

ATTRIBUTES AFFECTING CAMPSITE SELECTION AT TWO TYPES OF CAMPGROUNDS IN THE ADIRONDACK PARK¹

Kye-Young Choi, Graduate student
State University of New York,
College of Environmental Science and Forestry,
1 Forestry Drive,
Syracuse, NY 13210

Chad P. Dawson, Professor
State University of New York,
College of Environmental Science and Forestry,
1 Forestry Drive,
Syracuse, NY 13210

Abstract: This study compared the important attributes affecting campers' decisions in selecting their preferred campsites at two different types of New York State Department of Environmental Conservation (NYSDEC) campgrounds in the Adirondack Park. Mail surveys were sent to campers using six NYSDEC campgrounds (three less-developed campgrounds and three more-developed campgrounds) in 2000. Of the 240 surveys mailed, 13 were undeliverable and 116 were returned (51.1% response rate). A weighted attribute approach (WAA) was conducted to better understand the relative importance of campsite attributes for Adirondack campers when selecting their preferred campsites. Among the 17 campsite attributes, four attributes had statistically significant differences in terms of importance between the respondents from less and more-developed campgrounds. The weighted importance of these attributes was evaluated using the importance-performance analysis (IPA) technique.

Introduction

Management of the recreation and tourism resources in New York State includes a complementary relationship between the public and private sectors. One of the major providers of public recreation opportunities in the state is the New York State Department of Environmental Conservation (NYSDEC). Approximately 47 NYSDEC campgrounds of various sizes and locations, including four campgrounds on islands with boat access only, are currently distributed in the Adirondack Forest Preserve. Some of the campsites at these 47 campgrounds are preferred by campers and have high annual visitation rates, while other campsites are not preferred by campers. There are specific characteristics of campsites that satisfy various types of campers.

From review of literature published during the past several decades, important attributes affecting campers' decisions to select their preferred campsites were identified: distance

¹ In Schuster, Rudolph (editor), Proceedings of the 2002 Northeastern Recreation Research Symposium. Gen. Tech. Report NE (in press). Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station.

between campsites for privacy; amount of vegetation for shade and screening; vegetative barriers; visibility of ponds, lakes and rivers from the site; accessibility to water from the site; campsite level ground; use levels and crowding; level of campground and campsite development; and other factors (Clark et al. 1971, Heberlein and Dunwiddie 1979, Foster and Jackson 1979, Bumgardner et al. 1988, Brunson and Shelby 1990, 1991). Site selection behavior can affect camper use pattern and campsite popularity. Heberlein and Dunwiddie (1979) found that site preference was based on the structural needs of camping parties, such as size, activities and cooking methods. They also found that some campers were likely to camp in sight of each other while experienced campers tended to select sites further from the nearest visible site and further from all occupied sites than inexperienced campers.

In addition to the behavioral and psychological factors influencing campers' satisfaction, campsite design-related aspects, such as campers' perceptions of distance and vegetative screening between campsites were observed by researchers as important. Foster and Jackson (1979) identified variations in satisfaction and quality of experience as a necessary step in planning for the allocation and design of campground facilities. They found the effect of campground design on satisfaction was influenced significantly by campers' perceptions of distance and screening between their campsites. Development levels of campgrounds can influence the perception of important campsite attributes by campers (Clark et al. 1971). Bumgardner et al. (1988) affirmed that lake visibility emerged as the most important factor in campsite selection at undeveloped campgrounds while facilities and utilities were important in campsite selection at developed campgrounds.

The purpose of this exploratory study was two fold. One objective was to investigate the important attributes affecting campsite selection and satisfaction among Adirondack campers at NYSDEC campgrounds, and the other objective was to compare the campsite attributes at two different types of campgrounds. The results of this study were used to develop a subsequent survey using a conjoint analysis that measured the most important campsite attributes and their preferred levels to develop an Adirondack camper campsite-selection decision-making model.

Methods

Six campgrounds located in the southeastern area of the Adirondack Park were chosen to represent the range of development in NYSDEC campgrounds. Three were less-developed campgrounds (Crown Point, Paradox Lake, and Putnam Pond) while the other three were more-developed campgrounds (Rogers Rock, Hearthstone Point, and Luzerne). The campgrounds were classified based on camping fee, number of campsites, facilities and activities available, and geographic locations (table 1) (NYSDEC 2001a, NYSDEC 2001b, Hartman 1996). Registered

Table 1. Classification of six NYSDEC campgrounds selected as the locations to study campsite selection attributes used by campers in 2000.

