THESIS

SATISFACTION WITH OUTDOOR RECREATION:

ANALYZING MULTIPLE DATA SETS

Submitted by

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ABSTRACT

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Satisfaction has been a focal point in the study of recreation behavior since the 1970s. This thesis contains two articles, both of which use a comparative analysis approach to assess satisfaction ratings of outdoor recreationists. The first article updates a previous comparative analysis article (Vaske, Donnelly, Heberlein, & Shelby, 1982) by analyzing differences in satisfaction ratings reported by consumptive and nonconsumptive recreationists over a 30-year period. Based on the previous analysis, two hypotheses were advanced: (a) consumptive recreationists will report significantly lower satisfaction ratings than nonconsumptive recreationists, and (b) this pattern will remain constant over study years. Data were obtained from published and unpublished sources. A total of 57 consumptive (e.g., hunters) and 45 nonconsumptive (e.g., kayakers) recreation contexts were examined. Each study used the same satisfaction question (i.e., "Overall, how would you rate your day/trip/experience?"). Following Vaske et al. (1982), responses were collapsed into three categories (i.e., "poor/fair," "good/very good," "excellent/perfect"). The independent variables were activity type and study year. Similar to the previous comparative analysis, consumptive recreationists reported lower satisfaction ratings than did nonconsumptive recreationists (hypothesis 1). Consistent with hypothesis 2, the satisfaction ratings remained statistically equivalent for the "poor/fair" and "excellent/perfect" responses among the three categories of study years. Implications for theory, management, and future research are discussed.

The second article uses a comparative analysis approach to analyze National Park Service (NPS) visitor satisfaction data over a period of 17 years. Based on theory and prior research, six research questions were proposed. The first set of research questions examined the relationships between visitor satisfaction and study year, park designation, and park region. The remaining research questions concerned the relationships between consensus among visitor satisfaction scores and study year, park designation, and park region. Data were obtained from the online NPS Visitor Services Project (VSP) database (177 projects, n = 81,899). Each project contained the same core satisfaction question (i.e., "Overall, how would you rate the quality of the visitor services provided to you and your group?"), which served as the dependent variable. Independent variables included study year, park designation, and park region. For the first three research questions, three 1-way ANOVAs and one 3-way ANOVA indicated that visitor satisfaction varied by study year, park designation, and park region. Using the Potential for Conflict Index (PCI_2), results also addressed the second three research questions by showing that the amount of consensus among visitor satisfaction scores varied by study year, park designation, and park region. Methodological and managerial implications, as well as opportunities for future research, are discussed.

Keywords: comparative analysis, consumptive, National Park Service, nonconsumptive, Potential for Conflict Index, satisfaction, Visitor Services Project

Reference

Vaske, J. J., Donnelly, M. P., Heberlein, T. A., & Shelby, B. (1982). Differences in reported satisfaction ratings by consumptive and nonconsumptive recreationists. *Journal of Leisure Research, 14*(3), 195–206.

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Chapter 1: Introduction

Satisfaction

Satisfaction has been a focal point in the study of recreation behavior since the 1970s. Prior research has used numerous variables (e.g., study year, activity type, setting, group behavior, crowding, past experience, encounters, use levels) as predictors of satisfaction (e.g., Herrick & McDonald, 1992; Vaske, Donnelly, Heberlein, & Shelby, 1982; Vaske & Roemer, in press). The concept is commonly used as a measure of recreation quality, and it can be defined as "the congruence between expectations and outcomes" (Manning, 1999, p. 10). Quality of and satisfaction from recreation experiences reflect management goals and visitor expectations (Heberlein, 1977; Manning, 1999).

Individuals bring their own expectations to experiences that influence the kinds of satisfaction they receive. The multiple satisfaction approach recognizes the diversity of experiences that visitors seek. Different types of satisfaction include communing with nature, testing skills, harvesting game, exercising, and relaxing (Hendee, 1974). Although widely accepted, the multiple satisfaction approach makes it difficult to compare satisfaction ratings among different individuals, settings, and time periods, as is necessary when analyzing multiple data sets. As an alternative, Vaske et al. (1982) have defined satisfaction as "an overall rating of a recreation experience as good or bad. It is a composite of the particular expectations and needs, expressed as a single numerical rating. An average score can be calculated for all participants in an activity and the activities can be compared directly" (p. 198). Defined this way, satisfaction has been operationalized with a single question, such as "Overall, how would you rate your day/trip/experience?" or "Overall, how would you rate the quality of the visitor services provided to you and your group?"

Analyzing Multiple Data Sets

Analyses of multiple data sets (e.g., comparative analyses, meta-analyses) highlight replication of research and generalization of results over different settings and time periods (Vaske & Manning, 2008). Such analyses can demonstrate long-term patterns and trends, discern causal factors, and generate support for theories, which are not possible with a single data set or study. Comparative analyses have been reported for concepts such as crowding (Kuentzel & Heberlein, 1992; Shelby & Vaske, 2007; Shelby, Vaske, & Heberlein, 1989; Vaske & Shelby, 2008), norms (Donnelly, Vaske, Whittaker, & Shelby, 2000; Laven, Manning, & Krymkowski, 2005; Vaske & Donnelly, 2002), motivation (Légaré & Haider, 2008; Manfredo, Driver, & Tarrant, 1996), and satisfaction (Vaske et al., 1982; Vaske & Roemer, in press).

Purpose

This thesis contains two articles, both of which use a comparative analysis approach to assess satisfaction ratings of outdoor recreationists. The first article replicates Vaske et al.'s (1982) analysis by comparing the satisfaction ratings reported by consumptive and nonconsumptive recreationists, and it attempts to discern whether the pattern in these two groups' satisfaction scores remains consistent over time. By using data obtained over the last 30 years, this article seeks to generalize the original findings over a wider range of evaluation contexts and time periods. The second article is similar in its use of comparative analysis to evaluate satisfaction. This latter article, however, analyzes National Park Service (NPS) visitor satisfaction data over a period of 17 years. There are two goals of this second article: (a) to predict satisfaction based on study year, park designation, and park region and (b) to evaluate the amount of consensus among respondents in terms of their satisfaction scores.

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Chapter 2: Differences in Reported Satisfaction Ratings by Consumptive and Nonconsumptive Recreationists: A Comparative Analysis of Three Decades of Research

Summary

This article updates a previous comparative analysis article (Vaske, Donnelly, Heberlein, & Shelby, 1982) by analyzing differences in satisfaction ratings reported by consumptive and nonconsumptive recreationists over a 30-year period. Based on the previous analysis, two hypotheses were advanced: (a) consumptive recreationists will report significantly lower satisfaction ratings than nonconsumptive recreationists, and (b) this pattern will remain constant over study years. Data were obtained from published and unpublished sources. A total of 57 consumptive (e.g., hunters) and 45 nonconsumptive (e.g., kayakers) recreation contexts were examined. Each study used the same satisfaction question (i.e., "Overall, how would you rate your day/trip/experience?"). Following Vaske et al. (1982), responses were collapsed into three categories (i.e., "poor/fair," "good/very good," "excellent/perfect"). The independent variables were activity type and study year. Similar to the previous comparative analysis, consumptive recreationists reported lower satisfaction ratings than did nonconsumptive recreationists (hypothesis 1). Consistent with hypothesis 2, the satisfaction ratings remained statistically equivalent for the "poor/fair" and "excellent/perfect" responses among the three categories of study years. Implications for theory, management, and future research are discussed.

Keywords: consumptive, nonconsumptive, satisfaction

Differences in Reported Satisfaction Ratings by Consumptive and Nonconsumptive Recreationists: A Comparative Analysis of Three Decades of Research

Analyses of multiple data sets (e.g., comparative analyses, meta-analyses) highlight replication of research and generalization of results over different settings and time periods (Vaske & Manning, 2008). Such analyses can demonstrate long-term patterns and trends, discern causal factors, and generate support for theories, which are not possible with a single data set or study. Comparative analyses have been reported for concepts such as crowding (Kuentzel & Heberlein, 1992; Shelby & Vaske, 2007; Shelby, Vaske, & Heberlein, 1989; Vaske & Shelby, 2008), norms (Donnelly, Vaske, Whittaker, & Shelby, 2000; Laven, Manning, & Krymkowski, 2005; Vaske & Donnelly, 2002), motivation (Légaré & Haider, 2008; Manfredo, Driver, & Tarrant, 1996), and satisfaction (Vaske et al., 1982). This article replicated the Vaske et al. (1982) analyses comparing the satisfaction ratings reported by consumptive and nonconsumptive recreationists. By using data obtained over the last 30 years, we sought to generalize the original findings over a wider range of evaluation contexts and time periods.

Satisfaction

Satisfaction has been a focal point in the study of recreation behavior since the 1970s. The concept is commonly used as a measure of recreation quality, and it can be defined as "the congruence between expectations and outcomes" (Manning, 1999, p. 10). Quality of and satisfaction from recreation experiences reflect management goals and visitor expectations (Heberlein, 1977; Manning, 1999).

Individuals bring their own expectations to experiences that influence the kinds of satisfaction they receive. The multiple satisfactions approach recognizes the diversity of experiences that visitors seek. Different types of satisfaction include communing with nature, testing skills, harvesting game, exercising, and relaxing (Hendee, 1974). Although widely

accepted, the multiple satisfactions approach makes it difficult to compare satisfaction ratings among different individuals, activities, and time periods, as is necessary for a comparative analysis. Thus, similar to Vaske et al. (1982), we define satisfaction as "an overall rating of a recreation experience as good or bad. It is a composite of the particular expectations and needs, expressed as a single numerical rating. An average score can be calculated for all participants in an activity and the activities can be compared directly" (p. 198). Defined this way, satisfaction has been operationalized with a single question such as "Overall, how would you rate your day/trip/experience?" (Vaske, 2008).

Consumptive versus Nonconsumptive Recreation Activities

Recreation activities can be organized along a consumptive to nonconsumptive continuum. Recreationists on the consumptive end of the continuum seek to catch or capture and consume an element of the environment. The focus is on a commodity or product to be consumed. Examples of consumptive activities include hunting, angling, gold panning, and mushroom collecting. Nonconsumptive recreationists tend to focus on experiences (e.g., being with friends or experiencing nature) over commodities and products. Examples of nonconsumptive activities are viewing scenery, canoeing, hiking, backpacking, climbing, and camping. Viewing scenery, for example, is almost completely nonconsumptive, as "the viewer can often gain substantial benefits without any impact on the resource or the experience available to the next viewer" (Wagar, 1969, p. 258).

Consumptive and nonconsumptive activities differ in at least two ways. First, recreationists in the two activity types differ in the specificity of their goals. Consumptive recreation activities are generally dominated by one clear and specific goal: the acquisition of the commodity or product to be consumed (Vaske et al., 1982). For example, hunters seek to harvest

game; anglers want to catch fish. Although acquiring a specific product is the most important goal, consumptive recreationists have other goals that can influence a satisfying experience (Vaske et al., 1982). For example, hunters, anglers, or mushroom collectors may also enjoy the solitude of being in nature if alone or the companionship offered by others if in a group. Despite these secondary goals, "seeing, shooting, and bagging game are still the most central evaluative criteria for the recreationist" and are "the strongest predictors of overall satisfaction" (Vaske et al., 1982, p. 197). Realization of the secondary goals is only a partial substitute if the chosen product is not acquired (Vaske, 2008). In contrast, the goals of nonconsumptive recreationists are more general and less well-defined. Backpackers or campers, for example, may be motivated to experience nature, test skills, experience solitude, and/or be with friends. These goals can be achieved throughout the entire experience, do not depend on acquiring a specific product, and are more easily substituted if one goal is not satisfied (Vaske et al., 1982).

A second key difference between consumptive and nonconsumptive recreation activities is the amount of control participants have in fulfilling their goal(s). Consumptive recreationists generally have less control than do nonconsumptive recreationists. Despite the best efforts of hunters or anglers to select an area that ensures successful acquisition of the desired game/fish, there is rarely a guarantee that their goal will be met. Without this control, overall satisfaction for this group is likely to be low (Vaske et al., 1982). By comparison, nonconsumptive recreationists generally have greater control in achieving their goals than their consumptive counterparts. For the nonconsumptive recreationist, it is relatively easier to choose a location that guarantees goal achievement. Unexpected events (e.g., accidents, injuries, flat tires, forgotten equipment, poor weather conditions) can disrupt the desired experience, but nonconsumptive recreationists still

usually have more control over their experience and goals, which is likely to result in higher levels of overall satisfaction (Vaske et al., 1982).

Hypotheses

Based on theory and prior research (Vaske et al., 1982), the following hypotheses were advanced:

H_1: Consumptive recreationists will report significantly lower levels of satisfaction than will nonconsumptive recreationists.

H_2: The overall pattern of findings will remain constant over study years.

Methods

Sampling Design

Data for this paper were obtained from journal articles, published and unpublished reports, proceedings, dissertations, and theses reported in the literature over a 30-year period (i.e., 1975 to 2005). Satisfaction ratings were examined for 102 evaluation contexts (e.g., resident deer hunters in Colorado, kayakers on the Poudre River). A total of 57 consumptive recreation contexts and 45 nonconsumptive recreation contexts were examined. Consumptive activities included hunting (i.e., deer, elk, geese, turkey) and angling (i.e., salmon, trout); nonconsumptive activities included boating, rafting, canoeing, kayaking, climbing, biking, hiking, mountain biking, and sightseeing.

Table 1.1 details the location, sample size, response rate, and methodology for each study reported here. Including all evaluation contexts, the analysis represented 17 states and 2 Canadian provinces. Responses were obtained from 38,703 individuals. Response rates ranged from 39% to 100%, with an average response rate of 77% (consumptive average = 70%, nonconsumptive = 85%). Survey methodologies included on-site surveys (52 contexts), mailed

surveys (41 contexts), telephone surveys (3 contexts), or a combination of on-site and mailed surveys (6 contexts).

Variables

Two independent variables were analyzed: (a) activity type and (b) study year. Activity type was a dichotomous measure representing consumptive (n = 57) and nonconsumptive (n = 45) contexts. Study year was coded as three time periods: (a) 1975 to 1984 (n = 32), (b) 1985 to 1994 (n = 28), and (c) 1995 to 2005 (n = 42).

Each study analyzed used the same satisfaction question: "Overall, how would you rate your day/trip/experience?" Responses were coded on a 6-point scale representing "poor," "fair," "good," "very good," "excellent," and "perfect." This scale was designed to be skewed toward the positive end, as most recreationists rate their experiences favorably. Following Vaske et al. (1982), responses were collapsed into three categories (i.e., "poor/fair," "good/very good," "excellent/perfect"). For each evaluation context per study, the percentage of participants choosing each of the three responses was calculated and analyzed as three separate dependent variables (i.e., potential range = 0 to 100% for each variable).

