

Attributes, activities, & meanings: Exploring climate impacts to nature-based tourism through the lens of "place"

Research problem

- Benefits of nature-based tourism (NBT):**
 - Environmental: High-quality ecosystems
 - Economic: Regional growth/stability
 - Climate change impacts NBT:
 - Supply: natural resources (increased temperature, decreased fish populations)
 - Demand: recreationists' trip-taking behaviors (timing, activity and site preferences)
- How can climate change impacts to NBT be assessed through the lens of place?**
- Personal:** Improved physical & mental health
- Social:** Stronger families

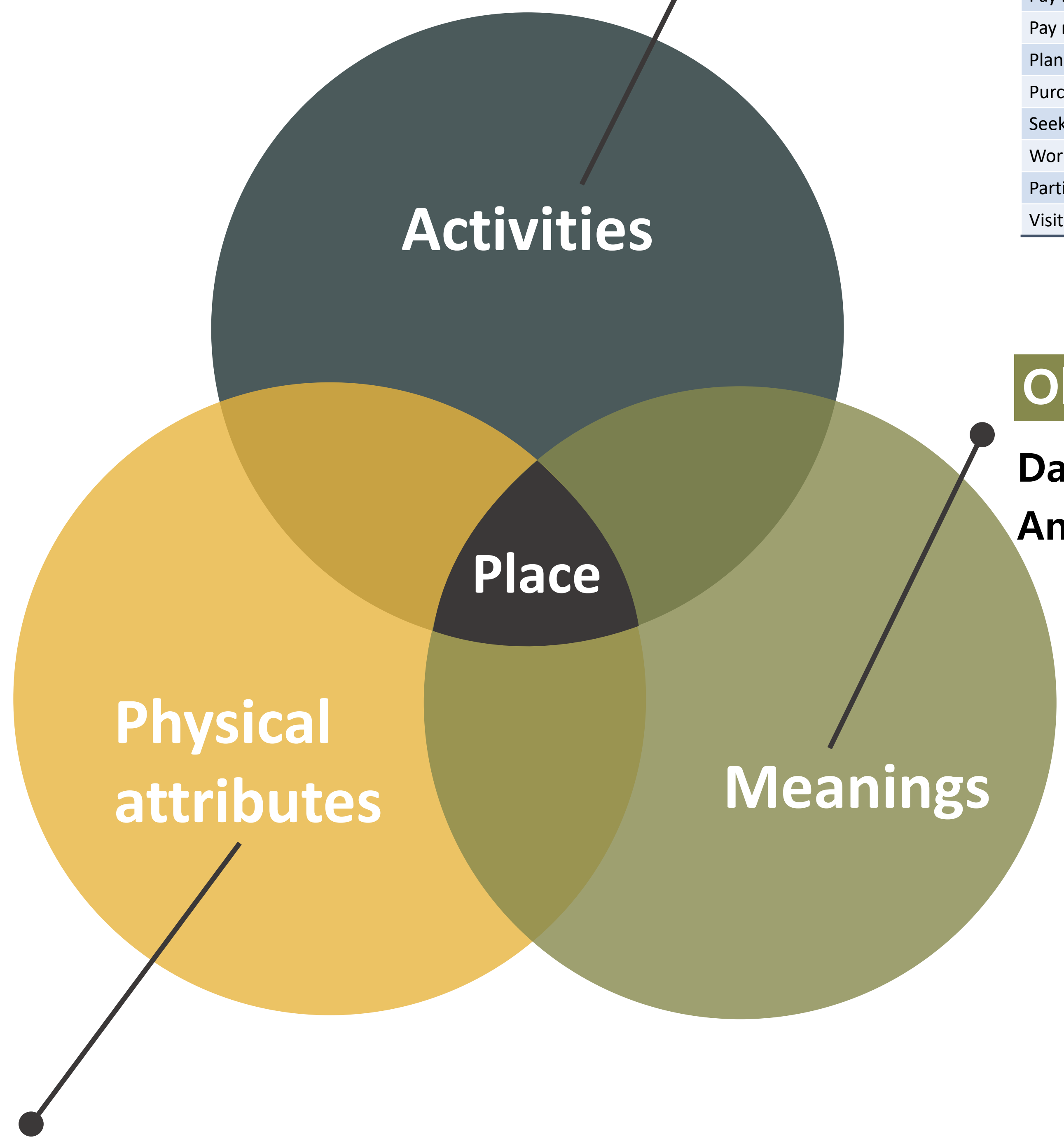
Multiple-method research design

- Qualitative**
 - Jul. 18-Sept. 7, 2015
 - Photos: n = 186
 - Unique users: n = 53
- Quantitative**
 - Jul. 15-Aug. 3, 2015
 - n = 1,398
 - 57% response rate

