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## The Dynamics of Crowding and Tourists' Emotions During the COVID-19 Pandemic: A Normative Approach

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# **The Dynamics of Crowding and Tourists' Emotions During the COVID-19 Pandemic: A Normative Approach**

## **1. Introduction**

The outbreak of COVID-19 has changed the mobility, accessibility, and behaviors of tourists dramatically (Gössling, Scott, & Hall, 2021; Kock, Nørfelt, Josiassen, Assaf, & Tsionas, 2020). The confirmed cases of COVID-19 infection have exceeded 40 million in over 200 countries, and the pandemic has been a challenge for the sustainability of the tourism industry globally. Under the impact of COVID-19, the levels of visitor use and perceived crowding in tourism destinations are expected to change due to the uncertainty of health risks associated with visitors' behaviors (Bae & Chang, 2020). The COVID-19 pandemic was controlled well in China since March and many tourism destinations were reopened in the May 1<sup>st</sup> Labor Day holiday. Although a few COVID-19 prevention strategies have been made by tourism management agencies (i.e. social distancing, wearing masks, temperature check, etc.), how these prevention strategies might influence tourists' perception of crowding in tourism destinations are unknown in the literature (Gössling et al., 2021). Moreover, tourists' perception of crowding is a complicated process that associates with many factors, including tourists' motivations, socio-demographic characters, characters of encounters, and situation factors (Manning, 2011), and examining the impact of COVID-19 pandemic on the perception of crowding can not only provide tourists with coping strategies but also help tourism decision-makers implement appropriate visitor use management strategies and disease preservation practices. Yet, few studies have documented the perception of crowding in tourism destinations during COVID-19.

Emotions are "short-lived, subjective feelings that occur in the foreground of consciousness, demand immediate attention, and motivate behavior" (Frijda, 2007). Evidence suggests that traveling is good for people because of positive outcomes, such as renewed energy, positive emotions, and more (Gilbert & Abdullah, 2004). During the COVID-19, tourists' emotions might be more complicated than the traditional transactional process, a series of concerns about health risks associated with crowding, the implementation of prevention policies, and encounters' behaviors might affect the tourists' emotion. However, very few studies have examined the factors impacting tourists' stress during the pandemic of COVID-19 and how tourists' emotion may respond to different levels of visitor use.

Given the uncertainty of COVID-19 related risks on tourists' mental and physical health, the importance to gauge the factors contributing to perceived crowding and emotion in tourism destinations, and the needs to develop management strategies to aid the recovery of the tourism industry by evaluating the tradeoffs among visitor use demand, perceived crowding, and emotions in tourism destinations, this study aims to 1) examine tourists' perceptions of crowding and emotions among different levels of visitor use scenarios by applying the normative theory of crowding, 2) identify factors associated with tourists' perceived crowding and emotions and 3) quantify the multivariate influential paths among these factors. Investigating tourists' acceptability of different levels of use and related emotions would help tourism managers and stakeholders develop appropriate thresholds and standards of use level during the COVID-19 pandemic. In addition, understanding the factors associated with tourists' emotions could help tourism professionals provide better service and minimize the negative experience of tourists during the COVID-19 pandemic.

## **2. Literature Review**

Crowding and visitor use has received extensive attention in the context of parks and tourism destinations since the 1960s. By adopting the concept of social carrying capacity in parks and recreation areas, the research of crowding has been conducted in different types of outdoor recreation areas, including

wilderness areas, nature-based tourism destinations, urban parks, and etc. (Shelby, et al, 1989). The normative theory has served as the foundation of research on crowding, and there are standards that tourists can define a situation as crowded. The normative theory suggests that crowding has a psychological meaning, that is, crowding is a negative judgment of density of use in tourism destinations. The normative theory suggests that crowding was affected by a few factors, including characters of tourists, characteristics of encounters, and situation factors (Manning, 2011). An indicator and standard of quality framework has been developed and used widely in parks, recreation and tourism management field. The indicator and standard of quality framework analyzes the levels of crowding and identifies the minimum acceptable conditions of indicators of visitor use (Lime & Stankey, 1971; Manning, 1999, 2011; Manning, Freimund, Lime, & Pitt, 1996; Xiao, Lu, Manning, & Reigner, 2019). The normative approach of crowding and carrying capacity framework often uses visual simulation surveys to collect the perceptions of visitor use (e.g. people per view, people at one time, etc.) simulated by digitizing photographs of tourism destinations (Lawson et al., 2011; Manning et al., 1996). The visual simulation surveys conceptualized by the normative theory have been used to manage the crowding in both nature-based and culture-oriented tourism destinations in the western context, however, very little is known about the normative approach of crowding in the non-western context.