Level of development	Campground	Basic fee	Number of campsite	Facilities & activities available ^a	Geographic location
Less-development campgrounds	Putnam Pond	\$10	72	Hiking/nature trail Boat/canoe rentals available	Putnam Pond
	Paradox Lake	\$12	58	Hiking/nature trail Boat/canoc rentals available	Paradox Lake
	Crown Point	\$12	66		Lake Champlain
	Rogers Rock	\$16	332	Boat mooring buoy reservation available	Lake George
More-developed campgrounds	Hearthstone Point	\$16	251		Lake George
	Luzerne	\$16	174	Hiking/nature trail Recreational program Environmental interpretation Boat/canoe rentals available Horse trailers allowed	Fourth Lake

^a Swimming, trailer dumping and showers are available at all campgrounds; playgrounds are available at all campgrounds except Crown Point; and boat launch is available at all campgrounds except Hearthstone Point.

campers were sent a mail survey and asked to identify important campsite attributes affecting their decision-making when selecting preferred campsites, and to rate the importance and their satisfaction with campsite attributes in 2000.

A simple random sampling technique was used to select a survey mailing list from 2000 camper registration cards with the help of NYSDEC staff. A total of 240 Adirondack campers were sent mail surveys in the year 2000 with 40 campers from each of six campgrounds. A modified Dillman mail survey technique (Salant and Dillman 1994) was used with up to two reminders being sent to non-respondents of the first mailing to ensure a high return rate.

Data was entered and all statistical tests were conducted using the Statistical Package for the Social Sciences (SPSS version 10.0 for windows). Survey questionnaires were analyzed using a weighted attribute approach (Carroll and Johnson 1990, Dawson and Buerger 1993) and an importance-performance analysis (Martilla and James 1997). A weighted attribute approach (WAA) for both the less and more-developed campgrounds was conducted to better understand the important attributes of the Adirondack campers' decision-making when selecting their preferred campsites. An importance-performance analysis (IPA) was conducted to develop an understanding of the inter relationship between important attributes and satisfaction (i.e., performance) among the Adirondack campers. T-test statistics were used to compare the means of the attributes of the two types of different campgrounds in order to check if there is any significant difference between the respondents from the two types of campgrounds.

Adirondack campers were asked to compare the relative importance of 17 attributes in their campsite-selection decision-making process. First, the 17 attributes were classified into seven categories based on their conceptual similarities. Then, the campers were instructed to distribute

a total of 70 points across the seven categories depending on how important the features or attributes were to the campers when selecting their ideal campsites:

STEP 1

Please assign a total of 70 POINTS in the following 7 categories.

_____ pts. **CROWDING is relatively low around the campsite**

...there are few other campers near my campsite...the distance between campsites is adequate for privacy...other campers do not make noise near my campsite

_____ pts. (continue through all seventh categories)

Second, the campers were instructed to distribute a sub-total of certain points across the attributes within each of seven categories (e.g., if a category has four attributes, a sub-total of points is 40) depending on how important the attributes are to the campers when selecting their ideal campsites. For example, the category above (a crowding-related concept category) can be assigned 30 sub-total points as follows:

STEP 2

Please assign a total of 30 POINTS to the following three campsite attributes.

Category: CROWDING is relatively low around the campsite

_____ pts. There are few other campers near my campsite

_____ pts. The distance between campsites is adequate for privacy

_____ pts. Other campers do not make noise near my campsite

The points for each attribute were calculated as follows:

$$P_{\text{attribute}} = P_{\text{category}} * (P_{\text{attribute-in-category}} / P_{\text{sub-total-of-category}})$$

$P_{\text{attribute}}$: Points for each attribute.

P_{category} : Points for each category out of the total 70 points (from Step 1).

$P_{\text{attribute-in-category}}$: Points for each attribute out of the sub-total points for that category (from Step 2).

$P_{\text{sub-total-of-category}}$: Sub-total points available for that category.

For example, the points for the attribute "there are few other campers near my campsite", were calculated for one respondent by the points they assigned to the "crowding-related concept category" (e.g., 25) multiplied by the points of that attribute (e.g., 8) out of the sub-total points of that category (e.g., 30). The resulting calculation is: $6.65 = 25 * (8/30)$

Study Results

Of the 240 campers that were sent surveys, 13 were undeliverable and 116 were returned (51.1% response rate).

