CROWDING RELATED NORMS IN OUTDOOR RECREATION: U.S. VERSUS INTERNATIONAL VISITORS

Megha Budruk
Graduate Research Assistant,
University of Vermont,
361 Aiken,
School of Natural Resources,
Burlington, VT 05401

Robert Manning
Professor,
University of Vermont,
356 Aiken, School of Natural Resources,
Burlington, VT 05401

Abstract: Research on crowding-related norms has begun to explore differences across settings, time, activities, and visitor characteristics such as age, economic status, and country of origin. The literature examining visitors' country of origin suggests a mixed pattern. While there is some evidence of differences across country of origin, other studies have not indicated such. This paper presents a meta-analysis of this issue using data from multiple studies conducted in the U.S. national park system. Findings indicate relatively few differences between U.S. and international visitors regarding a variety of crowding-related norms and associated measures. Where there are differences, these tend to be associated with the "preference" dimension of crowding-related norms and with visitor reports of the number of other visitors typically seen. Understanding visitor norms across cultures will enable managers to provide for an improved national park experience for all.

Introduction

Research in cultural diversity in outdoor recreation has been driven by the recognition that different cultural and ethnic groups may not share the same attitudes, beliefs, and norms regarding acceptable recreation experiences (Simcox, 1993). Understanding these differences is especially important in U.S. natural resource environments where a majority of managers come from anglo-european ancestry, may share similar land-use management philosophies, and are used to dealing with client groups with comparable backgrounds (Williams & Carr, 1993). While there exists a relatively large body of work on norms in outdoor recreation (Manning, 1999), recent studies have begun to explore norms reported by international groups (Vaske, Donnelly, & Petruzzi, 1996; Kim & Shelby, 1998).

Crowding and Carrying Capacity

Crowding in outdoor recreation has received extensive research attention. It has been defined as a negative and subjective evaluation of use levels and is understood as a normative concept (Manning, 1999). This implies that outdoor recreation visitors often have preferences, expectations or other standards by which to judge a situation as crowded or not. Crowding has often been addressed within the context of carrying capacity.

Rising visitation to the national park system has raised tensions between conserving important park resources while at the same time providing for quality recreation experiences. Carrying capacity has therefore become increasingly important for park planning and management. In its most generic form, carrying capacity has been defined as the amount and type of visitor use that can be accommodated in a park or related area while sustaining resources and the quality of the visitor experience. Contemporary carrying capacity frameworks such as Visitor Experience Resource Protection (VERP) rely on indicators and standards of quality to determine and manage carrying capacity (Graefe Kuss, & Vaske, 1990; Manning, 1986; Manning, Lime, Hof, & Freimund, 1995; National Park Service, 1993; Shelby & Heberlein, 1986; Stankey et al., 1985).