Analysis

Three 2-way ANOVAs were used to test for significant interactions between the two independent variables, activity type and study year. The relationship between activity type (i.e., consumptive vs. nonconsumptive) and overall satisfaction (i.e., "poor/fair," "good/very good," "excellent/perfect") was examined using t-tests (i.e., hypothesis 1). Three 1-way ANOVAs tested the hypothesis that the overall pattern of findings would remain constant over study years (i.e., hypothesis 2).

A relationship was considered statistically significant at $p < .05$. Eta (η) was used to indicate the strength of a relationship. An eta (or effect size) of .10 was considered a "minimal" relationship, .30 represented a "typical" relationship, and an $\eta > .50$ reflected a "substantial" relationship (Vaske, 2008).

Results

Descriptive Findings

Table 1.2 shows the reported satisfaction ratings by consumptive recreationists within each of the 57 evaluation contexts. The scores for the "poor/fair" satisfaction rating ranged from 4% (i.e., nonresident deer hunters in North Dakota) to 77% (i.e., pheasant hunters at the Bong Wildlife Management Unit during the late season of 1979). Conversely, the percentage of consumptive recreationists rating their overall satisfaction as "excellent/perfect" ranged from 2% (i.e., anglers in a mailed survey in New Hampshire) to 53% (i.e., nonresident deer hunters in North Dakota).

Table 1.3 describes the reported satisfaction ratings by nonconsumptive recreationists within each of the 45 evaluation contexts. The percentage of nonconsumptive recreationists rating their overall experience as "poor/fair" ranged from 0% (e.g., successful climbers at Mt. Shasta, jet boaters on the Rogue River) to 14% (i.e., rafters on the Wolf River). For the "excellent/perfect" response category, the percentage of nonconsumptive recreationists giving this response ranged from 20% (i.e., rafters on the Wolf River) to 91% (i.e., successful climbers at Mt. Shasta, jet boaters on the Rogue River).

Hypothesis Tests

Three 2-way ANOVAs were analyzed to examine potential interaction effects between the two independent variables. None of the interactions were significant, $F \leq 1.86$, $p \geq .162$ in all

of the analyses. Figures 1.1 and 1.2 illustrate the results from these 2-way ANOVAs for the "poor/fair" and "excellent/perfect" response categories. These patterns are consistent with hypothesized relationships.

The means for all three satisfaction variables (i.e., "poor/fair," "good/very good," "excellent/perfect") differed significantly ($p < .001$) between consumptive and nonconsumptive recreationists (see Table 1.4). For the "poor/fair" variable, 37% of consumptive recreationists and 2% of nonconsumptive recreationists gave this rating, $t = 13.33$, $p < .001$, $\eta = .766$. On average, 42% of consumptive and 27% of nonconsumptive recreationists rated their overall satisfaction as "good" or "very good," $t = 5.66$, $p < .001$, $\eta = .501$. Finally, 71% of the nonconsumptive recreationists (on average) rated their experience as "excellent" or "perfect," compared to only 22% of consumptive recreationists who gave this response, $t = 17.15$, $p < .001$, $\eta = .869$. These results support hypothesis 1 by illustrating that consumptive recreationists reported significantly lower levels of satisfaction than did nonconsumptive recreationists. All relationships were considered substantial.

Consistent with hypothesis 2, the satisfaction ratings remained statistically equivalent for the "poor/fair" ($F = 2.18$, $p = .119$, $\eta = .205$) and "excellent/perfect" ($F = 2.78$, $p = .067$, $\eta = .231$) responses among the three categories of study years (i.e., 1975 to 1984, 1985 to 1994, 1995 to 2005) (see Table 1.5). The means for the "poor/fair" variable ranged from 17% to 28%; the means for the "excellent/perfect" satisfaction scores ranged from 38% to 53%. For the "good/very good" variable, the satisfaction scores did vary overall, $F = 11.81$, $p < .001$, $\eta = .439$. Post-hoc analyses, however, indicated that the difference only occurred between two comparisons: (a) the 1995 to 2005 ($M = 43\%$) versus the 1975 to 1984 ($M = 30\%$) responses and

(b) the 1995 to 2005 versus the 1985 to 1994 (M = 30%) evaluations. The 1975 to 1984 and the 1985 to 1994 satisfaction ratings were statistically equal.

Discussion

Overall, study findings supported the two hypotheses. First, the pattern of findings reported by Vaske et al. (1982) was replicated. Consumptive recreationists still reported significantly lower levels of satisfaction than did nonconsumptive recreationists (i.e., hypothesis 1). The 1982 comparative analysis was based on six consumptive and 11 nonconsumptive activities. Analyses reported in this article were based on 57 consumptive and 45 nonconsumptive evaluation contexts. With the increased sample size, we have more confidence in generalizing the findings. Second, when both activity type and study year were included in the model, the general patterns supported the second hypothesis; consumptive recreationists reported significantly lower levels of satisfaction levels than nonconsumptive recreationists did over time. These findings have theoretical implications for the concept of satisfaction and the differences between consumptive and nonconsumptive recreation activities. They also have managerial implications and present opportunities for future research.

Theoretical Implications

Results reported here enhance our understanding by demonstrating long-term trends in satisfaction ratings reported by consumptive and nonconsumptive recreationists and by supporting theories regarding differences between the two activity types. The pattern of differences in reported satisfaction ratings by consumptive and nonconsumptive recreationists has remained constant over the study years. Consistent with prior theorizing (Vaske et al., 1982), the two main differences in these activity types – goal specificity and amount of control – appear to be influencing this pattern. With a smaller chance of successfully achieving their primary goal

(bagging game/catching fish), consumptive recreationists reported substantially lower levels of satisfaction than did nonconsumptive recreationists.

Managerial Implications

The results presented in this article also have managerial implications. First, findings from multiple data sets allow managers to compare data from their site against comparable locations and make more informed decisions (Vaske & Shelby, 2008). Second, although satisfaction is still an important management objective (Manning, 1999), it should not be the only management criterion. Our results show that while satisfaction is lower for consumptive recreationists, there are clear reasons for the findings.

Opportunities for Future Research

Despite its widespread application, there is still a need to further understand what influences satisfaction (the motivations and expectations that determine a person's evaluation of an experience). Managers are interested in the relationship between satisfaction and participation, which may not be a direct relationship. A person can have a dissatisfying experience, but continue to participate in an activity and vice versa. Certain satisfactions may be more important and outweigh others. Future research should continue to examine the relative importance of different facets of satisfaction and the other factors that motivate behavior.

This article, as well as the 1982 comparative analysis, argued that consumptive and nonconsumptive recreationists differ in the specificity of their goals and their control in achieving these goals. There are some nonconsumptive activities, however, which like hunting and angling, have more specific goals. The goal of mountain climbing is to reach the summit. The goal of bird watching and other wildlife viewing is to observe particular species of wildlife. For these activities, the recreationists may have more control in goal achievement by choosing

climbing routes that match their skills and abilities, or by selecting habitats known to have populations of the desired wildlife species. Findings from the Mt. Shasta study support this observation. Those who were motivated to reach the summit of Mt. Shasta and achieved their goal were more satisfied than those who did not summit the mountain (91% vs. 57%, "excellent/perfect," respectively). Examination of the satisfaction ratings reported by individuals engaged in other goal-directed nonconsumptive activities who did and did not achieve their objective would shed additional light on the conceptual distinctions advanced here.

Finally, results reported here were based on a comparative analysis of consumptive and nonconsumptive recreationists. There are, however, other statistical techniques (e.g., meta-analysis) that could be used in future analyses. Because meta-analyses incorporate specific effect size measures, the magnitude of the difference between the activity types could be assessed more formally.

Table 1.1

Description of Studies

State or province	Study site	Date	Population studied	Citation	Sample size	Response rate (%)	Survey mode
Alaska	Mt. McKinley	1977	Climbers	Shelby & Yuskavitch (1977)	33	66	On-site
Arizona	Grand Canyon	1975	Rafters	Shelby (1976)	212	97	On-site
	Statewide - CWD	2004	Deer hunters	Needham & Vaske (2008)	840	44	Mailed
California	Mt. Shasta	1993	Climbers	Puttkammer (1994)	310	50	On-site
	Joshua Tree	1994	Climbers	Trench & Wallace (1994)	675	95	On-site
Colorado	Statewide	1992	Pheasant hunters	Remington, Manfredo, Vaske, & DeMasso (1996)	480	94	Telephone
	Cache la Poudre River	1993	Rafters & kayakers	Vaske & Donnelly (1993)	1065	97	On-site
	Cache la Poudre River	1993	Anglers	Vaske (1993)	89	95	On-site
	Mt. Evans	1993	On-site visitors	Vaske, Donnelly, Wittman, & Laidlaw (1995)	986	96	On-site
	Statewide	1995	Elk bowhunters	Fulton et al. (1995)	630	97	Telephone
	Jefferson County	1996	Hikers & mountain	Carothers, Vaske, &	773	95	On-site

			bikers	Donnelly (2001)			
	Statewide - CWD	2004	Deer & elk hunters	Needham & Vaske (2008)	2004	50	Mailed
Maryland	Statewide	1978	Turkey hunters	Donnelly & Vaske (1981)	452	93	Mailed
	Savage River	1979	Anglers	Vaske & Donnelly (1980)	203	89	On-site
Massachusetts	Cape Cod	2005	Hunters	Kuentzel (2005)	408	70	On-site & Mailed
Michigan	Sleeping Bear Dunes	1977	Day visitors	Randall (1977)	481	87	On-site
Nebraska	Statewide - CWD	2004	Deer hunters	Needham & Vaske (2008)	947	47	Mailed
New Hampshire	Great Gulf Wilderness	1979	Hikers	Donnelly (1980)	721	96	On-site
	Statewide	1991	Anglers	Vaske & Donnelly (1991)	1180	85	On-site & Mailed
North Dakota	Statewide - CWD	2004	Deer hunters	Needham & Vaske (2008)	855	43	Mailed
Oregon	Rogue River	1979	Floaters & jet boaters	Shelby & Colvin (1979)	609	88	On-site
	Rogue River	1984	Whitewater boaters	In Shelby, Johnson, & Brunson (1990)	469	79	Mailed
	Deschutes River	1986	Whitewater boaters	In Shelby, Johnson, & Brunson (1990)	496	83	Mailed
	Clackamas River	1988	Whitewater boaters	In Shelby, Johnson, & Brunson (1990)	309	84	Mailed

	Klamath River	1988	Whitewater boaters	In Shelby, Johnson, & Brunson (1990)	389	76	Mailed
Pennsylvania	Upper Youghiogheny River	1988 -89	Boaters, rafters, & kayakers	Graefe, Gitelson, Fedler, & Zeigler (1989)	1826	80	On-site & Mailed
South Dakota	Statewide - CWD	2004	Deer hunters	Needham & Vaske (2008)	980	49	Mailed
Utah	Statewide - CWD	2004	Deer & elk hunters	Needham & Vaske (2008)	1435	39	Mailed
Washington	White Salmon River	1991	Boaters	Shelby & Wing (1992)	857	95	On-site
Wisconsin	Brule River	1975	Canoers, tubers, & anglers	Heberlein & Vaske (1977)	2965	92	On-site
	Apostle Islands	1975	Campers, day visitors, & boaters	Heberlein & Vaske (1979)	846	81	Mailed
	Statewide	1976	Deer hunters	Heberlein & Laybourne (1978)	234	82	Mailed
	Statewide	1977	Deer hunters	Heberlein & Laybourne (1978)	235	83	Mailed
	Horicon Marsh	1977	Goose hunters	Baumgartner (1978)	271	85	Mailed
	Wolf River	1977	Rafters	Blackwood (1977)	304	98	On-site
	Grand River Marsh	1978	Goose hunters	Kuentzel & Heberlein (1998)	1358	88	On-site
	Bong Wildlife Mgmt. Unit	1979	Pheasant hunters	Heberlein, Baumgartner, & Trent (1980)	1114	80	On-site

Sandhill Wildlife Mgmt. Unit	1979	Deer hunters	Heberlein & Kuentzel (2002)	285	100	On-site
Sandhill Wildlife Mgmt. Unit	1980	Deer hunters	Heberlein & Kuentzel (2002)	349	100	On-site
Bong Wildlife Mgmt. Unit	1981	Pheasant hunters	Heberlein (1981)	743	44	On-site
Sandhill Wildlife Mgmt. Unit	1981	Deer hunters	Heberlein & Kuentzel (2002)	212	100	On-site
Sandhill Wildlife Mgmt. Unit	1982	Deer hunters	Heberlein & Kuentzel (2002)	325	100	On-site
Sandhill Wildlife Mgmt. Unit	1983	Deer hunters	Heberlein & Kuentzel (2002)	142	100	On-site
Sandhill Wildlife Mgmt. Unit	1984	Deer hunters	Heberlein & Kuentzel (2002)	308	100	On-site
Sandhill Wildlife Mgmt. Unit	1985	Deer hunters	Heberlein & Kuentzel (2002)	122	100	On-site
Brule River	1985	Canoers & anglers	Heberlein & Proudman (1986)	1167	95	On-site
Sandhill Wildlife Mgmt. Unit	1986	Deer hunters	Heberlein & Kuentzel (2002)	119	100	On-site
Door County	1986	Sailors	Heberlein, McKinnell, & Ervin (1986)	229	80	Mailed
Lake Delevan	1986	Anglers &	Institute of Environmental	316	72	On-site

			recreationists	Studies (1986)			
	Sandhill Wildlife Mgmt. Unit	1987	Deer hunters	Heberlein & Kuentzel (2002)	372	100	On-site
	Sandhill Wildlife Mgmt. Unit	1988	Deer hunters	Heberlein & Kuentzel (2002)	249	100	On-site
	Sandhill Wildlife Mgmt. Unit	1989	Deer hunters	Heberlein & Kuentzel (2002)	261	100	On-site
	Statewide - CWD	2004	Deer hunters	Needham & Vaske (2008)	843	44	Mailed
Wyoming	Statewide - CWD	2004	Deer & elk hunters	Needham & Vaske (2008)	1663	42	Mailed
Alberta	Jasper National Park Rivers	1999	Rafters, kayakers, & canoers	Vaske & Donnelly (2000)	369	95	On-site
	Columbia Icefield	1996	Snocoach & glacier visitors	Vaske & Donnelly (1997)	1893	96	On-site
	Columbia Icefield	2000	Snocoach visitors	Vaske & Donnelly (2001)	438	97	On-site
British Columbia	Gwaii Haanas	1995	Kayakers, motorboaters, & sailors	Vaske, Donnelly, Freimund, & Miller (1996)	257	67	Mailed

Table 1.2

Satisfaction Ratings by Consumptive Recreationists within Different Evaluation Contexts