The average importance rankings of the 17 attributes for the less and more-developed campgrounds are shown in Table 2 with differences in importance between the two

types of campgrounds (i.e., average scores of the less-developed campgrounds minus those of the more-developed campgrounds). In addition, the total rankings for both types of campgrounds are combined in order of importance. According to the results of the WAA, "amount of vegetation around campsite for shade and screening" is the most important attribute, "reasonable camping fee" is the next most important, followed by "access to the lake, pond, or river from the campsite" (table 2). The top five important attributes of the less-developed campgrounds are the same group as those of the more-developed campgrounds. The next five important attributes of the less developed campgrounds are grouped the same as those of the more developed campgrounds; similarly, the remaining seven important attributes are ranked in the same grouping.

The important campsite attributes of both types of campgrounds were reported similarly by respondents. However, four of the 17 attributes had statistically significant differences in terms of mean importance between the two types of campgrounds (i.e., t-test of means using separate variance estimate and a 2-tailed probability with $p < 0.05$): "amount of vegetation around campsite for shade and screening", "distance between campsites for privacy", "availability of other facilities", and "availability of boat-launching near the campsite" (table 2).

Table 2. The average weighted importance reported by respondents for 17 campsite attributes for less-developed and more-developed campgrounds and attribute rank order.

Attributes	Less developed campgrounds ^a	More developed campgrounds ^a	Average difference (L-M)	Total rank order
Amount of vegetation around campsite for shade and screening	10.0	8.1	1.9 ^b	1
Reasonable camping fee	8.2	9.0	-0.8	2
Accessibility to the lake, pond, or river from the campsite	5.6	6.6	-1.0	3
Visibility of the lake, pond, or river from the campsite	5.9	4.6	1.2	4
Distance between campsites for privacy	5.1	6.3	-1.2 ^b	5
Level ground in the campsites	4.1	4.2	-0.1	6
Other campers' noise near my campsites	4.7	3.8	0.9	7
Few other campers near my campsite	4.1	4.0	0.1	8
Availability of other facilities (hot shower, flush toilet, trailer dump, etc)	3.1	4.1	-1.0 ^b	9
Toilet located in nearby campsites	3.1	3.6	-0.5	10
Convenient location and good condition of fire-place	2.8	2.9	-0.1	11
Campsite size for accommodating larger camping equipment	2.5	3.1	-0.6	12
Availability of other recreational activities nearby (swimming, hiking, volleyball, etc)	2.5	3.1	-0.6	13
Availability of boat-launching near the campsite	2.8	1.4	1.4 ^b	14
Campground roads to easily access the campsite	2.3	2.7	-0.4	15
Availability of hookup for water or electricity on campsite	1.4	1.9	-0.5	16
Availability of boat-rental near the campsite	1.1	0.9	0.2	17

^a Numbers are the mean values of importance points for the attributes from a total of 70 points.

^b T-test of means with a significant difference at $p < 0.05$.

Table 3. The average weighted satisfaction reported by respondents for 15 campsite attributes for less-developed and more-developed campgrounds.

Attributes	Less developed campgrounds ^a	More developed campgrounds ^a	Average difference (L-M)
Reasonable camping fee	1.4	1.3	0.1
Toilet located near campsite	1.3	1.1	0.2
Level ground in the campsite	1.3	1.0	0.3
Lake accessibility from the campsite	1.2	1.1	0.1
Distance between campsites for privacy	1.3	0.9	0.4 ^b
Availability of other facilities (hot shower, flush toilet, trailer dump, etc)	1.3	0.9	0.4 ^b
Amount of vegetation around campsite for shade and screening	1.1	1.1	0.0
Campground roads to easily access the campsite	1.1	1.1	0.0
Availability of other recreational activities nearby (hiking, etc)	1.2	1.0	0.1
Campsite size for accommodating larger camping equipment	1.1	1.0	0.1
No crowding around campsite	1.1	0.9	0.2
Location near family or friends	0.9	0.9	0.0
Availability of boat-launching & rental	1.0	0.7	0.3
Visibility of the lake from the campsite	0.7	0.6	0.1
Availability of hookup on campsite	0.3	0.3	0.0

^a The numbers shown in the table are the mean values of performance score ratings for the attributes from -2 = very dissatisfied to 0 = neutral to 2 = very satisfied.

^b T-test of means with a significant difference at $p < 0.05$.