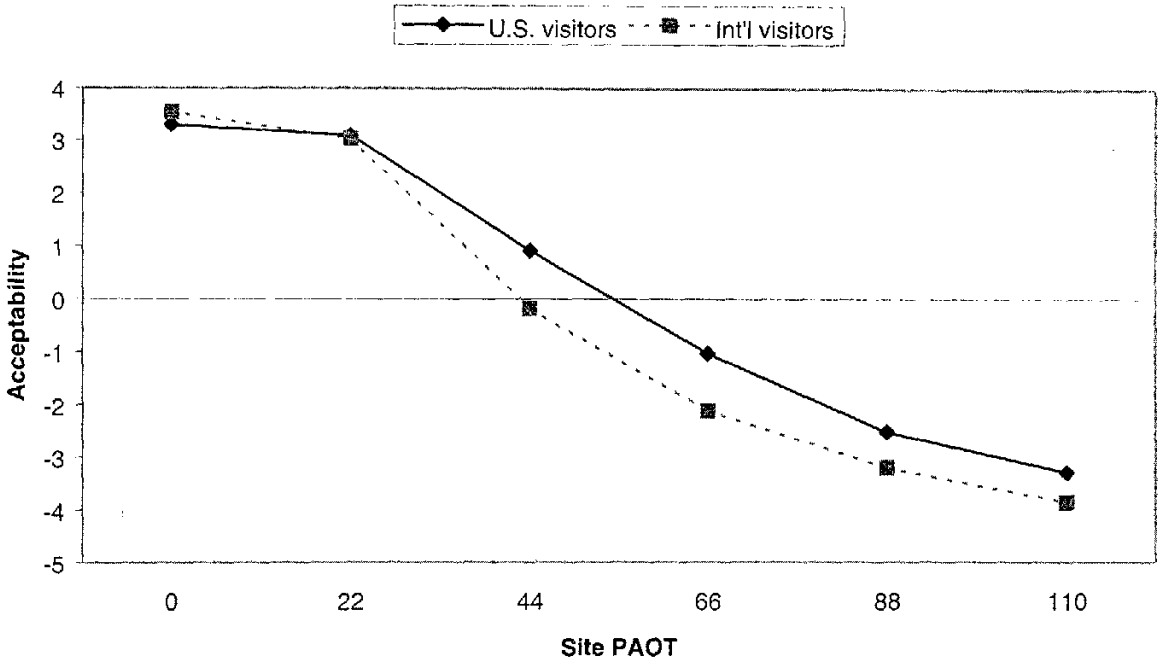
Indicators of quality are measurable, manageable variables that help define the level of resource protection and type of visitor experience to be provided and maintained. Indicator variables may include elements of the physical, social, and managerial environment that are important in determining the quality of natural, cultural and historical resources and the quality of visitor experiences. Examples of crowding-related indicator variables often used in carrying capacity research include number of people at one time (PAOT) at attraction sites and along trails, waiting times, length of tours, and size of tours. Standards of quality are minimum acceptable conditions of indicator variables. Carrying capacity can be managed by monitoring indicators of quality and implementing management activities to ensure that standards of quality are maintained.

Normative Research

Research on visitor-based standards of quality has increasingly focused on personal and social norms. Norms in the field of outdoor recreation have been defined as standards that individual and groups use for evaluating behavior, social and environmental conditions (Donnelly, Vaske, & Shelby, 1992; Shelby and Vaske, 1991; Vaske, Graefe, Shelby & Heberlein, 1986). If visitors have normative standards concerning relevant aspects of recreation experiences, then such norms can be measured and used as a basis for formulating standards of quality (Manning, et al. 1999).

Recent reviews of the outdoor recreation norm literature suggest that there are definitional and methodological issues surrounding normative theory and its application (Roggenbuck, Williams, Bange, & Dean, 1991; Manning, Johnson & Vande Kamp, 1996). Despite these potential shortcomings, norms have been shown to be useful for describing, predicting and influencing recreation behavior. The most common application of normative research has been in crowding studies, where encounters, proximity and conflict issues have been examined resulting in development of standards of quality.

Several techniques of norm measurement exist. These include "long" and "short" question formats, both of which can employ either numerical or visual approaches. In the long question format, respondents are asked to evaluate a range of impact conditions, such as increasing numbers of people at an attraction site. The range of conditions can be presented to visitors numerically or by a set of visual images. Resulting data provide a measure of personal crowding-related norms of respondents and these data can be aggregated in a social norm curve such as those presented in Figure 1.



In the short question format, an open-ended question is asked. For example, respondents might be asked to simply report the maximum number of other visitors acceptable, or asked to pick the visual image that most closely approximates this condition.

Finally, a number of evaluative dimensions can be used to measure crowding-related norms. For example, it is common to ask respondents to report the maximum number of other visitors "acceptable". However, other evaluative dimensions can also be used, such as "preference" and "tolerance".

