Visitor Attitudes Toward Climate Mitigation Strategies: Influence of Travel Distance and Experience Use History

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Introduction

Tourism development is interdependent with the natural environment, particularly as it relates to climate change (Hunter, 2012; Sun, 2014). Increasing concerns regarding climate change along with tourists' impact on the environment (Lee, Jan, & Yang, 2013) highlight the need to educate tourists, encourage their climate friendly behavior, and increase their support for climate friendly management actions. The concept of visitors' climate friendly behavior extends research examining environmentally responsible behavior (defined as the actions that protect and advocate sustainable use of natural resources; Vaske & Kobrin, 2001), and addresses environmentally responsible behavior specifically related with climate change (Groshong, Wilhelm Stanis, Morgan, & Li, 2019). Furthermore, both travel distance and experience use history (EUH; the amount of past experience an individual has with an activity at a specific site and other similar sites; Hammitt, Backlund, & Bixler, 2004) are important factors that have been used to understand visitor behavior and management preferences in outdoor recreation and tourism settings (Eagles, Johnson, Potwarka, & Parent, 2015; Smith, Moore, & Burr, 2010). However, research examining visitor attitudes toward climate mitigation strategies (i.e., climate change friendly behavior, support for climate friendly management actions), and its association with travel distance and EUH, is lacking.

Therefore, this study was conducted to understand visitor attitudes toward climate mitigation strategies, using an integrated approach of visitors' climate change friendly behavior and their support for management actions, and to explore whether visitor attitudes differ across different travel distance thresholds and levels of EUH. Study results not only contribute to the literature of environmentally responsible behavior in tourism, but also provide management insights for reducing visitor impacts on the environment while on-site and promoting sustainable destination development.

Literature Review

Encouraging tourists' environmentally responsible behavior and support for management actions to protect the resources is instrumental to minimize negative environmental impacts of tourism activities and is essential to the success and sustainability of tourism development. Previous studies have examined visitors' environmentally responsible behavior in various nature-based tourism settings including national parks, wetland recreation areas, and other protected areas (Brown, Ham, & Hughes, 2010; Halpenny, 2010; Lee, 2011). Likewise, a few studies have examined visitor support for management efforts (e.g., Groshong et al., 2019; Hall, Seekamp, & Cole, 2010; Kyle, Absher, & Graefe, 2003). Researchers have also looked into the associations of visitors' environmentally responsible behavior with different factors such as place attachment, commitment to natural environment, and interpretation services (Ballantyne, Packer, & Sutherland, 2011; Lee, 2011; Vaske & Kobrin, 2001; Kerstetter & Bricker, 2009). Although a variety of scales and constructs have been used to measure visitors' environmentally responsible behavior (Lee & Jan, 2015), one useful approach has been adapted to climate friendly behaviors (CFB), which distinguishes Visit Based CFB (i.e., site-specific CFB) and Big Picture CFB (i.e., general CFB) dimensions, and also includes support for climate friendly management action (Groshong et al., 2019). Still, research is limited in addressing public support for management actions specifically related to climate change mitigation.

Travel distance has long been studied in the tourism field. Previous research predominantly examined travel distance as related to tourists' travel patterns from one market to multiple destinations (Eagles et al., 2015). Researchers have also employed travel distance as a means to capture differences between proximate and distant visitors (e.g., visit frequency, place attachment) in nature-based tourism (Budruk, Wilhelm Stanis, Schneider, & Anderson, 2011; Walker & Crompton, 2012). Across these studies, several common distance thresholds have been examined and were suggested effective in segmenting visitors including 15 miles (e.g., Anderson, Wilhelm Stanis, Schneider, & Leahy, 2008; Budruk et al., 2011), 50 miles (Davenport et al., 2010; Nyaupane, Graefe, & Burns, 2003; Kil, Holland, & Stein, 2015), and 100 miles (Arnberger & Brandenburg, 2007; Nyaupane et al., 2003).