Research on emotions in tourism receives increasing attention since the 2000s (Beesley, 2005; Nawijn, 2011; Nawijn & Filep, 2016; Nawijn, Isaac, van Liempt, & Gridnevskiy, 2016; Weaver, Ming-Feng, Burns, & Ang, 2018). One primary research pipeline of emotions in tourism focuses on the changes in emotions during vacations and travel experiences. For instance, Nawijn (2010) examined the variation in the moods of international tourists in the Netherland during holiday trips, and developed a holiday happiness curve. Rather than treating the emotion during a vacation as a static status, this study highlighted the changes in tourists' emotions over time. Building upon this study, Nawijn (2011) examined the emotion changes for tourists on 8 to 13 days trips. Mitas, Yarnal, Adams, and Ram (2012) measured positive emotions during travel experiences and found that the positive emotions peaked during travel and declined after travel experiences.

COVID-19 pandemic has raised concerns for health risks associated with travel (Gössling et al., 2021; Tremblay-Huet, 2020). Recent research has found that tourists exposed to a high flow of tourism are more vulnerable to the risks of COVID-19 (Farzanegan, Gholipour, Feizi, Nunkoo, & Andargoli, 2020). The risk perception of tourists consists of two dimensions: cognitive and affective. The cognitive perception of risks refers to tourists' perceived susceptibility and severity of risks associated with travel. The affective perception of risks, on the other hand, refers to tourists' anxiety or worries about their exposure to risks (Sjöberg, 1998). Both cognitive and affective perceptions of risks can influence tourists' intention to travel during COVID-19 (Bae & Chang, 2020; Wang, Jin, Fan, Ju, & Xiao, 2020). Moreover, preventive behaviors such as social distancing, mask-wearing, and frequent hand-washing have been found to have positive impacts on South Koren tourists' intentions to travel (Bae & Chang, 2020). The perception of risks has also changed the behavior intention of tourism destinations: tourists are more likely to prefer to visit remote and rural tourism destinations than urban-oriented tourism destinations during the COVID-19 pandemic (Zhu & Deng, 2020). Although research has begun to document how the COVID-19 would influence the perception of risk and travel intention, few studies have examined how COVID-19 would influence on-site tourists' behaviors and the effects of prevention strategies on the perception of crowding and emotion in tourism destinations.

### **3. Methods**

We conducted an onsite visitor survey for visitors at Haikou Leiqiong UNESCO Global Geopark, locating in Haikou City, Hainan Province, China from June 15-June 22, 2020. A group of trained survey

administrators were stationed at the exit of the park and approached park visitors. To help ensure representativeness of surveys, the sampling process included both weekdays and weekends. A total of 550 questionnaires were distributed, and 443 completed questionnaires were collected, yielding an overall response rate of 80.5%.

Five batteries of questions were asked in the questionnaire, including 1) tourists' motivations to visit the Haikou Leiqiong UNESCO Global Geopark; 2) tourists' experiences with other encounters within the park; 3) situation factors; 4) tourists' perception of crowding and emotions; and 5) socio-demographic factors. The measure scales were adopted from previous studies about crowding [e.g., Neuts and Nijkamp (2012), Tepanon, and Uysal (2008), etc.] with the context of Haikou Leiqiong UNESCO Global Geopark. In addition, we added a few questions related to COVID-19 pandemic, including mask wearing, one-meter social distancing, sanitary condition, the information about COVID-19 prevention to the measurement scales.

#### **4. Results**

Respondents were almost evenly split between male (51%) and females respondents (49%). The majority of respondents were middle-aged, that more than 50% of respondents were between 24 to 45 years old. About 46% of respondents reported obtaining a bachelor's degree or higher. More than one-third of the respondents were visiting the park with a child. More than half of respondents have visited the Haikou Leiqiong UNESCO Global Geopark before.

A series of exploratory factor analyses (EFA) were performed to extract the dimensions of tourists' motivations, encounters' characters, and situation variables. The EFA extracted three main factors for tourists' motivations: scenery & culture, activity & enjoyment, and social relationship & safety. The three extracted factors explained 65.6% of the variances of the items. The means of the primary factors were 4.223 (scenery & culture), 4.008 (activity & enjoyment), and 4.137 (social relationship & safety), respectively. For the encounters' characters, the EFA only extracted one main factor: encounters' depreciative behaviors. For the situation factors, the EFA extracted two primary factors: environment quality & design and COVID-19 prevention strategies & implementation. The factor loadings ranged from 0.629 to 0.896 (KMO=0.876), and the two primary factors explained 84.7% of the variances of items. The means for environment quality & design and COVID-19 prevention strategies & implementation were 4.055 and 3.930, respectively.