Most studies of crowding-related norms have focused on U.S. national parks and related outdoor recreation areas. Consequently, resulting data are derived primarily from U.S. respondents. However, several recent studies in the U.S. national park system have included large enough sample sizes to begin to explore potential differences between U.S. and international visitors to these sites.

Study Methods and Analysis

Data on crowding-related norms for 13 sites in 5 U.S. national park units were used in this study (Alcatraz Island, Arches National Park, Mesa Verde National Park, Statue of Liberty National Monument and Yosemite National Park). Respondents were asked to report their norms across a number of indicator variables such as PAOT at attraction sites, PAOT along trails, waiting times to visit park attractions, frequency of tours, size of tour groups, and length of tours. Both long and short form data were used.

In the long form approach, respondents were asked to rate the acceptability of a range of impact conditions on a scale of –4 ("very unacceptable") to +4 ("very acceptable"). These conditions were represented either numerically or visually. Results were graphically represented as a norm curve. Norm curves of U.S. and international visitors were tested for statistically significant differences using a General Linear Model multivariate analysis, specifically Pillais trace criterion (Norusis, 1990).

In the short form approach, respondents were asked to report their "acceptability", "preference" and "tolerance" for conditions of indicator variables. Once again, these conditions were represented either numerically or visually. Using PAOT at attraction sites as an example, "acceptability" was measured by asking respondents "which photograph shows the highest number of visitors you think would be acceptable to see?" Similarly, "preference" and "tolerance" were measured by asking respondents "which photograph shows the number of people that you would prefer to see?" and "which photograph shows the number of people that would be so unacceptable that you would no longer visit?" Respondents were further asked to report conditions they thought these

indicators "should be managed for", and conditions that were "typically seen" or experienced. Differences between U.S. and international park visitor norms were examined using independent sample t-tests.

Overall crowding at these sites was measured using the 9-point Likert scale widely accepted in crowding literature, where 1 = "not at all crowded" and 9 = "extremely crowded." Differences between U.S. and international visitors' crowding perceptions were examined using independent sample t-tests.

A comparison of differences in norms between various ethnic groups among U.S. visitors was not possible due to variation in the ethnicity measure over different studies. Further, an examination of differences in norms among international visitors by country of origin was not possible due to insufficient sample sizes.

Results

Table 1 summarizes results of comparisons between U.S. and international visitor norm curves across several crowding-related indicators using long form data. Only 6 of the 20 comparisons were different to a statistically significant degree. In each of these cases, U.S. visitors reported higher norms than international visitors.

Table 1 Differences in norm curves between U.S. and international visitors to U.S. national parks.

Indicator	Park/ Site	F value
Attraction site PAOT	Alcatraz Island	4.7*
	Mesa Verde: Cliff Palace	0.6
	Mesa Verde: Spruce Tree House	1.9
	Mesa Verde: Sun Point Overlook	0.7
	Yosemite: Bridalveil Fall	2.9*
	Yosemite: Glacier Point	0.4
	Yosemite: Yosemite Fall	1.5
Trail PAOT	Arches National Park	1.7*
	Mesa Verde: Spruce Tree House	0.0
	Yosemite: Bridalveil Fall	2.2*
	Yosemite: Mirror Lake	1.7
	Yosemite: Vernal Fall	0.8
	Yosemite: Yosemite Fall	0.9
Frequency of tours	Mesa Verde: Balcony House	2.7*
	Mesa Verde: Long House	0.9
Size of tour groups	Mesa Verde: Balcony House	0.8
	Mesa Verde: Long House	0.3
Length of tours	Mesa Verde: Balcony House	0.6
	Mesa Verde: Long House	0.1
Waiting time	Statue of Liberty	3.2*

* significant at $p<0.05$

Table 2 summarizes results of t-tests between U.S. and international visitor norms across a variety of indicator variables using short form data. Data are organized by respondents' acceptability, preference, and tolerance for attraction site and trail PAOT. Respondents' norms regarding conditions the National Park Service should manage for, and conditions typically seen, are represented in the later part of the table.