EUH is typically measured by both length and frequency components in multiple dimensions, including total years of use and frequency per year of participation at the given location and/or at similar locations (Hammitt et al., 2004; Smith et al., 2010). The extensive EUH research in the recreation field has examined its association with factors such as place attachment/bonding (Moore & Graefe, 1994), perceived crowding (e.g. Arnberger & Brandenburg, 2007), and visitor satisfaction (Holloway, 2011). Some tourism scholars believe that the EUH framework is more thorough as compared to the traditional first-time/repeat visitor dichotomy often used to examine past experience in tourism research, thus adopting it to segment visitors and understand their concerns and preferences (e.g., Draper, 2016; Kline, Greenwood, Swanson, & Cardenas, 2014).

The limited research addressing environmentally friendly behavior in relation to climate change in tourism, the scarcity of studies examining the influence of travel distance or EUH on visitors' CFB, the lack of a systematic examination of major distance thresholds and a refined EUH framework in the literature all call for an investigation into visitor attitudes toward climate mitigation strategies. As such, this study was conducted to examine the impacts of travel distance and EUH on visitors' CFB and their support for climate friendly management actions.

Methodology

A survey was conducted in 2017 among visitors in the selected 20 Missouri state parks and historic sites using a stratified-cluster sampling approach to maximize visitor variability across seasons, popular areas in parks, and timing (weekends versus week days). The survey was self-administered, primarily using tablets loaded with the Qualtrics survey platform. An off-site paper survey was also available for respondents unable to complete on-site. The survey instrument obtained information on visitors' CFB and their support for climate friendly management actions, using a five-point Likert scale (1 = very unlikely/strongly disagree; 5 = very likely/strongly agree). The CFB scale comprised eight items representing two dimensions: Visit Based CFB focuses on behaviors at the specific state park where visitors where surveyed (4 items; e.g., "recycle at this park", "tell my friends not to feed animals in this park"); Big Picture CFB depicts behaviors at all Missouri state parks in general (4 items; e.g., "write letters in support of Missouri parks", "contribute money to support environmental protection at Missouri state parks"). A five-item scale of visitors' support for climate friendly management actions was also developed including items such as "Increase fees to fund climate-friendly practices" and "Restrict the use of private vehicles within parks". The survey also queried respondents' travel distance (calculated using residential zip codes, 4 distance categories), levels of EUH (i.e., number of years and visitation frequency to the specific park where respondents were surveyed and all Missouri state parks), and demographics.

Descriptive statistics were used to examine visitors' demographics, their Visit Based CFB, Big Picture CFB, and support for climate friendly management actions. Cronbach's alphas were computed to assess internal reliability of items within each dimension of visitors' CFB, and the support for climate friendly management action dimension. A series of one-way ANOVA tests were conducted to understand the influence of travel distance and EUH on visitors' Visit Based CFB, Big Picture CFB, and support for climate friendly management action dimensions, as well as items. Significant results ($p < .05$) were followed by post-hoc tests to examine differences between groups; Bonferroni adjustments were applied to critical values as appropriate.

Results

A total of 1,775 visitors completed the survey (69.7% response rate). Respondents were predominantly middle-aged (*M* = 45.2 years old), female (52.6%), and white (89.9%), with at least a four-year college degree (51.5%) and an annual household income above $50,000 (61.7%). Respondents were mostly Missouri residents (69%), familiar with both the specific park where they were surveyed (*Median* = 9.8 years of visit) and all Missouri state parks (*Median* = 20.8 years of visit), and lived within one-hour drive (*Median* = 56 miles) to the park where they were surveyed. Visitors described themselves as conservative (36%), liberal (27%), or moderate (18%).

When examined by travel distance, about a quarter of visitors traveled either less than 15 miles (23.6%) or between 15 to 50 miles (23.8%) to the park. Another 18.9% of visitors traveled between 51-100 miles, and about one-third (33.7%) came from more than 100 miles away. A four-category matrix was developed to depict visitors' EUH levels at Missouri state parks. Over one third of the respondents concentrated at either the lower ($Low_{this\ park}/Low_{all\ park}$, 36.5% of the respondents; Table 1) or the higher category ($High_{this\ park}/High_{all\ park}$, 36.8 % of the respondents) in the EUH matrix.

Cronbach's alphas showed high internal reliability among items comprised in each of two dimensions constructed to examine visitors' CFB (Visit Based CFB, α = .849; Big Picture CFB, α = .870), and support for climate friendly management action (α = .825). Overall, visitors indicated greatest support for climate friendly management action (*M* = 3.65), followed by Visit Based CFB (*M* = 3.58) and Big Picture CFB (*M* = 2.57).