The indicator for crowding and emotions used in this study is People Per View (PPV) in the Leiqiong Volcano Geological Park. In general, tourists' acceptability of PPVs and positive emotions decrease with increasing number of PPV. When the number of encounters is greater than 24, tourists cannot accept the scenario and the emotions turn from positive to negative. When there is no encounter, tourists reported very high acceptability of visitor use and high levels of positive emotions, including joy, relaxed, and excitement. However, when the PPV is 36, tourists report unacceptable and negative emotions towards the scenario. The norms of acceptability of PPV also show that when PPV is 18, tourists can accept the PPV, however, the emotion of tourists started to decrease from positive to neutral. Under the scenarios that all tourists are wearing masks, tourists reported a higher tolerance level of PPVs, that visitor use is unacceptable when the PPVs is higher than 35. Similarly, tourists' emotions are more positive when other encounters are wearing masks. For instance, all three emotion variables are positive for PPVs of 18 and 24 when other tourists wear masks comparing to neutral to negative for PPVs of 18 and 24 when other tourists do not wear masks.

A confirmatory factor analysis (CFA) of the hypothesized model for crowding and emotion has been tested. Research indicated that a CFA test should be performed before the structural equation model to

test the validity of each construct. The CFA test excluded the items with a coefficient alpha below 0.40. In sum, 26 indicators were identified after the CFA test, including 4 indicators for the motivation of scenery & culture, and 4 indicators for the motivation of social relationship and safety, 4 indicators for encounters' characters and 4 indicators for COVID-19 prevention strategies & implementation, 3 indicators for the acceptability of visitor use and 3 indicators for emotion. All three types of goodness of fit indices indicated that the overall measurement model was acceptable in that the proposed model among the collected data with a sample size of 443. Chi-square (36)=2.84,  $p < 0.001$ , goodness-of-fit index (GFI)=0.95, root mean square residual (RMSR)=0.038

After the CFA test, an initial hypothesized model was examined by the structural equation model (SEM). The indices of goodness-of-fit, RMSEA, Tucker-Lewis Index (TLI), and Standardized Root Mean Square Residual (SRMR) were used to verify the overall goodness-of-fit of the model. The RMSEA of the initial model was higher than 0.05, therefore, a model medication process was performed. By examining the modification indices, a direct path from COVID-19 prevention strategies & implementation was identified and added to the model to test whether or not the revised model fits the observed data.

In the revised model, the results of the goodness of fit indices exhibited a similar pattern to those for the initial theoretical model, as well as indicated better fits for all measures (CFI=0.964, RMSR=0.047, TLI=0.957, SRMR=0.047). The coefficients of SEM suggest that the motivation for scenery and culture has a negatively significant impact on the acceptability of visitor use, whereas the motivation of social relationship and safety has a positive impact on the acceptability of visitor use. Moreover, encounters' depreciate behavior has a significant impact on the acceptability of visitor use. As for tourists' emotions, the acceptability of visitor use has a direct impact on tourists' emotions. Interestingly, the COVID-19 prevention strategies and implementation has a significant impact on tourists' positive emotion.

## **5. Discussion and Conclusion**

This study examines tourists' perceptions of crowding and emotion under a variety of visitor use scenarios during the COVID-19 pandemic and identifies factors affecting the perceived crowding and emotions in a nature-based geological park. This study is one of the pilot studies that examines perceived crowding and emotions based on an on-site visitor survey during the COVID-19 pandemic. Study results suggest that tourists had the highest level of motivations for scenery and culture viewing, and were generally satisfying with the environmental quality and design and COVID-19 prevention strategies and implementation efforts within the park. Study results identify the thresholds of perceived crowding and positive emotions based on the indicator of PPV between the scenarios with and without COVID-19 prevention strategy and found that mask-wearing can reduce tourists' perception of crowding and enhance tourists' positive emotions. These findings suggest that nature-based tourism destinations should monitor visitor use level based on the social carrying capacity framework to not exceed the threshold of standards to reduce crowding as well as maintaining positive emotions in the post COVID-19 era. Moreover, this study also suggests that the level of crowding and COVID-19 prevention strategies and implementation can affect tourists' emotions in nature-based tourism destinations significantly. These findings highlight the importance of enforcement of social carrying capacity limits and COVID-19 prevention strategies for tourism destinations to provide desirable experiences and reduce physical and mental health risks during the COVID-19 pandemic.

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