The Adirondack campers were also asked to rate their satisfaction with 15 attributes from their trip in the year 2000 using a five-point Likert scale: (-2) very dissatisfied; (-1) dissatisfied; (0) neutral; (1) satisfied; and (2) very satisfied. For the list of satisfaction attributes, two items were combined (availability of boat launching and boat rental near the campsite) from the importance list of attributes and two attributes were dropped (other campers' noise near my campsite and convenient location and good condition of the fireplace or fire ring).¹ Additionally, one new attribute was added (location of this campsite near family and friends).

The average satisfaction ratings by respondents for the 15 attributes are shown in Table 3. Two of the 15 attributes had statistically significant differences between mean satisfaction ratings from respondents using the less and more-developed campgrounds (i.e., t-test of means using separate variance estimates and a 2-tailed probability with $p < 0.05$): "distance between campsites for privacy", and "availability of other facilities".

In order to visually analyze the importance of campsite selection attributes and their satisfaction ratings, an importance-satisfaction graph was plotted since overall satisfaction in outdoor recreation is a function of visitor importance and satisfaction levels with specific aspects of the recreational experience. The importance and satisfaction means for each attribute are plotted on a four-quadrant grid. The y-axis of the grid represents the importance scale and the x-axis represents the satisfaction

scale. Each quadrant of the grid represents a particular management action. The four quadrants are classified as "Concentrate Here" (high importance, low satisfaction), "Keep up the Good Work" (high importance, high satisfaction), "Low Priority" (low importance, low satisfaction), and "Possible Overkill" (low importance, high satisfaction). The location of the attribute on the grid provides managers with a basis for future management decisions. The axes for this study were placed at the grand mean of all importance and satisfaction means as a central reference point (i.e., actual management objectives with target results are more helpful in actual management situations). A drawback of using the grand mean of means in the analysis is that attributes often fall on or very near the axes, and determining which quadrant they should be considered part of must be made on a situational basis. Based on the location of the campsite selection attributes in the IPA chart and the importance-satisfaction quadrants, results can be used to suggest management actions.

The importance ratings of the 14 important attributes (table 2) are graphed in Figures 1 and 2 with the campers' ratings of their satisfaction (table 3). The importance attributes used in Figure 1 and 2 were based on the results of WAA that distributed a total of 70 points among the 17 attributes (table 2). Only 14 attributes appear in the IPA analysis because several attributes did not have either an importance or a satisfaction measure (see previous discussion) and were dropped from further analysis. The IPA results of the two types of campgrounds were a little different from each other. The IPA graph of the less developed campgrounds

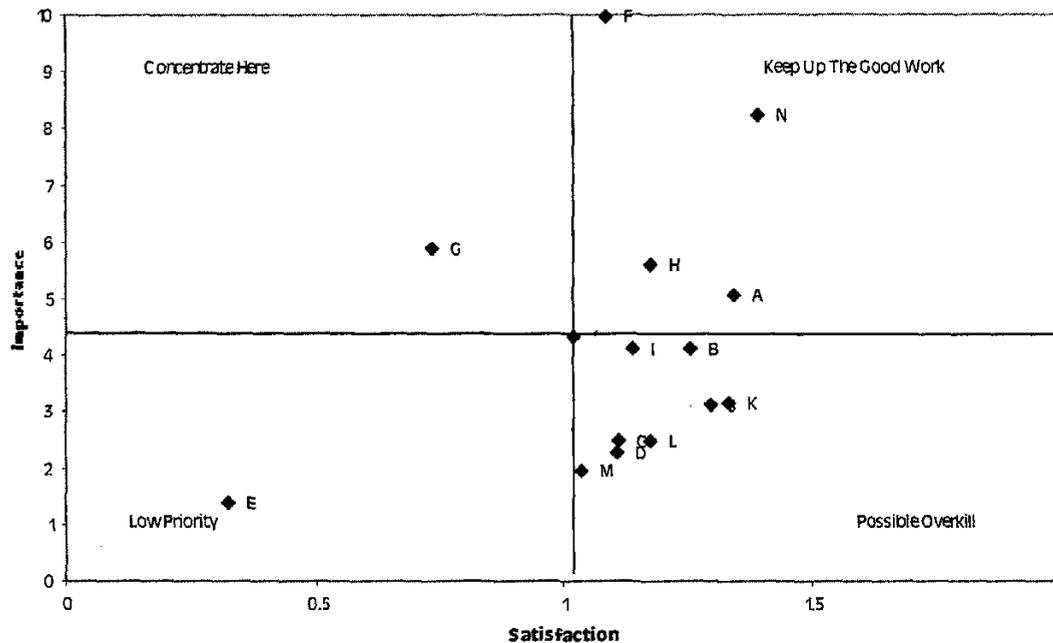


Figure 1 Importance-Satisfaction graph of 14 campsite selection attributes for the less-developed campgrounds in 2000

