visitor

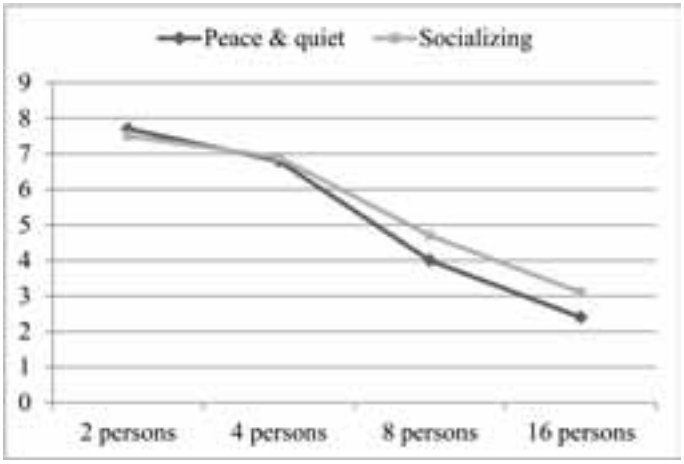

Figure 1. Perceived crowdedness by visitor density and recreation motive (lower score: more crowded)

density during the busiest hour of the day. For forests this would imply an average social carrying capacity of about 11 visitors per hectare per day, which is quite close to the value that is used for forests in the models that were referred to earlier: 9 visitors per hectare per day. Therefore the exercise suggests that there is no reason to drastically change the social capacities used thus far.

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