Analyses showed that visitors' travel distance was significantly associated with their willingness to engage in CFB and support for climate friendly management action (Table 2). Specifically, visitors living more than 100 miles away were less willing to engage in both Visit Based CFB and Big Picture CFB, but more supportive of climate friendly management action than those living within 15-50 miles of the park. Results also showed that visitors' levels of EUH were significantly associated with both Visit Based CFB and Big Picture CFB, yet not with their support for climate friendly management action (Table 3). In general, high EUH visitors indicated more willingness to engage in both Visit Based CFB and Big Picture CFB. Specifically, visitors of $Low_{this\ park}/Low_{all\ park}$ were significantly less willing than those with $Low_{this\ park}/High_{all\ park}$ or $High_{this\ park}/High_{all\ park}$, to engage in Visit Based CFB. Likewise, visitors with $High_{this\ park}/High_{all\ park}$ were significantly more willing than all other visitor groups of EUH levels to engage in Big Picture CFB.

Discussion and Conclusion

This study improves our understanding of visitor attitudes toward climate mitigation strategies from the perspectives of their climate friendly behavior and support for climate friendly

management actions. Overall, visitors were more willing to engage in climate friendly behavior at the specific park where they were surveyed, as compared to all Missouri state parks in general, and were relatively supportive of climate friendly management actions. However, there are still opportunities for improvement.

Although most respondents were Missourians, more than half of them traveled over 50 miles, and about one third traveled over 100 miles for their park visit, which suggests park managers could focus marketing efforts on in-state visitors from communities that are more than 50 miles away from the park. Considering that visitors living further away were less willing to engage in climate friendly behavior, park managers could place more effort in effectively explaining and communicating the benefits of climate friendly behavior (e.g., ensuring quality on-site experience, enhancing environmental sustainability) for distant visitors through brochures and ranger programs. The favorable ratings of proximate visitors toward Visit Based CFB may attribute to their connectedness to the area and resources, as proximate visitors tend to have a higher level of place identity (Budruk et al., 2011) and place attachment is shown positively influenced by pro-environmental behavior (Ramkissoon, Weiler, & Smith, 2012). Interestingly, visitors living further were more supportive of climate friendly management actions in parks. This maybe because that they do not visit parks as often and thus are less impacted by the management actions.

More than one third of the visitors concentrated in the lower level of EUH matrix (both low visitation to this and all state parks). This along with the finding that EUH was significantly associated with climate friendly behavior, indicates that encouraging park visits is key to increase the awareness and willingness to take climate friendly behavior and management actions. As such, park managers should not only make efforts to attract new visitors to parks, but also to increase the visitation levels of current visitors. Specifically, designing programs that bring back return visitors (e.g., event or activity series) may be useful in gaining their support for climate friendly management actions. In addition, the greater willingness among high EUH visitors to engage in climate friendly behavior may be related with their higher sensitivity to environmental impacts in recreation areas (White et al., 2008).

Taken together, study results provide important implications for the management of state parks and other nature-based tourism destinations in order to better serve visitors in response to climate change. Understanding visitor attitudes toward climate mitigation strategies, both in terms of visitor behaviors and support for management actions as well as differences by EUH and travel distance, is also a step forward toward minimizing negative environmental impacts of climate change and fostering sustainable destination development.

Table 1. Visitors' experience use history of Missouri state parks.

EUH levels[1]	**Missouri state parks** (n = 1,622)	
	n	%
$Low_{this\ park}$/ $Low_{all\ park}$	592	36.5
$High_{this\ park}$/ $Low_{all\ park}$	212	13.1
$Low_{this\ park}$/ $High_{all\ park}$	221	13.6
$High_{this\ park}$/ $High_{all\ park}$	597	36.8

[1] Each EUH level combines length and frequency dimensions of both the specific park where visitors were surveyed (this park) and all Missouri state parks (all park).

Table 2. A comparison of visitors' climate friendly behavior and support for management action associated with their travel distance.