	Evaluation context				
Study site	Evaluation by	Evaluation of	Poor/Fair (%)	Good/Very Good (%)	Excellent/ Perfect (%)
North Dakota - CWD	Nonresident deer hunters	Overall satisfaction	4	43	53
Brule River - 1985	Anglers	Overall satisfaction	17	37	47
North Dakota - CWD	Resident deer hunters	Overall satisfaction	7	48	46
Sandhill Wildlife Mgmt. Unit - 1986	Deer hunters	Overall satisfaction	20	38	44
Sandhill Wildlife Mgmt. Unit - 1987	Deer hunters	Overall satisfaction	16	44	42
Sandhill Wildlife Mgmt. Unit - 1981	Deer hunters	Overall satisfaction	23	38	38
Sandhill Wildlife Mgmt. Unit - 1988	Deer hunters	Overall satisfaction	20	44	38
Colorado - Statewide Unlimited	Elk bowhunters	1992 bowhunting experience	16	48	36
Brule River - 1975	Anglers	Overall	22	43	35

		satisfaction			
South Dakota - CWD	Nonresident deer hunters	Overall satisfaction	13	53	34
Grand River Marsh - Managed Hunt	Waterfowl hunters	Rating of hunt	45	23	33
Sandhill Wildlife Mgmt. Unit - 1983	Deer hunters	Overall satisfaction	30	39	32
Sandhill Wildlife Mgmt. Unit - 1989	Deer hunters	Overall satisfaction	20	48	32
Sandhill Wildlife Mgmt. Unit - 1979	Deer hunters	Overall satisfaction	39	32	31
Sandhill Wildlife Mgmt. Unit - 1984	Deer hunters	Overall satisfaction	21	49	31
Nebraska - CWD	Nonresident deer hunters	Overall satisfaction	21	49	30
Wyoming - CWD	Nonresident deer hunters	Overall satisfaction	22	49	29
Colorado - Statewide Limited	Elk bowhunters	1992 bowhunting experience	22	49	28
Sandhill Wildlife Mgmt. Unit - 1982	Deer hunters	Overall satisfaction	29	43	28
Wyoming - CWD	Nonresident elk hunters	Overall satisfaction	27	45	28

Horicon Marsh	Goose hunters	Overall satisfaction	39	34	27
Sandhill Wildlife Mgmt. Unit - 1977	Deer hunters	Overall satisfaction	25	51	25
Sandhill Wildlife Mgmt. Unit - 1980	Deer hunters	Overall satisfaction	32	44	25
South Dakota - CWD	Resident deer hunters	Overall satisfaction	13	63	24
Sandhill Wildlife Mgmt. Unit - 1976	Deer hunters	Overall satisfaction	36	41	23
Sandhill Wildlife Mgmt. Unit - 1985	Deer hunters	Overall satisfaction	34	44	23
Arizona - CWD	Nonresident deer hunters	Overall satisfaction	34	44	22
Wisconsin - CWD	Nonresident deer hunters	Overall satisfaction	22	56	22
Wyoming - CWD	Resident elk hunters	Overall satisfaction	31	47	22
Colorado - CWD	Nonresident deer hunters	Overall satisfaction	32	48	20
Nebraska - CWD	Resident deer hunters	Overall satisfaction	22	59	20
Colorado - CWD	Nonresident elk	Overall	34	47	19

	hunters	satisfaction			
Bong Wildlife Mgmt. Unit - Control Areas Opening Day - 1979	Pheasant hunters	Overall satisfaction	50	32	18
Cape Cod - Field	Hunters	Quality of hunting at CCNS	21	61	18
Cape Cod - Volunteer	Hunters	Quality of hunting at CCNS	25	58	17
Wisconsin - CWD	Resident deer hunters	Overall satisfaction	27	57	16
Wyoming - CWD	Resident deer hunters	Overall satisfaction	29	55	16
Bong Wildlife Mgmt. Unit - Opening Day - 1979	Pheasant hunters	Overall satisfaction	54	33	13
Colorado - CWD	Resident deer hunters	Overall satisfaction	37	50	13
Colorado - CWD	Resident elk hunters	Overall satisfaction	40	47	13
Utah - CWD	Nonresident elk hunters	Overall satisfaction	50	37	13
Cache la Poudre River	Anglers	Overall satisfaction	43	46	12
Maryland - Statewide	Turkey hunters	Overall satisfaction	57	32	12

Savage River	Anglers	Overall satisfaction	70	18	12
Utah - CWD	Nonresident deer hunters	Overall satisfaction	56	33	11
Arizona - CWD	Resident deer hunters	Overall satisfaction	53	37	10
Bong Wildlife Mgmt. Unit - Opening Day - 1981	Pheasant hunters	Overall satisfaction	65	26	9
Cape Cod - License	Hunters	Quality of hunting at CCNS	29	62	9
Grand River Marsh -Firing Line	Waterfowl hunters	Rating of hunt	69	22	9
Bong Wildlife Mgmt. Unit - Late Season - 1979	Pheasant hunters	Overall satisfaction	77	16	7
Utah - CWD	Resident elk hunters	Overall satisfaction	56	37	7
Lake Delevan	Anglers	Overall satisfaction	64	30	6
Bong Wildlife Mgmt. Unit - Late Season - 1981	Pheasant hunters	Overall satisfaction	73	23	5
Utah - CWD	Resident deer hunters	Overall satisfaction	64	31	5
Colorado - Statewide	Pheasant hunters	Overall	74	22	4

		satisfaction			
New Hampshire - Statewide - On-site	Anglers	Fishing quality	72	27	2
New Hampshire - Statewide - Mailed	Anglers	Fishing quality	56	42	2

Table 1.3

Satisfaction Ratings by Nonconsumptive Recreationists within Different Evaluation Contexts

	Evaluation context				
Study site	Evaluation by	Evaluation of	Poor/Fair (%)	Good/Very Good (%)	Excellent/ Perfect (%)
Mt. Shasta	Climbers – successful summit	Rating of climbing experience	0	9	91
Rogue River - 1979	Jet boaters	Overall satisfaction	0	9	91
Gwaii Haanas	Kayakers/canoers	Overall satisfaction	0	10	90
Gwaii Haanas	Sailors	Overall satisfaction	0	13	87
Rogue River - 1979	Floaters	Overall satisfaction	0	13	87
Upper Youghiogheny River - On-site	Boaters	Rating of river trip	0	12	87
Upper Youghiogheny River - Mailed	Boaters	Rating of river trip	2	11	87
Klamath River	Whitewater boaters	Overall satisfaction	2	13	86

White Salmon River	Boaters	Overall satisfaction	0	14	86
Deschutes River	Whitewater boaters	Overall satisfaction	1	16	83
Rogue River - 1984	Whitewater boaters	Overall satisfaction	1	17	83
Grand Canyon	Rafters	Overall satisfaction	0	18	82
Gwaii Haanas	Motorboaters	Overall satisfaction	0	17	82
Apostle Islands	Campers	Overall satisfaction	3	17	80
Apostle Islands	Boaters	Overall satisfaction	1	19	80
Jasper National Park	Voyageur canoers	Overall satisfaction	0	19	80
Upper Youghiogheny River - Mailed	Rafters	Rating of river trip	1	19	79
Jasper National Park	Kayakers	Overall satisfaction	0	22	77
Upper Youghiogheny River - Mailed	Kayakers	Rating of river trip	2	21	77
Clackamas River	Whitewater	Overall	0	24	75

	boaters	satisfaction			
Great Gulf Wilderness	Hikers	Overall satisfaction	5	20	75
Jasper National Park	Rafters	Overall satisfaction	0	25	75
Joshua Tree	Climbers	Rating of climbing experience	6	19	75
Apostle Islands	Day visitors	Overall satisfaction	0	28	72
Brule River - 1985	Canoers	Overall satisfaction	3	29	69
Door County	Sailors	Overall satisfaction	0	32	68
Mt. McKinley	Visitors	Overall satisfaction	9	24	68
Brule River - 1975	Canoers	Overall satisfaction	4	30	67
Columbia Icefield - 2000	Snocoach visitors	Overall satisfaction	2	32	67
Cache la Poudre River	Rafters	Overall satisfaction	1	34	66
Brule River - 1975	Tubers	Overall	5	30	65

		satisfaction			
Columbia Icefield - 1996	Snocoach visitors	Overall satisfaction	3	32	65
Sleeping Bear Dunes	Day visitors	Overall satisfaction	6	30	64
Jefferson County	Dual sport participants	Satisfaction with facilities	1	37	62
Cache la Poudre River	Kayakers	Overall satisfaction	1	39	61
Jefferson County	Dual sport participants	Satisfaction with trails	1	39	60
Jefferson County	Mountain bikers	Satisfaction with facilities	2	40	59
Mt. Shasta	Climbers - unsuccessful summit	Rating of climbing experience	9	35	57
Jefferson County	Mountain bikers	Satisfaction with trails	0	44	55
Columbia Icefield - 1996	Toe of the glacier visitors	Overall satisfaction	4	44	52
Mt. Evans	On-site visitors	Overall satisfaction	5	46	50
Jefferson County	Hikers	Satisfaction with	2	51	47

		facilities			
Lake Delevan	Recreationists	Overall satisfaction	11	48	42
Jefferson County	Hikers	Satisfaction with trails	1	59	40
Wolf River	Rafters	Overall satisfaction	14	66	20

Table 1.4

Reported Satisfaction Ratings by Activity Type

	Activity type[a]				
Satisfaction rating	Consumptive	Nonconsumptive	*t*-value	*p*-value	η
Poor/Fair	36.8	2.4	13.33	< .001	.766
Good/Very Good	41.6	27.2	5.66	< .001	.501
Excellent/Perfect	21.9	70.5	17.15	< .001	.869

[a]Values in cells denote mean percentage of consumptive and nonconsumptive recreationists giving each response.

Table 1.5

Reported Satisfaction Ratings by Study Year

	Study year[a]					
Satisfaction rating	1975–1984	1985–1994	1995–2005	*F*-value	*p*-value	η
Poor/Fair	28.3	17.1	19.6	2.18	.119	.205
Good/Very Good	30.0[1]	30.1[1]	42.8[2]	11.81	< .001	.439
Excellent/Perfect	42.1	53.3	37.6	2.78	.067	.231

[a]Values in cells are means. Means with different superscripts differ at $p < .05$ based on the LSD post hoc test.

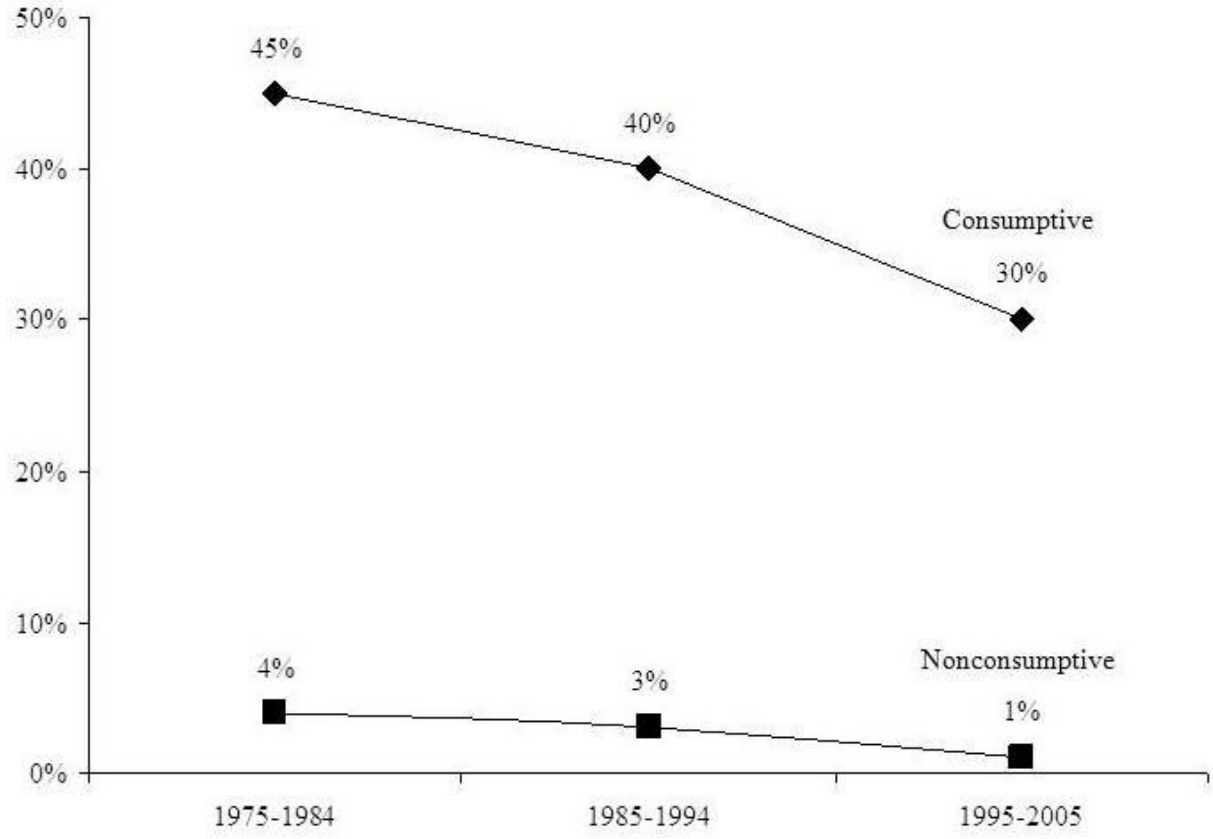

Figure 1.1. Average "poor/fair" satisfaction ratings by activity type and study year.

