

# 18 Shifting setting densities and normative evaluations of crowding over time

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## Introduction

In the United States, population growth and domestic migration is placing increasing pressure on natural landscapes and the array of ecosystem services they afford. The growth has given rise to the paradox of resource depletion through fragmentation and development while at the same time increasing the demand and need for these resources. In the context of publicly available nature-based recreation opportunities (e.g., protected areas, preserves, parks, lakes, rivers) lying near growing urban centers, the pressure can be particularly acute. Increased demand for these resources has led to ecological and social impacts. The diminished service quality increases human exposure to pollutants (e.g., water, air, noise), and stressors (e.g., conflict, crowding) within these environs. Given the array of psycho-social and physical benefits afforded by nature-based recreation opportunities, the depletion in service quality has potentially troubling implications for human wellbeing.

In the context of aquatic opportunities (e.g., rivers, lakes) concern is exacerbated by both the limited availability of accessible resource substitutes and limited capacity to acquire or develop additional resources. Vaske and Shelby's (2008) meta-analysis of social carrying capacity research conducted in the context of nature-based recreation resources illustrated that for boating as a general participation category, of the 66 investigations conducted in the 30 years leading up to their analyses, 20 percent of respondents considered the condition encountered "greatly over capacity" of the resource's ability to accommodate demand. When broken down into more specific aquatic categories, such as canoeing, those considering the resource demand "greatly over capacity" jumps to 50 percent. In this investigation, we document residents' perceptions of shifting use patterns of an aquatic nature-based resource situated within the Austin MSA – Lake Travis – over an eight-year period from 2008 to 2016. Specifically, we examine the drivers of residents' perceptions of setting density on the lake along with

the cognitive and behavioral coping strategies they employ to maintain psychological homeostasis in conditions of rapid social and ecological change.

## Method

The study population in this investigation consisted of shoreline property owners adjacent to an inland impoundment (lake) along the Lower Colorado River in central Texas. Data were collected from resident in 2008 and 2016. The protocols we adopted for the distribution of the mail surveys were adapted from Dillman's (2000) tailored design method. Following the 2008 and 2016 boating seasons (summer) in October, the identified residents were sent an initial letter informing them of the study and the opportunity to complete the survey online or to have a hard copy sent to them. Three follow-up contacts (survey packets) were made over the following four weeks. The procedures yielded 686 completed surveys (47.5% response rate) for 2008 and 730 in 2016 (44.3% response rate).

We included measures of residents' preferences for encounters with others on the lake, expectations for encountering others on the lake, their perceived crowding for the boating season, seven behavioral (absolute displacement, temporal displacement, activity substitution, resource substitution) and cognitive (rationalization, product shift, direct action). A model depicting their hypothesized relationships is depicted in Figure 1. This model was testing using data collected in both 2008 and 2016.

## Findings/Discussion

While we saw no statistical mean difference in our measure of crowding in 2008 compared to 2016 crowding's normative antecedents (preference and expectation) and affective outcome (enjoyment) all varied over time. In 2016, respondents' preferences and expectations for encounters with others were both more than preferred or expected compared to 2008. Nevertheless, 2016 respondents reported a significantly more enjoyable boating season compared to those sampled at 2008. So how

is it that when faced with a statistically more impactful stressor (2016 compared to 2008), the impact of that stressor on an affective outcome is seemingly ameliorated over time? Our path modeling offers some insight. For our groups analysis (i.e., 2008 vs. 2016), we observed the direct and indirect effects of preference and crowding on enjoyment were significantly stronger in 2008. This was also true for their effect on the model's only mediator, temporal substitution. Collectively, the (negative) impact of these variables on enjoyment was significantly stronger 2008 resulting in diminished enjoyment when compared to 2016. This finding provides insight on the psychological drivers of normative evaluations of setting density and its affective outcomes. While mean comparisons over time reveal change (or not; Kuentzel & Heberlein, 2003; Vaske & Shelby, 2008), they provide little insight as to why; i.e., its psychological foundation. The heightened norm violation occurring in 2016 in terms of respondents' preference and expectation for encounters was significantly less salient in terms of its impact on respondents' enjoyment. 2008 respondents' felt need to adopt a coping strategy further suppressed their enjoyment. While the effect of preference, expectation, and crowding on enjoyment was stronger in 2008 compared to 2016 for both data points, the effects

were of the same valence and all had a deleterious influence on enjoyment. In studies that report crowding scores reflecting "over capacity" similar to our own (i.e., samples comprised of kayakers, boaters, and canoers), findings illustrate that aquatic recreational resources are under increasing pressure. Coupled with demands related to household, industrial, and agricultural use, the value of water (both cultural and economic) is further inflated. The paradox of increasing demand and a static supply of nature-based recreation resources points toward an emerging crisis. These data combined with very long history of past research implies that, owing to the fluidity of the normative basis of people's evaluations of setting density and behavior in natural settings, the social value of the resource and experience it affords is likely to remain steady with no loss in service provision. In a time of acute climate, social, and economic instability, the lens through which we view this past work is obscured by uncertainty and instability and casts doubt on the assumptions emanating from this extensive literature. While research on crowding in any context appears to have dissipated over the past 10 years, we feel that the social, environmental, and economic machinations of the past decade warrant renewed interest.