Comparisons were made between U.S. and international visitor "acceptability" of attraction site and trail PAOT. Of the eleven comparisons, only one (trail PAOT at Arches National Park) emerged as significant. In this case, international visitors reported an average of 21 people on the trail as the maximum acceptable number of people compared to U.S. visitors who indicated an average of 26.

Similarly, t-tests were performed to compare U.S. and international visitor "preferences" for attraction site and trail PAOT. Of the twelve comparisons, ten emerged as significant. In all ten cases, international visitors preferred seeing fewer people at the sites or trails.

Comparisons were made between "tolerance" levels of U.S. and international visitors for attraction site or trail PAOT. Of the twelve comparisons, only site PAOT at Spruce Tree House at Mesa Verde National Park emerged as significant. In this case, international visitors indicated an average tolerance of 79 people as compared to U.S. visitors who indicated an average tolerance of 89 people.

Comparisons were made between U.S. and international visitor norms for site and trail PAOT the National Park Service "should manage for". Of the twelve comparisons, only management action for site PAOT at Alcatraz Island emerged as significant. In this case, international visitors indicated the National Park Service should manage for 43 people at Alcatraz Island as compared to U.S. visitors who indicated management for 45 people. Finally, in five of the twelve comparisons made, international visitors reported typically seeing significantly fewer people at the attraction sites or trails than U.S. visitors.

Table 3 summarizes results of t-tests to examine differences in crowding perceptions across both visitor sub-groups. Of the eleven comparisons, only one was statistically significant.

Table 2 T-test indicating differences in norms between U.S. and international visitors across a variety of indicators.

Crowding norm	Indicator	Park/ Site	U.S. visitors	International visitors	t-test
Acceptability	Attraction site PAOT	Alcatraz Island	36.4	35.9	1.4
		Mesa Verde: Spruce Tree House	45.0	43.4	0.5
		Yosemite: Bridalveil Fall	15.3	14.8	0.6
		Yosemite: Yosemite Falls	73.9	67.9	1.4
	Trail PAOT	Arches National Park	25.6	20.7	4.2*
		Mesa Verde: Spruce Tree House	26.9	26.6	0.2
		Mesa Verde: Sun Point	30.9	29	0.9
		Yosemite: Bridalveil Fall	13.5	13.2	0.3
		Yosemite: Glacier Point	33.5	34.6	-0.6
		Yosemite: Mirror Lake	18.7	17.7	0.9
		Yosemite: Yosemite Falls	33.9	32.0	0.9
Preference	Attraction site PAOT	Alcatraz Island	25.7	24.0	2.1*
		Mesa Verde: Spruce Tree House	25.1	15.6	2.7*
		Yosemite: Bridalveil Fall	8.3	5.9	3.1*
		Yosemite: Yosemite Falls	42.4	32.3	2.3*
	Trail PAOT	Arches National Park	10.4	6.4	5.7*
		Mesa Verde: Spruce Tree House	16.5	12.4	2.3*
		Mesa Verde: Sun point	15.4	11.6	1.8
		Yosemite: Bridalveil Fall	7.7	4.7	4.3*
		Yosemite: Glacier Point	19.9	18.6	0.7
		Yosemite: Mirror Lake	10.9	8.1	3.1*
		Yosemite: Vernal Fall	2.2	1.9	2.9*
		Yosemite: Yosemite Falls	20.6	14.0	3.6*
Tolerance	Attraction site PAOT	Mesa Verde: Spruce Tree House	89.3	79.3	2.3*
		Yosemite: Bridalveil Fall	25.1	24.6	4.3
		Yosemite: Yosemite Fall	135.1	129.4	1.1
	Trail PAOT	Arches National Park	48.4	48.8	-0.1
		Mesa Verde: Spruce Tree House	42.4	41.6	0.5
		Mesa Verde: Sun Point	55.9	53.4	0.9
		Yosemite: Bridalveil Fall	25.7	24.9	0.8
		Yosemite: Glacier Point	61.0	62.1	-0.6
		Yosemite: Mirror Lake	26.1	25.6	-0.6
		Yosemite: Vernal Fall	4.9	4.8	0.4
		Yosemite: Yosemite Falls	56.5	55.6	0.4
Management Action	Attraction site PAOT	Alcatraz Island	44.6	42.8	2.2*
		Mesa Verde: Spruce Tree House	65.0	57.1	1.8
		Yosemite: Bridalveil Fall	19.2	19.9	-0.7
		Yosemite: Yosemite Falls	103.7	100.6	0.6
	Trail PAOT	Arches National Park	34.6	32.4	1.3
		Mesa Verde: Spruce Tree House	33.1	30.6	1.3
		Mesa Verde: Sun Point	43.8	42.9	0.3