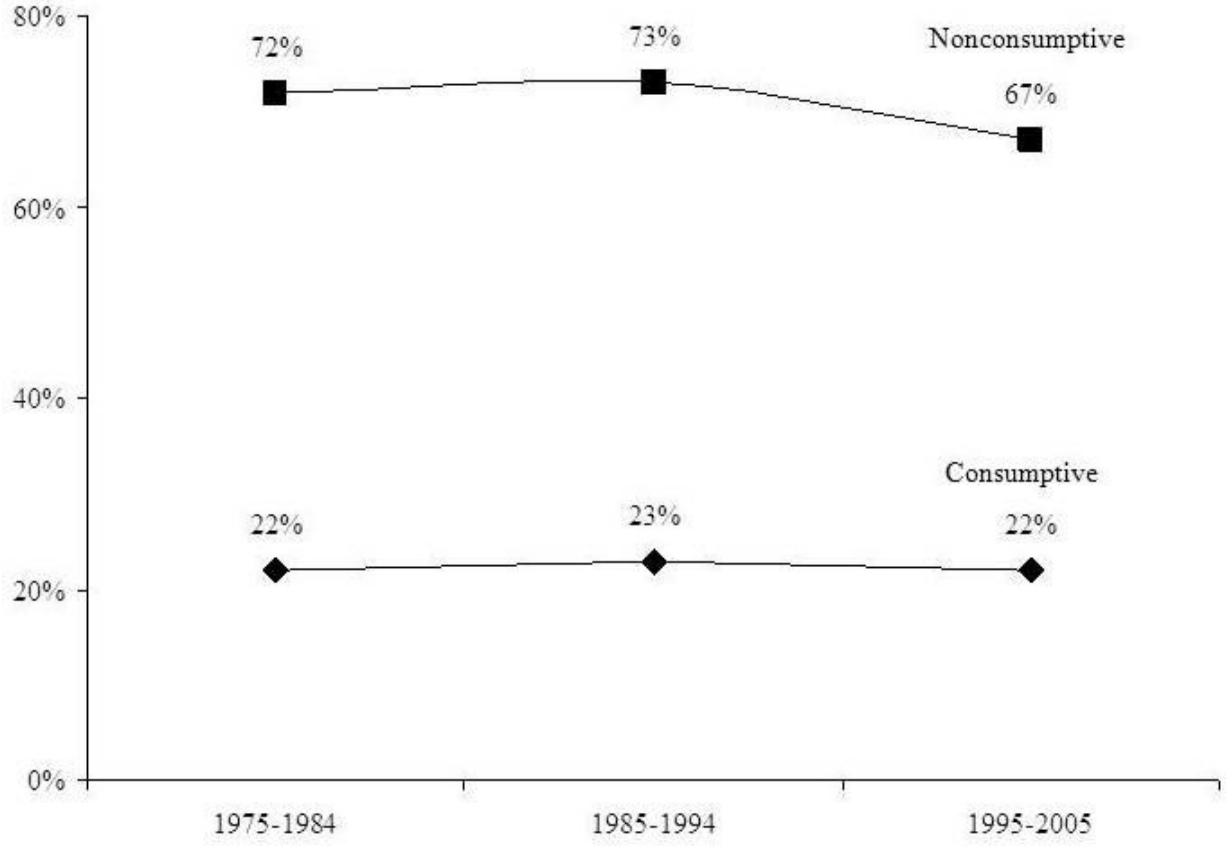

Figure 1.2. Average "excellent/perfect" satisfaction ratings by activity type and study year.

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Chapter 3: National Park Service Visitor Satisfaction: A Comparative Analysis

Summary

Satisfaction has been a focal point in the study of recreation behavior since the 1970s. This article uses a comparative analysis approach to analyze National Park Service (NPS) visitor satisfaction data over a period of 17 years. Based on theory and prior research, six research questions were proposed. The first set of research questions examined the relationships between visitor satisfaction and study year, park designation, and park region. The remaining research questions concerned the relationships between consensus among visitor satisfaction scores and study year, park designation, and park region. Data were obtained from the online NPS Visitor Services Project (VSP) database (177 projects, n = 81,899). Each project contained the same core satisfaction question (i.e., "Overall, how would you rate the quality of the visitor services provided to you and your group?"), which served as the dependent variable. Independent variables included study year, park designation, and park region. For the first three research questions, three 1-way ANOVAs and one 3-way ANOVA indicated that visitor satisfaction varied by study year, park designation, and park region. Using the Potential for Conflict Index (PCI_2), results also addressed the second three research questions by showing that the amount of consensus among visitor satisfaction scores varied by study year, park designation, and park region. Methodological and managerial implications, as well as opportunities for future research, are discussed.

Keywords: comparative analysis, National Park Service, Potential for Conflict Index, satisfaction, Visitor Services Project

National Park Service Visitor Satisfaction:
A Comparative Analysis

Analyses of multiple data sets (e.g., comparative analyses, meta-analyses) highlight replication of research and generalization of results over different settings and time periods (Vaske & Manning, 2008). Such analyses can demonstrate long-term patterns and trends, discern causal factors, and generate support for theories, outcomes that are not possible with a single data set or study. Comparative analyses have been completed for concepts such as crowding (Kuentzel & Heberlein, 1992; Shelby & Vaske, 2007; Shelby, Vaske, & Heberlein, 1989; Vaske & Shelby, 2008), norms (Donnelly, Vaske, Whittaker, & Shelby, 2000; Laven, Manning, & Krymkowski, 2005; Vaske & Donnelly, 2002), motivation (Légaré & Haider, 2008; Manfredo, Driver, & Tarrant, 1996), and satisfaction (Vaske, Donnelly, Heberlein, & Shelby, 1982; Vaske & Roemer, in press). This article uses a comparative analysis approach to analyze National Park Service (NPS) visitor satisfaction data over a period of 17 years.

The National Park Service – History and Today

Through the Yellowstone National Park Act of 1872, the United States Congress established the country's first national park. Additional parks (e.g., Sequoia, Yosemite, Kings Canyon, Mount Rainier) were set aside before the turn of the century. In 1906, the Antiquities Act granted presidents the authority to establish national monuments. It was not until 10 years later, however, that the NPS was created within the Department of the Interior (DOI) to oversee the existing 14 national parks and 21 national monuments (United States National Park Service, n.d.). As outlined by the NPS Organic Act of 1916, the mission of the agency is as follows: "…to promote and regulate the use of the… national parks… which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of

future generations" (United States National Park Service, 2008, para. 2). The agency's mission statement, therefore, directly addresses the need for NPS employees to manage for visitor satisfaction.

Currently, there are 397 park units managed by the NPS. These units are given one of 16 designations: (a) national park, (b) national monument, (c) national preserve, (d) national historic site, (e) national historical park, (f) national memorial, (g) national battlefield, (h) national cemetery, (i) national recreation area, (j) national seashore, (k) national lakeshore, (l) national river, (m) national parkway, (n) national trail, (o) affiliated areas, and (p) other designations (United States National Park Service, 2000). As shown in Figure 2.1, NPS units are also organized into seven regions, including Alaska, Intermountain, Midwest, National Capitol, Northeast, Pacific West, and Southeast (United States National Park Service, 2003).

The National Park Service Visitor Services Project

The NPS Visitor Services Project (VSP), an initiative of the NPS Social Science Program, began in 1983 when the NPS collaborated with the University of Idaho's Park Studies Unit to collect data about park visitors. To participate in this project, managers of NPS units must both fill out an application and provide the necessary funding. Questions included on VSP surveys cover a variety of topics (e.g., demographics, trip planning, travel expenditures, evaluations of facilities and services, opinions about resource management issues, evaluations of activities). These questions can be one of three types: (a) core (i.e., intended to be included on every VSP survey), (b) common (i.e., intended to be asked frequently on VSP surveys), and (c) customized (i.e., intended to provide information specific to a park unit). Data collection began in 1988, and the partnership has now conducted over 200 surveys in 140 park units. All project results are available from an online database. Beginning in 1995, a core question about

satisfaction was included on the VSP surveys, and thus the data provide an opportunity to perform a comparative analysis of NPS visitor satisfaction (United States National Park Service, 2006).

Satisfaction

Satisfaction has been a focal point in the study of recreation behavior since the 1970s. Prior research has used numerous variables (e.g., study year, activity type, setting, group behavior, crowding, past experience, encounters, use levels) as predictors of satisfaction (e.g., Herrick & McDonald, 1992; Vaske et al., 1982; Vaske & Roemer, in press). The concept is commonly used as a measure of recreation quality, and it can be defined as "the congruence between expectations and outcomes" (Manning, 1999, p. 10). Quality of and satisfaction from recreation experiences reflect management goals and visitor expectations (Heberlein, 1977; Manning, 1999).

Individuals bring their own expectations to experiences that influence the kinds of satisfaction they receive. The multiple satisfaction approach recognizes the diversity of experiences that visitors seek. Different types of satisfaction include communing with nature, testing skills, harvesting game, exercising, and relaxing (Hendee, 1974). Although widely accepted, the multiple satisfaction approach makes it difficult to compare satisfaction ratings among different individuals, settings, and time periods, as is necessary when analyzing multiple data sets. Thus, similar to Vaske et al. (1982), we define satisfaction as "an overall rating of a recreation experience as good or bad. It is a composite of the particular expectations and needs, expressed as a single numerical rating. An average score can be calculated for all participants in an activity and the activities can be compared directly" (p. 198). Defined this way, satisfaction

has been operationalized with a single question, such as "Overall, how would you rate the quality of the visitor services provided to you and your group?"

Potential for Conflict Index (PCI_2)

Traditionally, human dimensions research has evaluated the average satisfaction ratings among participants in recreation activities. By using the second generation of the Potential for Conflict Index (PCI_2), however, it is also possible to assess the amount of consensus among respondents in terms of their satisfaction scores. The PCI_2 was developed as a way to communicate the meaning of abstract statistics representing consensus in an effective, understandable manner. This is achieved through the integration of measures of central tendency, shape, and dispersion into a single statistic that can be depicted in an intuitive graphical form (Vaske, Beaman, Barreto, & Shelby, 2010).

Values for the PCI_2 statistic range from 0 to 1. The greatest amount of consensus and the lowest potential for conflict results when 100% of responses occur at any one point on the response scale (i.e., $PCI_2 = 0$). A bimodal distribution, where responses are divided evenly between the two extremes of the response scale, creates a situation with the lowest amount of consensus and the greatest potential for conflict (i.e., $PCI_2 = 1$). These values are displayed graphically as bubbles, and interpretation of these bubbles can provide information about central tendency, shape, and dispersion. First, the center of the bubble represents the mean satisfaction rating as plotted on the *y*–axis (i.e., central tendency). Second, the bubble's location relative to the neutral point illustrates whether or not the distribution of visitor satisfaction is skewed (i.e., shape). Finally, the size of the bubble demonstrates the amount of consensus or conflict (i.e., degree of dispersion) regarding visitor satisfaction ratings. A small bubble represents high

consensus (i.e., low potential for conflict), while a larger bubble represents less consensus (i.e., higher potential for conflict) (Vaske et al., 2010).

Research Questions

Past research has identified many factors (e.g., study year, activity type, setting, group behavior, crowding, past experience, encounters, use levels) affecting visitor satisfaction (e.g., Herrick & McDonald, 1992; Vaske et al., 1982; Vaske & Roemer, in press). This article focuses on the relationships among satisfaction with visitor services and three variables: (a) study year, (b) park designation, and (c) park region. Satisfaction (and consensus) may vary by study year, for instance, as park budgets fluctuate across those years. In terms of park designation, satisfaction (and consensus) may vary because many of the spectacular, "crown jewel" parks are the same type (i.e., national park). Finally, satisfaction (and consensus) may vary by park region due to the differing number of parks, type of parks, and geographical and aesthetic features of the parks in each region. Thus, based on theory and prior research, the following research questions are proposed:

Q_1: Will visitor satisfaction vary by study year?

Q_2: Will visitor satisfaction vary by park designation?

Q_3: Will visitor satisfaction vary by park region?

Q_4: Will the amount of consensus among visitor satisfaction scores vary by study year?

Q_5: Will the amount of consensus among visitor satisfaction scores vary by park designation?

Q_6: Will the amount of consensus among visitor satisfaction scores vary by park region?

Method

Sampling Design

Data for this article were obtained from the online NPS VSP database (*https://vsp.uidaho.edu/index3.htm*) and included all projects containing the core question about satisfaction. This core satisfaction question was asked in 177 VSP projects, covering a 17-year period (i.e., 1995 to 2011). Included projects represented all 16 park designations and all seven park regions. Total sample size for these 177 projects was 81,899. Response rates ranged from 39% to 88%, with an average response rate of 72%.

Variables Measured

Independent variables. Three independent variables were analyzed: (a) study year, (b) park designation, and (c) park region. Study year was coded as three time periods: (a) 1995 to 2000 (n = 26,516, 32% of respondents), (b) 2001 to 2005 (n = 20,980, 26%), and (c) 2006 to 2011 (n = 34,403, 42%).

The 16 possible park designations were coded as five categories. Historical sites (n = 20,277, 25% of respondents) contained national historic sites, national historical parks, national memorials, national battlefields, and national cemeteries. The second category, national parks and preserves (n = 36,802, 45%), included national parks, national preserves, and national parks and preserves. Water-based sites (n = 5,473, 7%) consisted of national seashores, national lakeshores, and national rivers. The national monuments group (n = 8,658, 11%) only contained those parks designated as national monuments. Finally, the other category (n = 10,689, 13%) combined the original other designation with national recreation areas, national parkways, and national trails.

For region of park, the original seven categories were retained. These included Alaska (*n* = 2,760, 3% of respondents), Intermountain (*n* = 14,967, 18%), Midwest (*n* = 11,923, 15%), National Capitol (*n* = 5,736, 7%), Northeast (*n* = 11,932, 15%), Pacific West (*n* = 15,221, 19%), and Southeast (*n* = 19,360, 24%).

Dependent variable. Each of the 177 included VSP projects contained the following core question about satisfaction: "Overall, how would you rate the quality of the visitor services provided to you and your group?" Responses were coded on a five-point scale: (-2) "very poor," (-1) "poor," (0) "average," (1) "good," and (2) "very good."

Analysis Strategy

To examine the relationships among the three independent variables (i.e., study year, park designation, park region) and the dependent variable (i.e., satisfaction), a series of three 1-way ANOVAs was performed. One 3-way ANOVA was also used to test for significant interactions among the three independent variables (i.e., study year, park designation, park region). A relationship was considered statistically significant at $p < .05$. Eta (η) was used to indicate the strength of a relationship. An eta (or effect size) of .10 was considered a "minimal" relationship, .30 represented a "typical" relationship, and an $\eta > .50$ reflected a "substantial" relationship (Vaske, 2008).

The PCI_2 was then used to evaluate the amount of consensus among visitor satisfaction scores by study year, park designation, and park region. After applying the Bonferroni correction, the PCI_2 difference tests were also used to statistically compare the PCI_2 values. The PCI_2 and the PCI_2 difference tests were computed using the software available at *http://welcome.warnercnr.colostate.edu/~jerryv*. This site also contains details regarding the logic of PCI_2.

Results

ANOVAs

The mean satisfaction rating for all visitors was between "good" and "very good" (M = 1.41, SD = 0.72). A series of three 1-way ANOVAs, followed by one 3-way ANOVA, was used to further evaluate whether satisfaction differed by study year, park designation, and region of park. Respondents in all three time periods did have significantly different mean satisfaction ratings, F (2, 78,689) = 69.12, $p < .001$ (see Table 2.1 and Figure 2.2). On average, visitors in all three time periods evaluated their satisfaction as between "good" and "very good." Tamhane post-hoc tests, however, indicated that there were significant differences in mean satisfaction scores among all three groups, $p < .001$. Individuals in the 2001 to 2005 group (M = 1.46, SD = 0.69) reported the highest average satisfaction rating, while those in the 1995 to 2000 group (M = 1.38, SD = 0.72) had the lowest mean score. Respondents in the 2006 to 2011 category (M = 1.41, SD = 0.74) were intermediary between the other two groups in terms of their average satisfaction rating. This relationship was less than minimal ($\eta = .042$).