Study Area

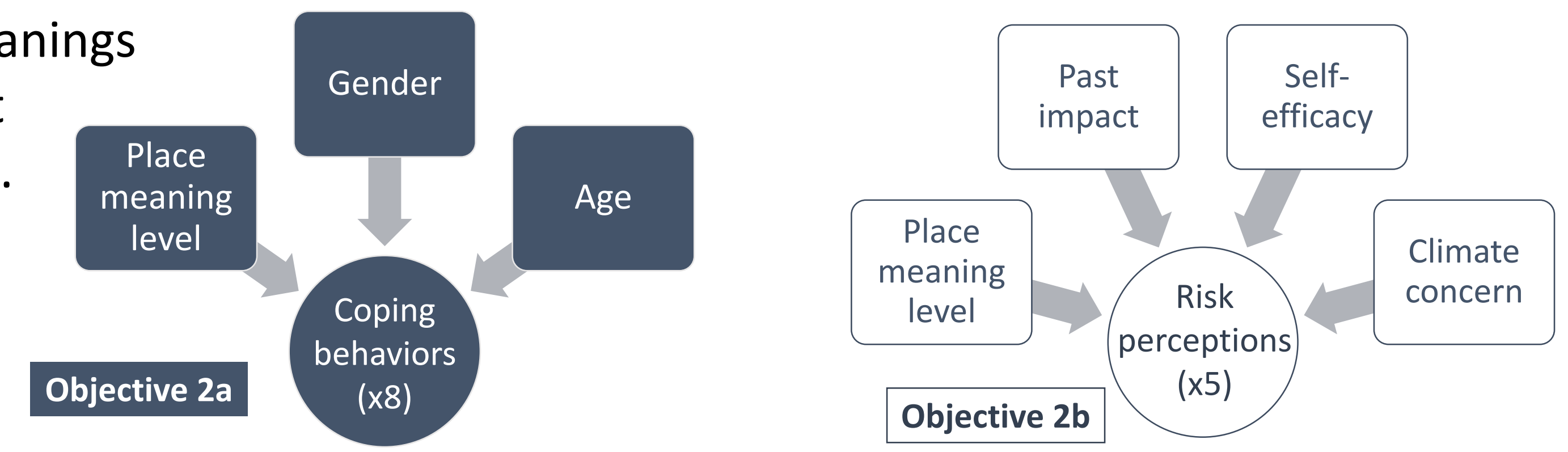


Environmental variable	Current	Future – low emissions future	Future –high emissions future
% days above avg. daily temperature (71 F)	60% (18 of 30 days)	63% (19 of 30 days)	67% (21 of 30 days)
% days of above 80 F heat index	5% (2 of 30 days)	17% (5 of 30 days)	19% (6 of 30 days)
% of days with more than 1/4 " rainfall	14% (5 of 30 days)	12% (4 of 30 days)	11% (3 of 30 days)
		'high', 'very high', & 'extreme'	'very high' & 'extreme'
% of days with fire risk	18% (6 of 30 days)	35% (11 of 30 days)	37% (11 of 30 days)
% of streams with brook trout	77%		20%
% of streams with small-mouth bass	53%		58%



Objective 2

Assess how visitors' place meanings are related to visitors' (a) past coping behaviors and (b) future risk perceptions.
Data: On-site visitor survey data
Analysis: Binary logistic regression