Table 2 Continued

Crowding Norm	Indicator	Park/ Site	U.S. visitors	International visitors	t-test
		Yosemite: Bridalveil Fall	25.7	24.9	1.0
		Yosemite: Glacier Point	49.5	48.2	0.6
		Yosemite: Mirror Lake	33.8	34.7	0.6
		Yosemite: Vernal Fall	4.0	4.0	0.4
		Yosemite: Yosemite Falls	45.1	42.3	0.5
					1.2
Typically seen	Attraction site PAOT	Alcatraz Island	41.5	39.2	2.6*
		Mesa Verde: Spruce Tree House	42.4	37.5	1.5
		Yosemite: Bridalveil Fall	18.1	18.1	0.0
		Yosemite: Yosemite Falls	61.7	56.0	1.5
	Trail PAOT	Arches National Park	18.8	15.8	3.0*
		Mesa Verde: Spruce Tree House	20.4	18.8	1.1
		Mesa Verde: Sun Point	15.6	17.2	-1.0
		Yosemite: Bridalveil Fall	15.1	12.8	2.2*
		Yosemite: Glacier Point	31.0	31.2	-1.0
		Yosemite: Mirror Lake	11.6	9.9	2.0
		Yosemite: Vernal Fall	2.9	2.9	-0.1
		Yosemite: Yosemite Falls	26.7	23.7	2.0*

* significant at p<0.05

Table 3 T-test indicating differences in crowding perceptions between U.S. and international visitors.

Site	U.S. visitors	International visitors	t-test
Alcatraz Island	3.5	3.6	-0.6
Arches National Park	3.2	3.3	-0.4
Mesa Verde National Park	3.3	3.9	-1.7
- reported at Cliff Palace	3.3	3.6	-1.1
- reported at Spruce Tree House	2.6	3.2	-2.6*
- reported at Sun Point			
Statue of Liberty	3.7	3.8	-0.8
Yosemite National Park			
- reported at the Base of Bridalveil Falls	4.7	4.3	1.4
- reported at Glacier Point	3.8	3.8	0.0
- reported at Mirror Lake	3.4	3.7	-1.1
- reported at Vernal Fall	4.3	4.2	0.3
- reported at Yosemite Falls	3.5	3.5	-0.5

* significant at p<0.05

Conclusions

Results of this study indicate fairly inconsistent patterns between U.S., and international visitors regarding crowding-related norms and associated measures. This suggests there are relatively few differences in norms between these two sub-groups. Where significant differences exist, they tend to be associated with "preferences" and number of visitors "typically seen." In each of these cases international visitors prefer seeing fewer people at a site or on a trail as compared to U.S. visitors. At the four sites where significant differences across number of people typically seen emerged, international visitors reported seeing fewer people as compared to U.S. visitors. Crowding perceptions did not vary between U.S., and international visitors.

The relatively few differences in norms between these visitor sub-groups suggest there may be relatively well-established, widely accepted images and associated norms concerning U.S. national parks. While this study examined differences across only two sub-groups, it is important to explore potential differences among other visitor sub-groups based on variables such as gender, age, socio-economic status, etc.