Respondents in the five park designation categories were also significantly different in terms of their mean satisfaction ratings, F (4, 78,687) = 169.83, $p < .001$ (see Table 2.2 and Figure 2.3). Visitors to all five park types, on average, gave satisfaction ratings between "good" and "very good." Tamhane post-hoc analyses, however, indicated that mean satisfaction scores were only statistically equivalent for historical sites (M = 1.47, SD = 0.69) and national monuments (M = 1.47, SD = 0.67), p = 1.00. All other possible pairwise comparisons were significantly different, $p < .001$. Individuals at historical sites and national monuments reported the highest mean satisfaction scores, followed by those at national parks and preserves (M =

1.42, *SD* = 0.70), other areas (*M* = 1.31, *SD* = 0.74), and water-based sites (*M* = 1.24, *SD* = 0.95). The effect size for this relationship was less than minimal (η = .093).

Visitors in the seven park regions also had significantly different mean satisfaction scores, *F* (6, 78,685) = 44.88, *p* < .001 (see Table 2.3 and Figure 2.4). Although respondents in all seven regions reported "good" to "very good" satisfaction ratings, Tamhane post-hoc tests indicated that there were significant differences among some of the groups. Statistical equivalence in average satisfaction scores occurred between the Alaska (*M* = 1.43, *SD* = 0.77) and Intermountain (*M* = 1.45, *SD* = 0.67) regions, the Alaska and Midwest (*M* = 1.41, *SD* = 0.81) regions, the Alaska and Northeast (*M* = 1.47, *SD* = 0.70) regions, the Alaska and Southeast (*M* = 1.40, *SD* = 0.70) regions, the Intermountain and Northeast regions, the Midwest and Southeast regions, and the National Capitol (*M* = 1.35, *SD* = 0.72) and Pacific West (*M* = 1.35, *SD* = 0.72) regions, *p* ≥ .114. All other possible pairwise comparisons showed significantly different mean satisfaction ratings, *p* ≤ .001. Highest average satisfaction ratings were given by visitors in the Northeast, Intermountain, Alaska, Midwest, and Southeast regions, followed by those in the Pacific West and National Capitol regions. This was considered a less than minimal relationship (η = .058).

Finally, a 3-way ANOVA (see Table 2.4) was used to test for significant interactions among the three independent variables (i.e., study year, park designation, park region). All main effects and all interaction effects were significant, *F* (2 to 16) ≥ 20.74, *p* < .001. Effect sizes for these relationships, however, were all less than minimal (η ≤ .089).

PCI_2

Using the PCI_2, results indicated a high degree of consensus among visitors in terms of their satisfaction (i.e., no PCI_2 values greater than .15 for study year, park designation, or park

region). In terms of study year, PCI_2 values ranged from .03 (i.e., 1995 to 2000, 2001 to 2005) to .05 (i.e., 2006 to 2011) (see Figure 2.5). Using the Bonferroni correction, differences were statistically significant at $p = .017$ (i.e., .05/3). As shown in Table 2.5, difference tests for the PCI_2 indicated that the amount of consensus among visitor satisfaction scores for 1995 to 2000 and 2001 to 2005 were statistically equivalent ($p > .017$). The PCI_2 values were significantly different ($p < .017$) for the remaining two comparisons: (a) 1995 to 2000 versus 2006 to 2011 and (b) 2001 to 2005 versus 2006 to 2011.

When analyzing consensus based on park designation, PCI_2 values ranged from .02 (i.e., national monuments) to .15 (i.e., water-based sites) (see Figure 2.6). Using the Bonferroni correction, differences were statistically significant at $p = .005$ (i.e., .05/10). Using the PCI_2 difference tests, the amount of consensus among visitor satisfaction scores was statistically equivalent ($p > .005$) for only two comparisons: (a) historical sites versus national parks and (b) historical sites versus other areas (see Table 2.6). PCI_2 difference tests indicated that there were significant differences ($p < .005$) in consensus for the remaining eight possible pairwise comparisons.

Similar results were found when evaluating consensus based on park region. In this analysis, PCI_2 values were between .02 (i.e., Intermountain, Southeast) and .09 (i.e., Midwest) (see Figure 2.7). Using the Bonferroni correction, differences were statistically significant at $p = .002$ (i.e., .05/21). The PCI_2 difference tests suggested that the amount of consensus in visitor satisfaction scores was statistically equivalent ($p > .002$) for 11 comparisons: (a) Alaska versus National Capitol, (b) Alaska versus Northeast, (c) Alaska versus Pacific West, (d) Intermountain versus National Capitol, (e) Intermountain versus Northeast, (f) Intermountain versus Southeast, (g) National Capitol versus Northeast, (h) National Capitol versus Pacific West, (i) National

Capitol versus Southeast, (j) Northeast versus Pacific West, and (k) Northeast versus Southeast (see Table 2.7). Statistical differences were found for the remaining 10 possible pairwise comparisons ($p < .002$).

Discussion

Overall, the findings provided insight in regards to all six research questions. Results for all three 1-way ANOVAs, as well as the 3-way ANOVA, indicated that visitor satisfaction varied significantly by study year, park designation, and park region. The effect sizes, however, were less than minimal in all cases. Findings using the PCI_2 and the PCI_2 difference tests suggested that the amount of consensus among visitor satisfaction scores varied by study year, park designation, and region of park. While many of the differences were statistically significant, this is likely a function of the large sample size ($n = 81,899$). Thus, many of these differences were not practically significant or substantive, as indicated by the minimal effect sizes. The findings, however, contain important methodological and managerial implications and present opportunities for future research.

Methodological and Managerial Implications

In terms of methodological implications, the results highlight the importance of analyzing multiple data sets to achieve replication of research and generalization of results over different settings and time periods. More specifically, this article was able to examine NPS visitor satisfaction in multiple settings (i.e., 16 park designations, seven park regions) over a period of 17 years. The results indicated that satisfaction scores varied statistically, albeit not substantively, based on study year, park designation, and region of park. Mean satisfaction ratings in all cases were between "good" and "very good." Findings also suggested that the amount of consensus in visitor satisfaction varied in relation to study year, park designation, and

park region, although consensus was high overall. As another important methodological consideration, the use of the PCI_2 and PCI_2 difference tests also helps to provide further validation for this statistic.

From a managerial perspective, the overall similarities in mean satisfaction ratings and consensus scores indicate that the NPS is achieving its mission in terms of managing for visitor satisfaction. Employing multiple data sets also allows park managers to compare satisfaction data from their individual sites against mean scores based on numerous similar park units (e.g., in terms of study year, park type, park region). Evaluating visitor satisfaction at individual park units relative to average satisfaction ratings allows managers to make more informed decisions for their particular situations (see Tables 2.8, 2.9, and 2.10).

Opportunities for Future Research

These findings represent a first step in using data from the NPS VSP online database to explore NPS visitor satisfaction. There are other opportunities for future research stemming from this article. Methodologically, these data could be analyzed using other statistical techniques, such as multi-level modeling. Multi-level modeling could be particularly useful, as individuals are nested within park units and park units are nested within both park designations and park regions in this data set. Moreover, a comparative analysis could be undertaken that analyzes these data at the level of park units, rather than individual respondents.

There is also a possibility to analyze these data on a more in-depth level. The NPS VSP online database provides the opportunity to analyze visitor satisfaction based on a variety of other variables (e.g., demographics, prior visits, location, activities, crowding). Past research has shown that these factors can be important determinants of satisfaction. Moreover, researchers could use the online database to examine satisfaction at more specific levels (e.g., satisfaction

with facilities, satisfaction with trails). Researchers could also attempt to discern why specific study years, park designations, park regions, and park units received higher or lower scores, in terms of both satisfaction and consensus. Certain study years, for example, may have been affected by economic conditions (e.g., park budget reductions, economic recessions). Scores for individual park units may have varied based on the facilities offered, activity structures, and access restrictions.

Finally, additional research could attempt to address some of the limitations of this particular study. The method of choosing park units to partake in VSP projects is one example of a limitation. Bias may be introduced from two sources: (a) each participating park unit is required to provide its own funding, which favors parks with larger budgets, and (b) each park unit's decision to participate is influenced by its managers' perceptions (positive or negative) of social science research. Another drawback relates to the characterization of park units into different designations and regions, as these groupings may appear arbitrary. Future research could discern whether certain park units fit more neatly into other categories or whether the structure of the groups needs to be altered entirely.

Table 2.1

Visitor Satisfaction by Study Year

	Study year[a]					
	1995 – 2000	2001 – 2005	2006 – 2011	*F*	*p*	η
Satisfaction[b]	1.38[1]	1.46[2]	1.41[3]	69.12	< .001	.042

[a]Values in cells are means. Means with different superscripts across each row are significantly different at $p < .001$. [b]Continuous variable coded on a 5-point scale: (-2) very poor, (-1) poor, (0) average, (1) good, and (2) very good.

Table 2.2

Visitor Satisfaction by Park Designation

	Park designation[a]							
	Historical	National parks	Water-based	National monuments	Other	*F*	*p*	η
Satisfaction[b]	1.47[1]	1.42[2]	1.24[3]	1.47[1]	1.30[4]	169.83	< .001	.093

[a]Values in cells are means. Means with different superscripts across each row are significantly different at $p < .001$.
[b]Continuous variable coded on a 5-point scale: (-2) very poor, (-1) poor, (0) average, (1) good, and (2) very good.

Table 2.3

Visitor Satisfaction by Park Region

	Park region[a]									
	Alaska	Inter-mountain	Midwest	National Capitol	Northeast	Pacific West	Southeast	*F*	*p*	η
Satisfaction[b]	1.43^{12}	1.45^{1}	1.41^{2}	1.35^{3}	1.47^{1}	1.35^{3}	1.40^{2}	44.88	< .001	.058

[a]Values in cells are means. Means with different superscripts across each row are significantly different at $p \leq .001$.
[b]Continuous variable coded on a 5-point scale: (-2) very poor, (-1) poor, (0) average, (1) good, and (2) very good.

Table 2.4

Visitor Satisfaction by Study Year, Park Designation, and Park Region

Variable	*df*	*MS*	*F*	*p*	η
Study year (SY)	2	20.95	42.03	< .001	.032
Park designation (PD)	4	66.79	134.00	< .001	.084
Park region (PR)	6	11.77	23.62	< .001	.045
SY x PD	8	41.15	82.56	< .001	.089
SY x PR	11	12.03	24.13	< .001	.055
PD x PR	15	22.23	44.60	< .001	.089
SY x PD x PR	16	10.34	20.74	< .001	.063

Table 2.5

Visitor Satisfaction by Study Year – PCI_2 Difference Tests

Study year	PCIa	PCIb	PCI difference
1995 – 2000 vs. 2001 – 2005	.03	.03	0.00
1995 – 2000 vs. 2006 – 2011	.03	.05	7.07*
2001 – 2005 vs. 2006 – 2011	.03	.05	7.07*

* $p < .017$ (i.e., .05/3)

Table 2.6

Visitor Satisfaction by Park Designation – PCI_2 Difference Tests

Park designation	PCIa	PCIb	PCI difference
Historical vs. National parks	.03	.03	0.00
Historical vs. Water-based	.03	.15	14.55*
Historical vs. National monuments	.03	.02	3.54*
Historical vs. Other	.03	.04	2.77
National parks vs. Water-based	.03	.15	14.88*
National parks vs. National monuments	.03	.02	4.47*
National parks vs. Other	.03	.04	3.16*
Water-based vs. National monuments	.15	.02	15.76*
Water-based vs. Other	.15	.04	12.87*
National monuments vs. Other	.02	.04	5.55*

* $p < .005$ (i.e., .05/10)

Table 2.7

Visitor Satisfaction by Park Region – PCI_2 Difference Tests

Park region	PCIa	PCIb	PCI difference
Alaska vs. Intermountain	.05	.02	4.12*
Alaska vs. Midwest	.05	.09	4.96*
Alaska vs. National Capitol	.05	.03	2.63
Alaska vs. Northeast	.05	.03	2.63
Alaska vs. Pacific West	.05	.03	2.75
Alaska vs. Southeast	.05	.02	4.12*
Intermountain vs. Midwest	.02	.09	15.65*
Intermountain vs. National Capitol	.02	.03	2.77
Intermountain vs. Northeast	.02	.03	2.77
Intermountain vs. Pacific West	.02	.03	3.54*
Intermountain vs. Southeast	.02	.02	0.00
Midwest vs. National Capitol	.09	.03	12.00*
Midwest vs. Northeast	.09	.03	12.00*
Midwest vs. Pacific West	.09	.03	13.42*
Midwest vs. Southeast	.09	.02	15.65*
National Capitol vs. Northeast	.03	.03	0.00
National Capitol vs. Pacific West	.03	.03	0.00
National Capitol vs. Southeast	.03	.02	2.77
Northeast vs. Pacific West	.03	.03	0.00
Northeast vs. Southeast	.03	.02	2.77
Pacific West vs. Southeast	.03	.02	3.54*

* $p < .002$ (i.e., .05/21)

Table 2.8

Individual Projects Compared to Study Year Means

Study year	Mean[ab]	PCI[a]
1995 – 2000	**1.38**	**.03**
Acadia National Park (1998)[c]	1.59	.02
Adams National Historic Site (1995)	1.75	.00
Badlands National Park (2000)	1.47	.01
Bandelier National Monument (1995)	1.55	.02
Big Cypress National Preserve (1999)	1.22	.02
Booker T Washington National Monument (1995)	1.60	.03
Bryce Canyon National Park (1997)	1.47	.00
Chamizal National Memorial (1996)	1.55	.02
Chattahoochee River National Recreation Area (1998)	1.10	.03
Chiricahua National Monument (1996)	1.54	.02
Cumberland Gap National Historical Park (1999)	1.50	.01
Cumberland Island National Seashore (1998)	1.42	.02
Death Valley National Park (1996)	1.27	.02
Devils Tower National Monument (1995)	1.32	.01
Dry Tortugas National Park (1995)	1.29	.05
Eisenhower National Historic Site (2000a)	1.40	.00
Eisenhower National Historic Site (2000b)	1.57	.05
Everglades National Park (1996)	1.31	.02
Fort Bowie National Historic Site (1996)	1.63	.03
George Washington Memorial Parkway (1996)	1.44	.00
George Washington Memorial Parkway (1998)	1.15	.05
Glacier Bay National Park and Preserve (1999)	1.53	.02
Grand Teton National Park (1997)	1.42	.02
Great Smoky Mountains National Park (1996a)	1.34	.02
Great Smoky Mountains National Park (1996b)	1.39	.02
Haleakala National Park (2000a)	1.10	.02
Haleakala National Park (2000b)	1.09	.02