Legend for Figure 1

- | | | | |
|---|--------------------------------------------------------------|---|--------------------------------------------------------------------------------|
| A | Distance between campsites for privacy | H | Access to the lake, pond, or river from the campsite |
| B | Level ground in the campsite | I | No crowding in nearby campsite |
| C | Campsite size for accommodating larger camping equipment | J | Toilet located near campsite |
| D | Campground roads to easily access the campsite | K | Availability of other facilities (hot shower, flush toilet, trailer dump, etc) |
| E | Availability of hookup on campsite | L | Availability of other recreational activities nearby (hiking, etc) |
| F | Amount of vegetation around campsite for shade and screening | M | Availability of boat launching & rental |
| G | Visibility of the lake, pond, or river from the campsite | N | Reasonable camping fee |

shows one attribute (visibility of the lake, pond or river from the campsite) falling into the "Concentrate Here" quadrant indicating that the less-developed campground users consider this attribute very important for camping campgrounds, two attributes (distance between campsites for privacy; and visibility of the lake, pond or river from the campsite) fall into the "Concentrate Here" quadrant (figure 2).

In the IPA graph of the less-developed campgrounds, four attributes (distance between campsites for privacy; amount of vegetation around campsite for shade and screening; access to the lake, pond, or river from the campsite; and reasonable camping fee) fall into the "Keep Up The Good Work" quadrant indicating that the less-developed campground users consider these attributes very important and highly satisfying (figure 1). In the case of the more-developed campgrounds, three attributes (amount of

vegetation around campsite for shade and screening; access to the lake, pond, or river from the campsite; and reasonable camping fee) fall into this quadrant (figure 2).

In the IPA graph of the less-developed campgrounds, one attribute (availability of hookup on campsite) falls into the "Low Priority" quadrant indicating that the less-developed campground users do not consider this attribute very important nor highly satisfying for their camping experience and, thus, should not receive high priority for management (figure 1). In contrast, the IPA graph of the more-developed campground shows seven attributes (level ground in the campsite; campsite size for accommodating larger camping equipment; availability of hookup on campsite; no crowding in nearby campsite; availability of other facilities; availability of other recreational activity nearby; and availability of boat-launching and rental) falling into this quadrant (figure 2).