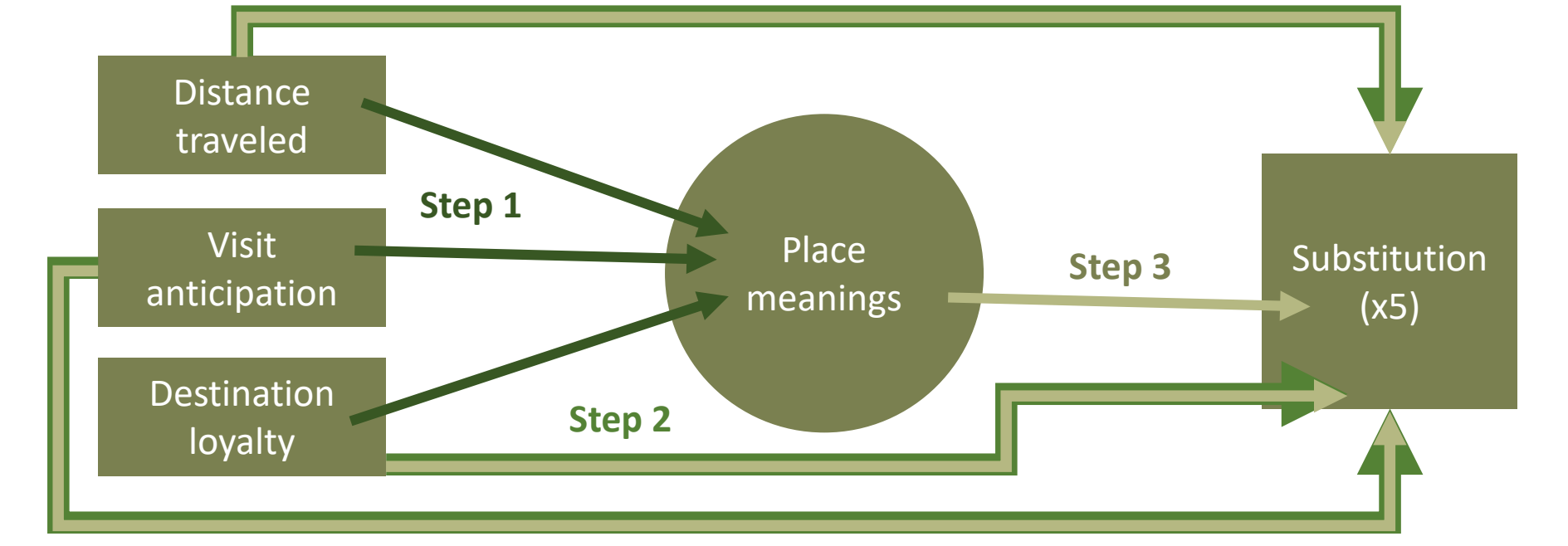
Findings:

Coping behaviors	Freq.	Age	Gender	Meanings
Pay more attention to weather before trips	38%	< 44	M	High
Pay more attention to weather during trips	30%	< 34	M	n.s.
Plan trips for other times of the year	26%	All	M	n.s.
Purchase new or better equipment	19%	n.s.	M	High
Seek lodging options that enhance safety	16%	18-24	n.s.	High & mod.
Worry more about safety prior to/during trips	17%	18-24	n.s.	n.s.
Participate in less risky recreation activities	21%	n.s.	n.s.	n.s.
Visit recreation sites that reduce risk	21%	n.s.	n.s.	n.s.

Risk perception	Frequencies		Concern	Efficacy
	Negative	Positive		
Self	28%	17%	Low	n.s.
Future trips	24%	18%	Low	Low
Rec. infrastructure	33%	26%	Low	Low
Nature	37%	31%	Low	n.s.
Tourism economy	32%	25%	Low	Low

Objective 3

Understand how place meanings may mediate climate change driven recreation substitution
Data: On-site visitor survey data
Analysis: Ordinal logistic regression with a mediating variable



Findings:

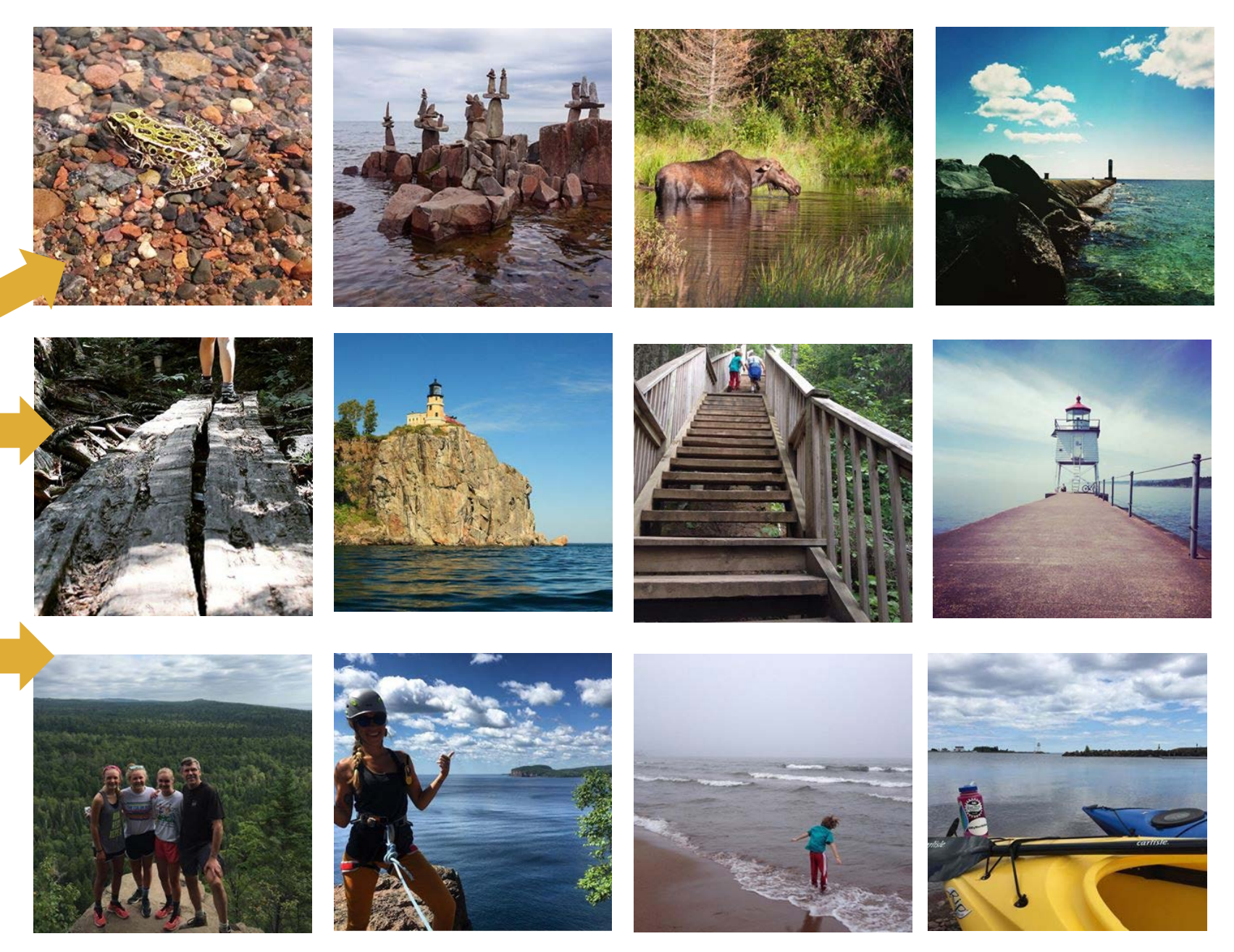
	Recreation substitution	Destination loyalty	Trip anticipation	Travel distance
Activity substitution	Stay on the North Shore but do something else.	Low loyalty (p < .033) Not mediated	n.s.	n.s.
Temporal substitution	Cancel your trip, but reschedule during the summer season.	Low loyalty (p < .021) Partially mediated	Low anticipation (p = .040) Partially mediated	n.s.
	Cancel your trip for the full summer season.	Low loyalty (p < .014) Partially mediated	n.s.	n.s.
Spatial substitution	Travel elsewhere on the North Shore to participate in the planned summer activity.	Low loyalty (p < .018) Not mediated	High anticipation (p < .031) Partially mediated	n.s.
	Travel outside of the North Shore to participate in the planned summer activity.	Low loyalty (p < .004) Not mediated	High anticipation (p < .009) Partially mediated	n.s.

Objective 1

Explore the physical characteristics of place as conceptualized through images of a NBT destination.
Data: Photographic images and captions
Analysis: Interpretive content analysis to reveal key themes

#MyNorthShore

Category	Themes	Full (n)	Full (%)	Avid removed (n)	Avid removed (%)
1. Natural Resources	Wildlife, weather, waterfalls, rocks, plants, rivers, Lake Superior, inland lake, landscapes, insects, forests, coastline.	205	45%	117	43%
2. Built infrastructure	Roads (waysides, transportation corridors, streetscapes), recreation infrastructure (e.g., trails, boat ramps, bridges), historic sites, buildings (e.g., lighthouses, retail shops, restaurants) hotels, cabin or lodge.	70	15%	40	15%
3. Human Subjects	Self, recreation provider, pets, number of subjects in photo, family and friends, youth, mixed generation, adults.	66	14%	44	16%
4. Outdoor Recreation	Visiting cultural and historic sites, swimming, scenic driving, rock collecting, recreation constraints, recreation substitution, picnicking, leisure at home, interpretation, visitor's center, signs, museums, hunting, hiking, gathering wild plants (foods), fishing, creating art, contemplation, rock climbing, camping, campfires, boating, bicycling, ATV use.	51	11%	29	11%
5. Affect	Include both references to positive and negative emotional responses.	39	9%	18	7%
6. Culture	Ojibwe (native American symbols or cultural references), food and drink, art.	29	6%	22	8%



Implications

- Place-based marketing**
 - Include images of key attributes (transcend language barriers)
 - Elicit place-based values related to desirable visitor behaviors
 - Place image/meanings may curb losses due to climate change
- Place-based management**
 - Resource inventory, monitoring & climate adaptation through visitors' conceptualization of the North Shore destination image
 - Behavioral: influenced by place meanings
 - Cognitive: influence by global climate concern
 - Changing environmental conditions → flexibility for substitution