Jean Lafitte National Historical Park and Preserve (1998)	1.56	.02
Kenai Fjords National Park (1999)	1.40	.02
Lassen Volcanic National Park (1999)	1.40	.04
Lincoln Boyhood Home National Memorial (1997)	1.56	.01
Lowell National Historical Park (1997)	1.62	.01
Manassas National Battlefield Park (1995)	1.49	.03
Martin Luther King Jr National Historic Site (1997)	1.44	.01
Mojave National Preserve (1997)	1.02	.12
Mount Rainier National Park (2000)	1.38	.03
National Monuments and Memorials (1998)	1.33	.03
New Bedford Whaling National Historical Park (1999)	1.45	.03
Olympic National Park (2000)	1.50	.01
Prince William Forest Park (1996)	1.52	.02
Rock Creek Park (1999)	1.25	.04
Saint Croix National Scenic Riverway (1999)	1.41	.03
San Francisco Maritime National Historical Park (1995)	1.46	.01
San Juan National Historic Site (1999)	1.18	.04
Virgin Islands National Park (1997)	1.28	.03
Voyageurs National Park (1997)	1.42	.02
Whiskeytown Unit National Recreation Area (1998)	1.15	.01
The White House (2000a)	1.33	.02
The White House (2000b)	0.90	.14
The White House (2000c)	1.23	.01
World War II Valor in the Pacific National Monument (2000)	1.40	.02
Wrangell – St Elias National Park and Preserve (1995)	1.00	.14
2001 – 2005	**1.46**	**.03**
Apostle Islands National Lakeshore (2004)	1.45	.02
Arches National Park (2003)	1.52	.00
Biscayne National Park (2001)	1.35	.09
Cape Hatteras National Seashore (2002)	1.49	.01
Capulin Volcano National Monument (2003)	1.71	.00
Catoctin Mountain Park (2002)	1.61	.00

Chesapeake and Ohio Canal National Historical Park (2003)	1.34	.03
Chickasaw National Recreation Area (2005)	1.37	.01
Colonial National Historical Park (2001)	1.39	.01
Congaree National Park (2005)	1.68	.04
Cowpens National Battlefield (2003)	1.63	.00
Crater Lake National Park (2001)	1.49	.01
Craters of the Moon National Monument and Preserve (2004)	1.52	.00
Cuyahoga Valley National Park (2005)	1.62	.00
Dayton Aviation Heritage National Historical Park (2004)	1.78	.00
Dry Tortugas National Park (2002)	1.48	.02
Effigy Mounds National Monument (2004)	1.67	.00
Everglades National Park (2002)	1.35	.02
Fort Stanwix National Monument (2003)	1.59	.00
Fort Sumter National Monument (2005)	1.32	.00
Gateway National Recreation Area (2003)	0.67	.13
George Washington Birthplace National Monument (2004)	1.38	.02
Grand Canyon National Park (2003a)	1.52	.02
Grand Canyon National Park (2003b)	1.44	.04
Great Sand Dunes National Park and Preserve (2002)	1.53	.00
Harpers Ferry National Historical Park (2005)	1.40	.01
Hopewell Furnace National Historic Site (2002)	1.54	.03
John Day Fossil Beds National Monument (2004)	1.49	.03
Johnstown Flood National Memorial (2005)	1.55	.01
Joshua Tree National Park (2004)	1.50	.02
Keweenaw National Historical Park (2004)	1.45	.01
Knife River Indian Villages National Historical Park (2003)	1.69	.00
Lincoln Home National Historic Site (2005)	1.60	.01
Manzanar National Historic Site (2004)	1.66	.01
Mojave National Preserve (2003)	0.79	.13
New River Gorge National River (2004)	1.57	.02
Nicodemus National Historic Site (2005)	0.89	.11
Oregon Caves National Monument (2003)	1.63	.01

Pictured Rocks National Lakeshore (2001)	1.48	.01
Pinnacles National Monument (2002)	1.47	.05
Pipestone National Monument (2002)	1.50	.01
Saint-Gaudens National Historic Site (2004)	1.75	.02
San Francisco Maritime National Historical Park (2005)	1.16	.02
Sequoia and Kings Canyon National Parks (2002)	1.36	.02
Shenandoah National Park (2001)	1.63	.01
Stones River National Battlefield (2002)	1.45	.06
Timpanogos Cave National Monument (2005)	1.43	.00
Valley Forge National Historical Park (2001)	1.45	.01
Yosemite National Park (2005)	1.26	.03
2006 – 2011	**1.41**	**.05**
Acadia National Park (2009)	1.65	.01
Agate Fossil Beds National Monument (2007)	1.35	.07
Big Cypress National Preserve (2007a)	1.27	.03
Big Cypress National Preserve (2007b)	0.86	.09
Blue Ridge Parkway (2007)	1.56	.01
Blue Ridge Parkway (2008)	1.60	.01
Boston National Historical Park (2009)	1.37	.04
Bryce Canyon National Park (2009)	1.58	.01
Capitol Reef National Park (2008)	1.40	.01
Carl Sandburg Home National Historic Site (2008)	1.66	.00
Chattahoochee River National Recreation Area (2010)	1.35	.01
Chiricahua National Monument (2011)	1.53	.00
City of Rocks National Reserve (2008)	1.44	.01
Curecanti National Recreation Area (2010)	1.25	.03
Death Valley National Park (2009)	1.56	.00
Delaware Water Gap National Recreation Area (2010)	1.34	.03
Denali National Park and Preserve (2006)	1.55	.04
Devils Postpile National Monument (2006)	1.42	.03
Ebey's Landing National Historical Reserve (2007)	1.24	.03
Everglades National Park (2008a)	1.16	.04

Everglades National Park (2008b)	1.09	.04
Fire Island National Seashore (2008a)	0.83	.03
Fire Island National Seashore (2008b)	1.38	.03
Fort Bowie National Historic Site (2011)	1.47	.04
Fort Donelson National Battlefield (2007)	1.49	.02
Fort Larned National Historic Site (2009)	1.64	.01
Fort Union Trading Post National Historic Site (2007)	1.41	.02
Fort Union Trading Post National Historic Site (2010)	1.53	.05
Fossil Butte National Monument (2010)	1.41	.02
George Washington Carver National Monument (2010)	1.78	.03
Glen Canyon National Recreation Area (2007a)	1.20	.05
Glen Canyon National Recreation Area (2007b)	1.18	.05
Golden Spike National Historic Site (2006)	1.39	.03
Grand Teton National Park (2008)	1.53	.01
Grand Teton National Park Laurance S Rockefeller Preserve (2009)	1.85	.01
Great Smoky Mountains National Park (2008a)	1.58	.02
Great Smoky Mountains National Park (2008b)	1.52	.01
Hawaii Volcanoes National Park (2007)	1.40	.01
Herbert Hoover National Historic Site (2008)	1.65	.00
Homestead National Monument of America (2009)	1.74	.00
Horseshoe Bend National Military Park (2008)	1.58	.01
Independence National Historical Park (2007)	1.52	.02
Indiana Dunes National Lakeshore (2009)	1.23	.03
James A Garfield National Historic Site (2009a)	1.52	.02
James A Garfield National Historic Site (2009b)	1.38	.04
John Fitzgerald Kennedy National Historic Site (2006)	1.44	.02
John Muir National Historic Site (2007)	1.38	.02
Joshua Tree National Park (2010)	1.57	.02
Kalaupapa National Historical Park (2010)	0.99	.11
Katmai National Park and Preserve (2006)	1.52	.04
Kings Mountain National Military Park (2006)	1.57	.02
Klondike Gold Rush National Historical Park (2009)	1.54	.00

Lava Beds National Monument (2007)	1.43	.01
Little River Canyon National Preserve (2010)	1.32	.03
Mammoth Cave National Park (2006)	1.51	.03
Martin Van Buren National Historic Site (2009)	1.39	.00
Minute Man National Historical Park (2007)	1.49	.01
Minuteman Missile National Historic Site (2009)	0.84	.12
Monocacy National Battlefield (2006)	1.35	.01
Mount Rushmore National Memorial (2007)	1.60	.01
New Bedford Whaling National Historical Park (2010)	1.53	.03
Ninety Six National Historic Site (2010)	1.63	.00
Niobrara National Scenic River (2010)	1.40	.00
Perry's Victory and International Peace Memorial (2009)	1.34	.03
Rainbow Bridge National Monument (2007)	1.30	.00
Richmond National Battlefield Park (2010)	1.36	.06
Rocky Mountain National Park (2010)	1.52	.01
Rocky Mountain National Park (2011)	1.54	.01
San Juan National Historic Site (2010)	1.31	.03
Sleeping Bear Dunes National Lakeshore (2009)	1.48	.01
Wind Cave National Park (2010)	1.40	.01
Yellowstone National Park (2006)	1.33	.02
Yosemite National Park (2008)	1.25	.03
Yosemite National Park (2009)	1.33	.02
Zion National Park (2006a)	1.56	.02
Zion National Park (2006b)	1.47	.01

[a]Group mean and PCI values are calculated with the individual as the unit of analysis.
[b]Continuous variable coded on a 5-point scale: (-2) very poor, (-1) poor, (0) average, (1) good, and (2) very good. [c]Year in parentheses represents the completion date of the project.

Table 2.9

Individual Projects Compared to Park Designation Means

Park designation	Mean[ab]	PCI[a]
Historical	**1.47**	**.03**
Adams National Historic Site (1995)[c]	1.75	.00
Boston National Historical Park (2009)	1.37	.04
Carl Sandburg Home National Historic Site (2008)	1.66	.00
Chamizal National Memorial (1996)	1.55	.02
Chesapeake and Ohio Canal National Historical Park (2003)	1.34	.03
Colonial National Historical Park (2001)	1.39	.01
Cowpens National Battlefield (2003)	1.63	.00
Cumberland Gap National Historical Park (1999)	1.50	.01
Dayton Aviation Heritage National Historical Park (2004)	1.78	.00
Eisenhower National Historic Site (2000a)	1.40	.00
Eisenhower National Historic Site (2000b)	1.57	.05
Fort Bowie National Historic Site (1996)	1.63	.03
Fort Bowie National Historic Site (2011)	1.47	.04
Fort Donelson National Battlefield (2007)	1.49	.02
Fort Larned National Historic Site (2009)	1.64	.01
Fort Union Trading Post National Historic Site (2007)	1.41	.02
Fort Union Trading Post National Historic Site (2010)	1.53	.05
Golden Spike National Historic Site (2006)	1.39	.03
Harpers Ferry National Historical Park (2005)	1.40	.01
Herbert Hoover National Historic Site (2008)	1.65	.00
Hopewell Furnace National Historic Site (2002)	1.54	.03
Horseshoe Bend National Military Park (2008)	1.58	.01
Independence National Historical Park (2007)	1.52	.02
James A Garfield National Historic Site (2009a)	1.52	.02
James A Garfield National Historic Site (2009b)	1.38	.04
Jean Lafitte National Historical Park and Preserve (1998)	1.56	.02
John Fitzgerald Kennedy National Historic Site (2006)	1.44	.02
John Muir National Historic Site (2007)	1.38	.02

Johnstown Flood National Memorial (2005)	1.55	.01
Kalaupapa National Historical Park (2010)	0.99	.11
Keweenaw National Historical Park (2004)	1.45	.01
Kings Mountain National Military Park (2006)	1.57	.02
Klondike Gold Rush National Historical Park (2009)	1.54	.00
Knife River Indian Villages National Historical Park (2003)	1.69	.00
Lincoln Boyhood Home National Memorial (1997)	1.56	.01
Lincoln Home National Historic Site (2005)	1.60	.01
Lowell National Historical Park (1997)	1.62	.01
Manassas National Battlefield Park (1995)	1.49	.03
Manzanar National Historic Site (2004)	1.66	.01
Martin Luther King Jr National Historic Site (1997)	1.44	.01
Martin Van Buren National Historic Site (2009)	1.39	.00
Minute Man National Historical Park (2007)	1.49	.01
Minuteman Missile National Historic Site (2009)	0.84	.12
Monocacy National Battlefield (2006)	1.35	.01
Mount Rushmore National Memorial (2007)	1.60	.01
New Bedford Whaling National Historical Park (1999)	1.45	.03
New Bedford Whaling National Historical Park (2010)	1.53	.03
Nicodemus National Historic Site (2005)	0.89	.11
Ninety Six National Historic Site (2010)	1.63	.00
Richmond National Battlefield Park (2010)	1.36	.06
Saint-Gaudens National Historic Site (2004)	1.75	.02
San Francisco Maritime National Historical Park (1995)	1.46	.01
San Francisco Maritime National Historical Park (2005)	1.16	.02
San Juan National Historic Site (1999)	1.18	.04
San Juan National Historic Site (2010)	1.31	.03
Stones River National Battlefield (2002)	1.45	.06
Valley Forge National Historical Park (2001)	1.45	.01
National parks and preserves	**1.42**	**.03**
Acadia National Park (1998)	1.59	.02
Acadia National Park (2009)	1.65	.01

Arches National Park (2003)	1.52	.00
Badlands National Park (2000)	1.47	.01
Big Cypress National Preserve (1999)	1.22	.02
Big Cypress National Preserve (2007a)	1.27	.03
Big Cypress National Preserve (2007b)	0.86	.09
Biscayne National Park (2001)	1.35	.09
Bryce Canyon National Park (1997)	1.47	.00
Bryce Canyon National Park (2009)	1.58	.01
Capitol Reef National Park (2008)	1.40	.01
Congaree National Park (2005)	1.68	.04
Crater Lake National Park (2001)	1.49	.01
Cuyahoga Valley National Park (2005)	1.62	.00
Death Valley National Park (1996)	1.27	.02
Death Valley National Park (2009)	1.56	.00
Denali National Park and Preserve (2006)	1.55	.04
Dry Tortugas National Park (1995)	1.29	.05
Dry Tortugas National Park (2002)	1.48	.02
Everglades National Park (1996)	1.31	.02
Everglades National Park (2002)	1.35	.02
Everglades National Park (2008a)	1.16	.04
Everglades National Park (2008b)	1.09	.04
Glacier Bay National Park and Preserve (1999)	1.53	.02
Grand Canyon National Park (2003a)	1.52	.02
Grand Canyon National Park (2003b)	1.44	.04
Grand Teton National Park (1997)	1.42	.02
Grand Teton National Park (2008)	1.53	.01
Grand Teton National Park Laurance S Rockefeller Preserve (2009)	1.85	.01
Great Sand Dunes National Park and Preserve (2002)	1.53	.00
Great Smoky Mountains National Park (1996a)	1.34	.02
Great Smoky Mountains National Park (1996b)	1.39	.02
Great Smoky Mountains National Park (2008a)	1.58	.02
Great Smoky Mountains National Park (2008b)	1.52	.01