References

Donnelly, M. P., Vaske, J. J., & Shelby, B. (1992). Establishing management standards: Selected examples of the normative approach. In B. Shelby, G. Stankey, & B. Schindler (Eds.), Defining wilderness quality: The role of standards in wilderness management. A workshop proceedings (USDA Forest Service General Technical Report PNW-305).

Graefe, A. R., Kuss, F. R., & Vaske, J. J. (1990). Visitor impact management: The planning framework.

Washington, DC: National Parks and Conservation Association.

Kim, S., & Shelby, B. (1998). Norms for behavior and conditions in two national park campgrounds in Korea. Environmental Management, 22 (2), 277 – 285.

Manning, R. E. (1986). Studies in outdoor recreation. Oregon State University Press, Corvallis.

Manning, R. E., Lime, D. W., Hof, M., & Freimund, W. A. (1995). The carrying capacity of national parks: Theory and application. In Proceedings of the conference on innovationas and challenges in the management of visitor opportunities in parks and protected areas. University of Waterloo, Canada.

Manning, R. E., Johnson, D., & Vande Kamp, M. (1996). Norm congruence among tour boat passengers to Glacier Bay National Park. Leisure Sciences, 18, 125 – 141.

Manning, R. E. (1999). Studies in Outdoor Recreation. Search and research for satisfaction. Oregon State University Press, Corvallis.

Manning, R. E., Valliere, W. A., Wang, B., & Jacobi, C. (1999). Crowding norms: Alternate measurement approaches. Leisure Sciences, 21, 97 – 115.

National Park Service (1993). VERP: A process for addressing carrying capacity in the National Park System. Denver, CO.

Noe, F. P., Hull, R. B., & Wellman, J. D. (1982). Normative response and norm activation among ORV users within a seashore environment. Leisure Sciences, 5 (2), 127 – 142.

Norusis, M. J. (1990). SPSS Introductory Statistics Student Guide. Chicago: SPSS Inc.

Roggenbuck, J. W., Williams, D. R., Bange, S. P., & Dean, D. J. (1991). River float trip encounter norms. Questioning the use of the social norms concept. Journal of Leisure Research 23 (2), 133 – 153.

Simcox, D. E. (1993). Cultural foundations for leisure preference, behavior and environmental orientation. In A. W. Ewert, D. J. Chavez, & A. W. Magill. (Eds.,), Culture, conflict and communication in the wildland-urban interface. San Francisco: Westview Press.

Shelby, B. & Heberlein, T. A., (1986). Carrying capacity in recreation settings. Corvallis, OR: Oregon State University Press.

Shelby, B., & Vaske, J. J. (1991). Using normative data to develop evaluative standards for resource management: A comment on three recent papers. Journal of Leisure Research, 23, 173-187.

Stankey, G. H., Cole, D. N., Lucas, R. C., Petersen, M. E., Frissell, S. S., & Washburne, R. F. (1985). The limits of acceptable change (LAC) system for wilderness planning. (General Technical Report INT-176). Ogden, UT: USDA Forest Service, Intermountain Research Station.

Vaske, J. J., Donnelly, M. P., & Petruzzi, J. P. (1996). Country of origin, encounter norms, and crowding in a frontcountry setting. Leisure Sciences, 18, 161 – 176.

Vaske, J. J., Gracfe. A., Shelby, B. & Heberlein, T. A. (1986). Backcountry encounter norms: Theory, method, and empirical evidence. Journal of Leisure Research, 18, 137-153.

Williams, D. R., & Carr, D. S. (1993). The sociocultural meaning of outdoor recreation places. In A. W. Ewert, D. J. Chavez, & A. W. Magill. (Eds.,), Culture, conflict and communication in the wildland-urban interface. San Francisco: Westview Press.