Attitudes toward climate mitigation strategies	<15 miles	15-50 miles	50-100 miles	>100 miles	F	Sig.
Climate Friendly Behavior (CFB)						
Visit Based CFB	**3.74[a]**	**3.57[a]**	**3.63[a]**	**3.48[b]**	**5.198**	**.000**
Volunteer to stop visiting a favorite spot in this park if it needs to recover from environmental damage	3.66	3.45	3.44	3.30	5.495	.001
Volunteer to reduce my use of a favorite spot in this park if it needs to recover from environmental damage	3.59	3.38	3.40	3.22	6.323	.000
Tell my friends not to feed animals in this park	3.57	3.44	3.58	3.40	2.087	.100
Recycle at this park	4.15	4.04	4.06	3.95	2.402	.066
Big Picture CFB	**2.78[a]**	**2.60[a]**	**2.61[a]**	**2.42[b]**	**10.195**	**.001**
Attend a public meeting about managing the park's environmental issues	2.67	2.42	2.43	2.27	9.260	.000
Volunteer to help the park deal with environmental issues	2.95	2.63	2.62	2.50	11.873	.000
Write letters in support of Missouri (MO) Parks	2.64	2.65	2.58	2.36	6.221	.000
Contribute money to support environmental protection at MO State Parks	2.87	2.71	2.78	2.57	5.436	.001
Support for Climate Friendly Management Action	**3.70**	**3.56[a]**	**3.67**	**3.73[b]**	**3.644**	**.012**
Increase fees to fund climate-friendly practices	3.30	3.11	3.23	3.39	4.766	.003
Encourage visitors to use less energy or water	3.73	3.64	3.79	3.84	3.248	.021
Restrict the use of private vehicles within parks	3.23	2.98	3.06	3.18	4.094	.007
Close areas that are sensitive or damaged	3.95	3.84	3.93	3.89	1.023	.381
Encourage visitors to recycle	4.33	4.23	4.35	4.32	1.282	.279

[a,b] Different letter superscripts indicate statistical difference between groups after applying Bonferroni adjustments to critical values.

Table 3. A comparison of visitors' climate friendly behavior and support for management action associated with their levels of EUH.

Attitudes toward climate mitigation strategies	$Low_{this\ park}$/ $Low_{all\ park}$	$High_{this\ park}$/ $Low_{all\ park}$	$Low_{this\ park}$/ $High_{all\ park}$	$High_{this\ park}$/ $High_{all\ park}$	F	Sig.
Climate Friendly Behavior (CFB)						
Visit based CFB	**3.40[a]**	**3.54**	**3.71[b]**	**3.74[b]**	**11.907**	**.000**
Volunteer to stop visiting a favorite spot in this park if it needs to recover from environmental damage	3.23	3.35	3.58	3.63	9.964	.000
Volunteer to reduce my use of a favorite spot in this park if it needs to recover from environmental damage	3.15	3.25	3.52	3.60	13.601	.000
Tell my friends not to feed animals in this park	3.33	3.41	3.59	3.60	5.140	.002
Recycle at this park	3.88	4.15	4.18	4.13	7.420	.000
Big Picture CFB	**2.38[a]**	**2.54[a]**	**2.57[a]**	**2.78[b]**	**16.000**	**.000**
Attend a public meeting about managing the park's environmental issues	2.27	2.42	2.30	2.62	10.612	.000
Volunteer to help the park deal with environmental issues	2.46	2.58	2.70	2.82	9.661	.000
Write letters in support of Missouri (MO) Parks	2.31	2.46	2.59	2.75	13.858	.000
Contribute money to support environmental protection at MO State Parks	2.50	2.68	2.70	2.91	12.350	.000
Support for Climate Friendly Management Action	**3.68**	**3.61**	**3.66**	**3.66**	**0.406**	**.749**
Increase fees to fund climate-friendly practices	3.36	3.22	3.18	3.21	2.155	.092
Encourage visitors to use less energy or water	3.73	3.70	3.77	3.75	0.217	.884
Restrict the use of private vehicles within parks	3.16	3.08	3.14	3.07	0.684	.562
Close areas that are sensitive or damaged	3.89	3.83	3.92	3.92	0.516	.671
Encourage visitors to recycle	4.26	4.23	4.30	4.35	1.507	.211

[a,b] Different letter superscripts indicate statistical difference between groups after applying Bonferroni adjustments to critical values.

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