Haleakala National Park (2000a)	1.10	.02
Haleakala National Park (2000b)	1.09	.02
Hawaii Volcanoes National Park (2007)	1.40	.01
Joshua Tree National Park (2004)	1.50	.02
Joshua Tree National Park (2010)	1.57	.02
Katmai National Park and Preserve (2006)	1.52	.04
Kenai Fjords National Park (1999)	1.40	.02
Lassen Volcanic National Park (1999)	1.40	.04
Little River Canyon National Preserve (2010)	1.32	.03
Mammoth Cave National Park (2006)	1.51	.03
Mojave National Preserve (1997)	1.02	.12
Mojave National Preserve (2003)	0.79	.13
Mount Rainier National Park (2000)	1.38	.03
Olympic National Park (2000)	1.50	.01
Rocky Mountain National Park (2010)	1.52	.01
Rocky Mountain National Park (2011)	1.54	.01
Sequoia and Kings Canyon National Parks (2002)	1.36	.02
Shenandoah National Park (2001)	1.63	.01
Virgin Islands National Park (1997)	1.28	.03
Voyageurs National Park (1997)	1.42	.02
Wind Cave National Park (2010)	1.40	.01
Wrangell – St Elias National Park and Preserve (1995)	1.00	.14
Yellowstone National Park (2006)	1.33	.02
Yosemite National Park (2005)	1.26	.03
Yosemite National Park (2008)	1.25	.03
Yosemite National Park (2009)	1.33	.02
Zion National Park (2006a)	1.56	.02
Zion National Park (2006b)	1.47	.01
Water-based	**1.24**	**.15**
Apostle Islands National Lakeshore (2004)	1.45	.02
Cape Hatteras National Seashore (2002)	1.49	.01
Cumberland Island National Seashore (1998)	1.42	.02

Fire Island National Seashore (2008a)	0.83	.03
Fire Island National Seashore (2008b)	1.38	.03
Indiana Dunes National Lakeshore (2009)	1.23	.03
New River Gorge National River (2004)	1.57	.02
Niobrara National Scenic River (2010)	1.40	.00
Pictured Rocks National Lakeshore (2001)	1.48	.01
Saint Croix National Scenic Riverway (1999)	1.41	.03
Sleeping Bear Dunes National Lakeshore (2009)	1.48	.01
National monuments	**1.47**	**.02**
Agate Fossil Beds National Monument (2007)	1.35	.07
Bandelier National Monument (1995)	1.55	.02
Booker T Washington National Monument (1995)	1.60	.03
Capulin Volcano National Monument (2003)	1.71	.00
Chiricahua National Monument (1996)	1.54	.02
Chiricahua National Monument (2011)	1.53	.00
Craters of the Moon National Monument and Preserve (2004)	1.52	.00
Devils Postpile National Monument (2006)	1.42	.03
Devils Tower National Monument (1995)	1.32	.01
Effigy Mounds National Monument (2004)	1.67	.00
Fort Stanwix National Monument (2003)	1.59	.00
Fort Sumter National Monument (2005)	1.32	.00
Fossil Butte National Monument (2010)	1.41	.02
George Washington Birthplace National Monument (2004)	1.38	.02
George Washington Carver National Monument (2010)	1.78	.03
Homestead National Monument of America (2009)	1.74	.00
John Day Fossil Beds National Monument (2004)	1.49	.03
Lava Beds National Monument (2007)	1.43	.01
National Monuments and Memorials (1998)	1.33	.03
Oregon Caves National Monument (2003)	1.63	.01
Perry's Victory and International Peace Memorial (2009)	1.34	.03
Pinnacles National Monument (2002)	1.47	.05
Pipestone National Monument (2002)	1.50	.01

Rainbow Bridge National Monument (2007)	1.30	.00
Timpanogos Cave National Monument (2005)	1.43	.00
World War II Valor in the Pacific National Monument (2000)	1.40	.02
Other	**1.30**	**.04**
Blue Ridge Parkway (2007)	1.56	.01
Blue Ridge Parkway (2008)	1.60	.01
Catoctin Mountain Park (2002)	1.61	.00
Chattahoochee River National Recreation Area (1998)	1.10	.03
Chattahoochee River National Recreation Area (2010)	1.35	.01
Chickasaw National Recreation Area (2005)	1.37	.01
City of Rocks National Reserve (2008)	1.44	.01
Curecanti National Recreation Area (2010)	1.25	.03
Delaware Water Gap National Recreation Area (2010)	1.34	.03
Ebey's Landing National Historical Reserve (2007)	1.24	.03
Gateway National Recreation Area (2003)	0.67	.13
George Washington Memorial Parkway (1996)	1.44	.00
George Washington Memorial Parkway (1998)	1.15	.05
Glen Canyon National Recreation Area (2007a)	1.20	.05
Glen Canyon National Recreation Area (2007b)	1.18	.05
Prince William Forest Park (1996)	1.52	.02
Rock Creek Park (1999)	1.25	.04
Whiskeytown Unit National Recreation Area (1998)	1.15	.01
The White House (2000a)	1.33	.02
The White House (2000b)	0.90	.14
The White House (2000c)	1.23	.01

[a]Group mean and PCI values are calculated with the individual as the unit of analysis.
[b]Continuous variable coded on a 5-point scale: (-2) very poor, (-1) poor, (0) average, (1) good, and (2) very good. [c]Year in parentheses represents the completion date of the project.

Table 2.10

Individual Projects Compared to Park Region Means

Park region	Mean[ab]	PCI[a]
Alaska	**1.43**	**.05**
Denali National Park and Preserve (2006)[c]	1.55	.04
Glacier Bay National Park and Preserve (1999)	1.53	.02
Katmai National Park and Preserve (2006)	1.52	.04
Kenai Fjords National Park (1999)	1.40	.02
Wrangell – St Elias National Park and Preserve (1995)	1.00	.14
Intermountain	**1.45**	**.02**
Arches National Park (2003)	1.52	.00
Bandelier National Monument (1995)	1.55	.02
Bryce Canyon National Park (1997)	1.47	.00
Bryce Canyon National Park (2009)	1.58	.01
Capitol Reef National Park (2008)	1.40	.01
Capulin Volcano National Monument (2003)	1.71	.00
Chamizal National Memorial (1996)	1.55	.02
Chickasaw National Recreation Area (2005)	1.37	.01
Chiricahua National Monument (1996)	1.54	.02
Chiricahua National Monument (2011)	1.53	.00
Curecanti National Recreation Area (2010)	1.25	.03
Devils Tower National Monument (1995)	1.32	.01
Fort Bowie National Historic Site (1996)	1.63	.03
Fort Bowie National Historic Site (2011)	1.47	.04
Fossil Butte National Monument (2010)	1.41	.02
Glen Canyon National Recreation Area (2007a)	1.20	.05
Glen Canyon National Recreation Area (2007b)	1.18	.05
Golden Spike National Historic Site (2006)	1.39	.03
Grand Canyon National Park (2003a)	1.52	.02
Grand Canyon National Park (2003b)	1.44	.04
Grand Teton National Park (1997)	1.42	.02
Grand Teton National Park (2008)	1.53	.01

Grand Teton National Park Laurance S Rockefeller Preserve (2009)	1.85	.01
Great Sand Dunes National Park and Preserve (2002)	1.53	.00
Rainbow Bridge National Monument (2007)	1.30	.00
Rocky Mountain National Park (2010)	1.52	.01
Rocky Mountain National Park (2011)	1.54	.01
Timpanogos Cave National Monument (2005)	1.43	.00
Yellowstone National Park (2006)	1.33	.02
Zion National Park (2006a)	1.56	.02
Zion National Park (2006b)	1.47	.01
Midwest	**1.41**	**.09**
Agate Fossil Beds National Monument (2007)	1.35	.07
Apostle Islands National Lakeshore (2004)	1.45	.02
Badlands National Park (2000)	1.47	.01
Cuyahoga Valley National Park (2005)	1.62	.00
Dayton Aviation Heritage National Historical Park (2004)	1.78	.00
Effigy Mounds National Monument (2004)	1.67	.00
Fort Larned National Historic Site (2009)	1.64	.01
Fort Union Trading Post National Historic Site (2007)	1.41	.02
Fort Union Trading Post National Historic Site (2010)	1.53	.05
George Washington Carver National Monument (2010)	1.78	.03
Herbert Hoover National Historic Site (2008)	1.65	.00
Homestead National Monument of America (2009)	1.74	.00
Indiana Dunes National Lakeshore (2009)	1.23	.03
James A Garfield National Historic Site (2009a)	1.52	.02
James A Garfield National Historic Site (2009b)	1.38	.04
Keweenaw National Historical Park (2004)	1.45	.01
Knife River Indian Villages National Historical Park (2003)	1.69	.00
Lincoln Boyhood Home National Memorial (1997)	1.56	.01
Lincoln Home National Historic Site (2005)	1.60	.01
Minuteman Missile National Historic Site (2009)	0.84	.12
Mount Rushmore National Memorial (2007)	1.60	.01
Nicodemus National Historic Site (2005)	0.89	.11

Niobrara National Scenic River (2010)	1.40	.00
Perry's Victory and International Peace Memorial (2009)	1.34	.03
Pictured Rocks National Lakeshore (2001)	1.48	.01
Pipestone National Monument (2002)	1.50	.01
Saint Croix National Scenic Riverway (1999)	1.41	.03
Sleeping Bear Dunes National Lakeshore (2009)	1.48	.01
Voyageurs National Park (1997)	1.42	.02
Wind Cave National Park (2010)	1.40	.01
National Capitol	**1.35**	**.03**
Catoctin Mountain Park (2002)	1.61	.00
Chesapeake and Ohio Canal National Historical Park (2003)	1.34	.03
George Washington Memorial Parkway (1996)	1.44	.00
George Washington Memorial Parkway (1998)	1.15	.05
Harpers Ferry National Historical Park (2005)	1.40	.01
Manassas National Battlefield Park (1995)	1.49	.03
Monocacy National Battlefield (2006)	1.35	.01
National Monuments and Memorials (1998)	1.33	.03
Prince William Forest Park (1996)	1.52	.02
Rock Creek Park (1999)	1.25	.04
The White House (2000a)	1.33	.02
The White House (2000b)	0.90	.14
The White House (2000c)	1.23	.01
Northeast	**1.47**	**.03**
Acadia National Park (1998)	1.59	.02
Acadia National Park (2009)	1.65	.01
Adams National Historic Site (1995)	1.75	.00
Booker T Washington National Monument (1995)	1.60	.03
Boston National Historical Park (2009)	1.37	.04
Colonial National Historical Park (2001)	1.39	.01
Delaware Water Gap National Recreation Area (2010)	1.34	.03
Eisenhower National Historic Site (2000a)	1.40	.00
Eisenhower National Historic Site (2000b)	1.57	.05

Fire Island National Seashore (2008a)	0.83	.03
Fire Island National Seashore (2008b)	1.38	.03
Fort Stanwix National Monument (2003)	1.59	.00
Gateway National Recreation Area (2003)	0.67	.13
George Washington Birthplace National Monument (2004)	1.38	.02
Hopewell Furnace National Historic Site (2002)	1.54	.03
Independence National Historical Park (2007)	1.52	.02
John Fitzgerald Kennedy National Historic Site (2006)	1.44	.02
Johnstown Flood National Memorial (2005)	1.55	.01
Lowell National Historical Park (1997)	1.62	.01
Martin Van Buren National Historic Site (2009)	1.39	.00
Minute Man National Historical Park (2007)	1.49	.01
New Bedford Whaling National Historical Park (1999)	1.45	.03
New Bedford Whaling National Historical Park (2010)	1.53	.03
New River Gorge National River (2004)	1.57	.02
Richmond National Battlefield Park (2010)	1.36	.06
Saint-Gaudens National Historic Site (2004)	1.75	.02
Shenandoah National Park (2001)	1.63	.01
Valley Forge National Historical Park (2001)	1.45	.01
Pacific West	**1.35**	**.03**
City of Rocks National Reserve (2008)	1.44	.01
Crater Lake National Park (2001)	1.49	.01
Craters of the Moon National Monument and Preserve (2004)	1.52	.00
Death Valley National Park (1996)	1.27	.02
Death Valley National Park (2009)	1.56	.00
Devils Postpile National Monument (2006)	1.42	.03
Ebey's Landing National Historical Reserve (2007)	1.24	.03
Haleakala National Park (2000a)	1.10	.02
Haleakala National Park (2000b)	1.09	.02
Hawaii Volcanoes National Park (2007)	1.40	.01
John Day Fossil Beds National Monument (2004)	1.49	.03
John Muir National Historic Site (2007)	1.38	.02

Joshua Tree National Park (2004)	1.50	.02
Joshua Tree National Park (2010)	1.57	.02
Kalaupapa National Historical Park (2010)	0.99	.11
Klondike Gold Rush National Historical Park (2009)	1.54	.00
Lassen Volcanic National Park (1999)	1.40	.04
Lava Beds National Monument (2007)	1.43	.01
Manzanar National Historic Site (2004)	1.66	.01
Mojave National Preserve (1997)	1.02	.12
Mojave National Preserve (2003)	0.79	.13
Mount Rainier National Park (2000)	1.38	.03
Olympic National Park (2000)	1.50	.01
Oregon Caves National Monument (2003)	1.63	.01
Pinnacles National Monument (2002)	1.47	.05
San Francisco Maritime National Historical Park (1995)	1.46	.01
San Francisco Maritime National Historical Park (2005)	1.16	.02
Sequoia and Kings Canyon National Parks (2002)	1.36	.02
Whiskeytown Unit National Recreation Area (1998)	1.15	.01
World War II Valor in the Pacific National Monument (2000)	1.40	.02
Yosemite National Park (2005)	1.26	.03
Yosemite National Park (2008)	1.25	.03
Yosemite National Park (2009)	1.33	.02
Southeast	**1.40**	**.02**
Big Cypress National Preserve (1999)	1.22	.02
Big Cypress National Preserve (2007a)	1.27	.03
Big Cypress National Preserve (2007b)	0.86	.09
Biscayne National Park (2001)	1.35	.09
Blue Ridge Parkway (2007)	1.56	.01
Blue Ridge Parkway (2008)	1.60	.01
Cape Hatteras National Seashore (2002)	1.49	.01
Carl Sandburg Home National Historic Site (2008)	1.66	.00
Chattahoochee River National Recreation Area (1998)	1.10	.03
Chattahoochee River National Recreation Area (2010)	1.35	.01

Congaree National Park (2005)	1.68	.04
Cowpens National Battlefield (2003)	1.63	.00
Cumberland Gap National Historical Park (1999)	1.50	.01
Cumberland Island National Seashore (1998)	1.42	.02
Dry Tortugas National Park (1995)	1.29	.05
Dry Tortugas National Park (2002)	1.48	.02
Everglades National Park (1996)	1.31	.02
Everglades National Park (2002)	1.35	.02
Everglades National Park (2008a)	1.16	.04
Everglades National Park (2008b)	1.09	.04
Fort Donelson National Battlefield (2007)	1.49	.02
Fort Sumter National Monument (2005)	1.32	.00
Great Smoky Mountains National Park (1996a)	1.34	.02
Great Smoky Mountains National Park (1996b)	1.39	.02
Great Smoky Mountains National Park (2008a)	1.58	.02
Great Smoky Mountains National Park (2008b)	1.52	.01
Horseshoe Bend National Military Park (2008)	1.58	.01
Jean Lafitte National Historical Park and Preserve (1998)	1.56	.02
Kings Mountain National Military Park (2006)	1.57	.02
Little River Canyon National Preserve (2010)	1.32	.03
Mammoth Cave National Park (2006)	1.51	.03
Martin Luther King Jr National Historic Site (1997)	1.44	.01
Ninety Six National Historic Site (2010)	1.63	.00
San Juan National Historic Site (1999)	1.18	.04
San Juan National Historic Site (2010)	1.31	.03
Stones River National Battlefield (2002)	1.45	.06
Virgin Islands National Park (1997)	1.28	.03

[a]Group mean and PCI values are calculated with the individual as the unit of analysis.
[b]Continuous variable coded on a 5-point scale: (-2) very poor, (-1) poor, (0) average, (1) good, and (2) very good. [c]Year in parentheses represents the completion date of the project.

Figure 2.1. National Park Service regions (United States National Park Service, 2003).

Figure 2.2. Visitor satisfaction by study year.

Figure 2.3. Visitor satisfaction by park designation.

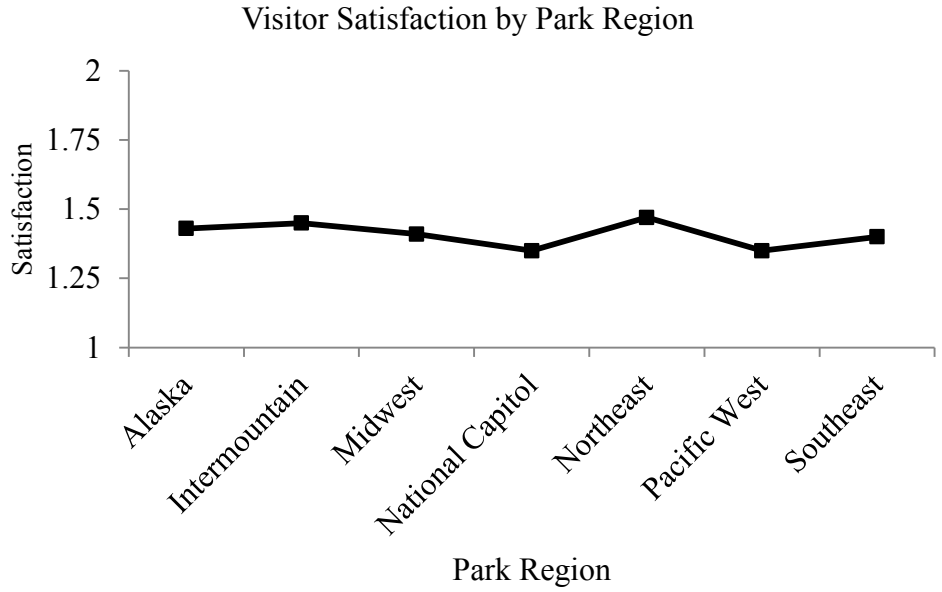

Figure 2.4. Visitor satisfaction by park region.

Figure 2.5. Visitor satisfaction by study year – PCI_2.

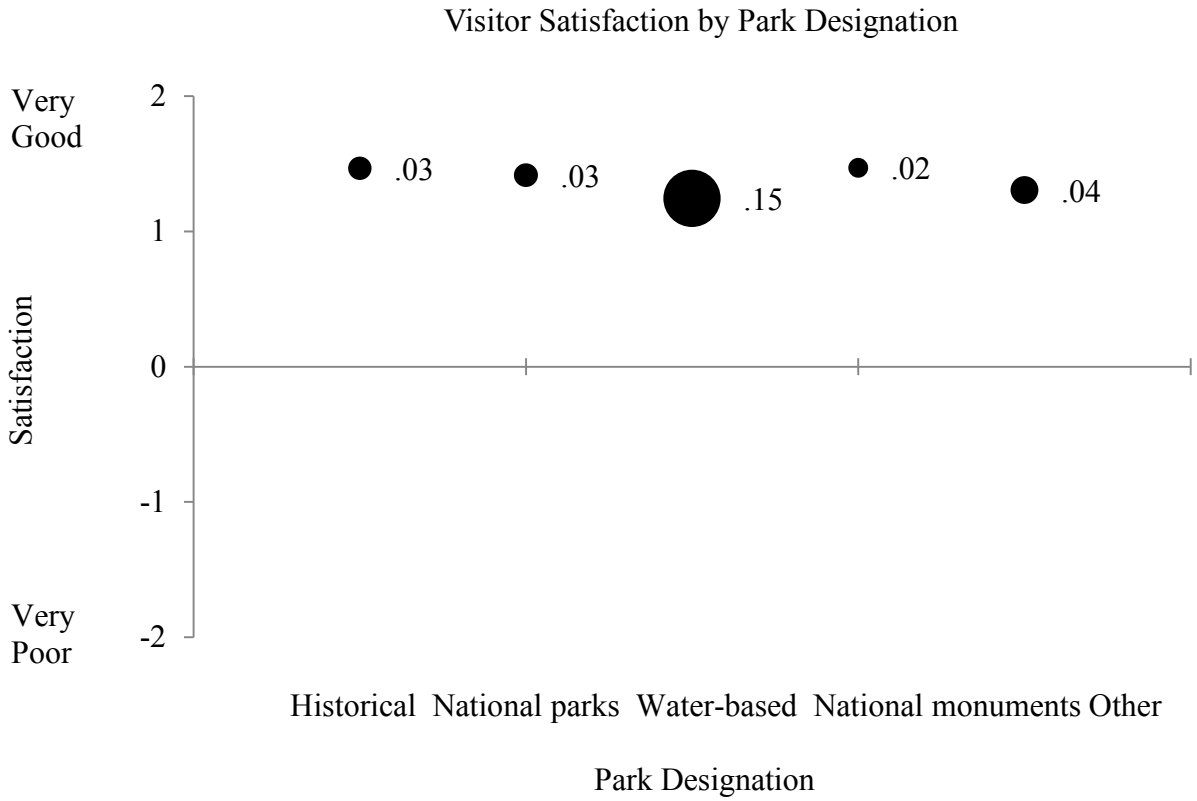

Figure 2.6. Visitor satisfaction by park designation – PCI_2.

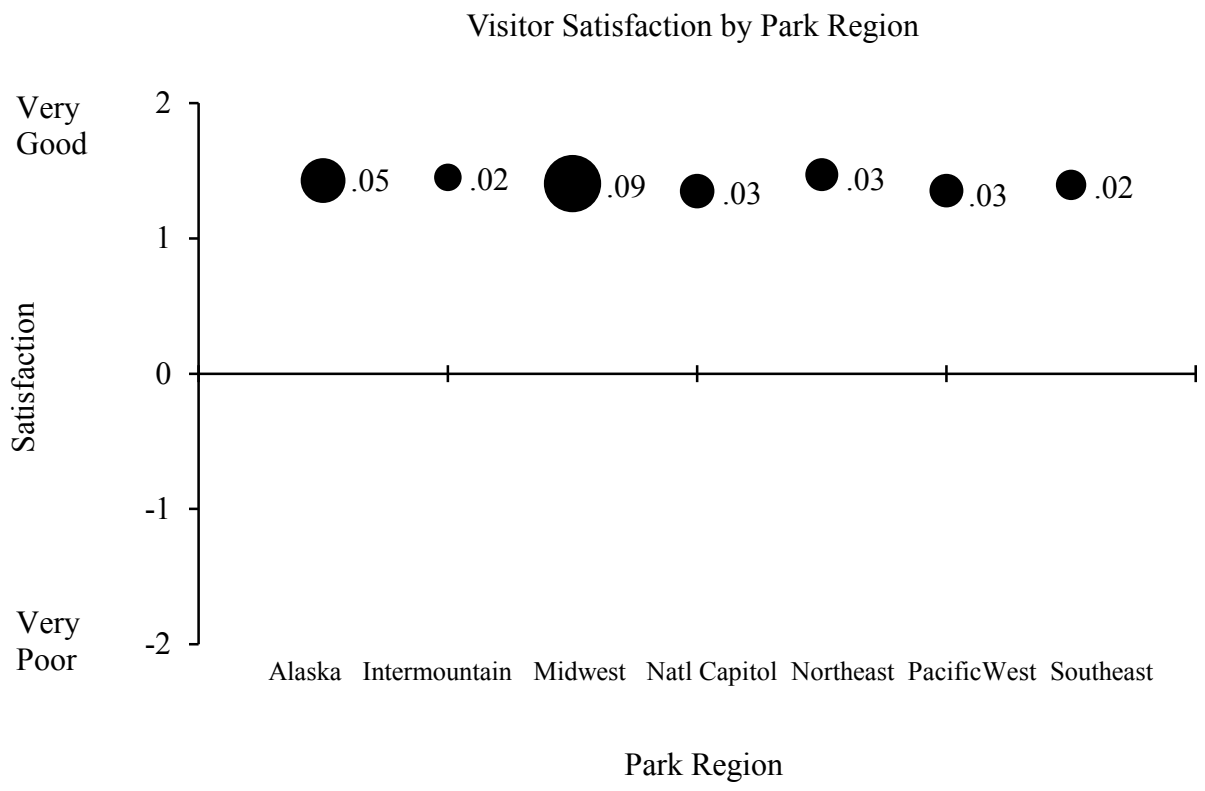

Figure 2.7. Visitor satisfaction by park region – PCI_2.

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Chapter 4: Conclusion

Summary of Findings

The purpose of the two articles contained within this thesis was to use a comparative analysis approach to assess satisfaction ratings of outdoor recreationists. The first article replicated Vaske, Donnelly, Heberlein, and Shelby's (1982) analysis by comparing the satisfaction ratings reported by consumptive and nonconsumptive recreationists, and it attempted to discern whether the pattern in these two groups' satisfaction scores would remain constant over time. Results showed that consumptive recreationists still reported significantly lower levels of satisfaction than did nonconsumptive recreationists. Moreover, when both activity type and study year were included in the model, there was a consistent pattern of consumptive recreationists reporting significantly lower levels of satisfaction levels than nonconsumptive recreationists did over time. The 1982 comparative analysis was based on six consumptive and 11 nonconsumptive activities. Analyses reported in this thesis were based on 57 consumptive and 45 nonconsumptive evaluation contexts. By using data obtained over the last 30 years and increasing the sample size, this updated article was able to generalize the original findings over a wider range of evaluation contexts and time periods.

The second article was similar in its use of comparative analysis to evaluate satisfaction. This latter article, however, analyzed National Park Service (NPS) visitor satisfaction data over a period of 17 years. There were two goals of this second article: (a) to predict satisfaction based on study year, park designation, and park region and (b) to evaluate the amount of consensus among respondents in terms of their satisfaction scores. Results indicated that visitor satisfaction varied significantly by study year, park designation, and park region. The effect sizes, however, were less than minimal in all cases. Findings using the PCI_2 and the PCI_2 difference tests

suggested that the amount of consensus among visitor satisfaction scores varied by study year, park type, and region of park. While many of the differences were statistically significant, this is likely a function of the large sample size (n = 81,899). Thus, many of these differences were not practically significant or substantive, as indicated by the minimal effect sizes.

Commonalities among Findings

Important methodological and managerial implications stem from the commonalities among the findings of the two articles. First, results of both studies indicate that satisfaction is high among nonconsumptive recreationists. In the first article, satisfaction was measured on a 6-point scale ranging from "poor" to "perfect," with responses collapsed into three categories: (a) "poor/fair," (b) "good/very good," and (c) "excellent/perfect." When measured on this scale, 71% of nonconsumptive recreationists rated their satisfaction as "excellent" or "perfect," and another 27% provided ratings of "good" or "very good." The findings of the second article were based on visitors to National Park Service (NPS) units, who are primarily nonconsumptive due to NPS activity regulations. For this article, satisfaction was measured on a 5-point scale, ranging from "very poor" to "very good," and the mean satisfaction score for these recreationists was between "good" and "very good." This indicates that managers of nonconsumptive recreation areas are achieving their goal of providing high quality, satisfying recreation experiences to visitors. It is not possible with these results, however, to provide the same type of conclusion for managers of consumptive recreation activities. Although it would have been interesting to compare satisfaction ratings of consumptive and nonconsumptive recreationists for the second article in order to provide a parallel to the first article, this was not possible due to the predominance of nonconsumptive recreationists at NPS units.

A second similarity between both articles is the consistency in satisfaction ratings over time. In the first article, the satisfaction ratings remained statistically equivalent for the "poor/fair" and "excellent/perfect" responses among the three categories of study years (i.e., 1975 to 1984, 1985 to 1994, 1995 to 2005). For the "good/very good" variable, the satisfaction scores did vary overall, but the difference only occurred for two comparisons. For the second article, respondents in all three time periods (i.e., 2001 to 2005, 1995 to 2000, 2006 to 2011) did have significantly different mean satisfaction ratings. The effect size for this relationship, however, was less than minimal, and visitors in all three time periods evaluated their satisfaction as between "good" and "very good."

Opportunities for Future Research

Despite the widespread application of the satisfaction concept, both of these articles indicate that there is still a need to further understand what influences satisfaction (the motivations and expectations that determine a person's evaluation of an experience). Managers are interested in the relationship between satisfaction and participation, which may not be a direct relationship. A person can have a dissatisfying experience, but continue to participate in an activity and vice versa. Certain satisfactions may be more important and outweigh others. Future research should continue to examine the relative importance of different facets of satisfaction and the other factors that motivate behavior. Continued use of the online VSP database provides an opportunity to further investigate some of these topics.

Additionally, results reported in both articles were based on a comparative analysis approach to analyzing satisfaction. Findings emphasized the importance of analyzing multiple data sets in order to demonstrate long-term patterns and trends, discern causal factors, and generate support for theories. Although this type of analysis can be difficult (e.g., requires time

and attention to detail), future research in outdoor recreation can continue to undertake similar analyses on a variety of important concepts. Finally, although the comparative analysis approach has its advantages, other statistical techniques (e.g., multi-level modeling, meta-analysis) could be used in future analyses of satisfaction and other recreation concepts.

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