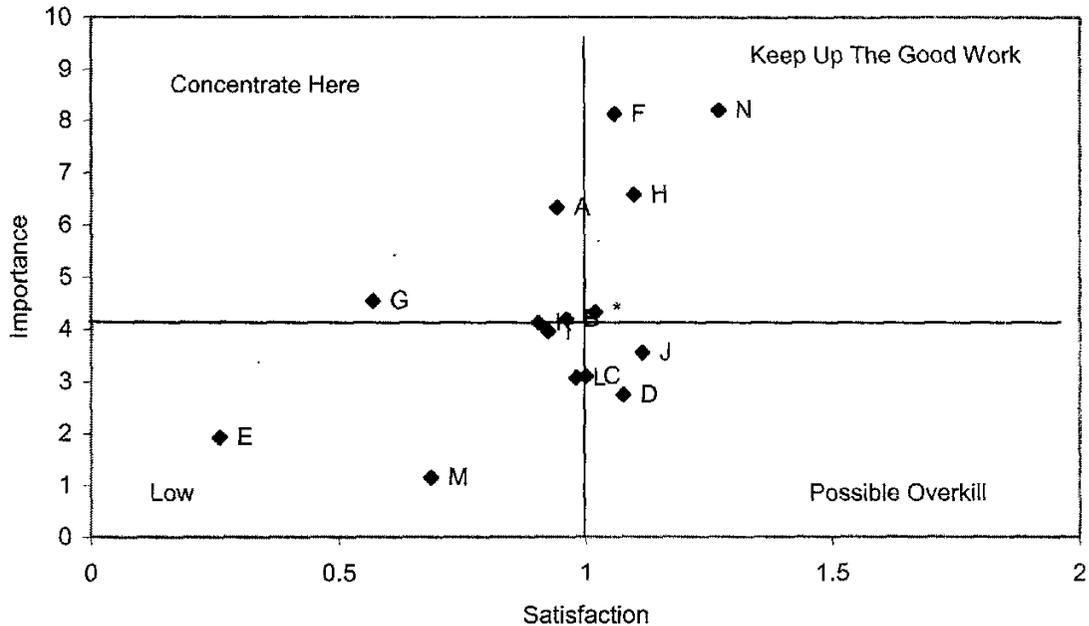


Figure 2. Importance- Satisfaction graph of 14 campsite selection attributes for the more-developed campgrounds

Legend for Figure 2

- | | |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| A Distance between campsites for privacy | H Access to the lake, pond, or river from the campsite |
| B Level ground in the campsite | I No crowding in nearby campsite |
| C Campsite size for accommodating larger camping equipment | J Toilet located near campsite |
| D Campground roads to easily access the campsite | K Availability of other facilities (hot shower, flush toilet, trailer dump, etc) |
| E Availability of hookup on campsite | L Availability of other recreational activities nearby (hiking, etc) |
| F Amount of vegetation around campsite for shade and screening | M Availability of boat launching & rental |
| G Visibility of the lake, pond, or river from the campsite | N Reasonable camping fee |

In the IPA graph of the less-developed campgrounds, eight attributes (level ground; campsite size; campground roads; no crowding in nearby campsite; toilet location; availability of other facilities; availability of other recreational activities nearby; and availability of boat-launching and rental) fall into the "Possible Overkill" quadrant indicating the less-developed campground users do not consider these attributes to be as important while the campers are very satisfied with them (figure 1). The IPA graph of the more-developed campgrounds, in contrast, shows two attributes (campground roads; and toilet location) in this quadrant (figure 2)

Discussion

Among the four attributes that had statistically significant difference in importance between the respondents from the less and more-developed campgrounds, two attributes were

ranked highly compared to the others: (1) respondents from less developed campgrounds placed more importance on the amount of vegetation around campsite for shade and screening than did others (ranked 1 overall); and (2) respondents from more developed campgrounds placed more importance on the distance between campsites for privacy than did others (ranked 5 overall) (table 2).

The respondents from less-developed campgrounds regard amount of vegetation around campsite for shade and screening more important than the more-developed campground users and this attribute is located near the "Concentrate here" quadrant indicating that respondents consider this attribute very important, but not highly satisfying (Figure 1). This suggests that managers of the less-developed campgrounds may need to re-evaluate the amount of vegetation maintained around the campsites.

The respondents from more-developed campgrounds consider the distance between campsites for privacy more important than the less-developed campground users and highly satisfying)(figure 2). This response may be due to the situation that more-developed campgrounds have relatively more campsites and that may, in turn, cause campers to perceive more crowding and less physical or psychological space from their campsite neighbors than the less-developed campgrounds. Respondents using the more-developed campgrounds reported another crowding-related attribute "no crowding in nearby campsite" to be located near the "Concentrate here" quadrant (figure 2) while respondents from the less-developed campgrounds reported it near the "Keep Up The Good Work" quadrant (figure 1). Managers of the more developed campgrounds may need to consider more physical space between adjacent campsites (Hultsman et al. 1998, Cooper 1992).

One attribute (visibility of the lake, pond, or river from the campsite) was reported by respondents from both the less and more-developed campgrounds as within the "Concentrate here" quadrant (figure 1 and 2). Managers need to consider this result in campground design and management as the visibility of ponds, lakes and rivers to campers is an important attribute to their satisfaction. Overall, the results of this study show that four campsite attributes (visibility of the lake, pond, or river from the campsite; distance between campsites for privacy; amount of vegetation around campsite for shade and screening; no crowding in nearby campsite) are of concern to campers and should be further study to investigate how important and satisfied campground customers are with their experiences. This study formed the basis for a more in-depth investigation in 2001 to identify and measure the types of trade-off decisions made by campers at NYSDEC campgrounds in the Adirondack Park. The 2001 study will use a conjoint analysis technique in a mail survey with verbal and visual approaches to describing the campsite attributes (Green and Srinivasan 1978).

Most of the campsite attributes surveyed in this study in 2000 were reported to be very important and highly satisfying by the respondents. In addition, overall respondents in this study within the Adirondack Park were satisfied or very satisfied with the facilities and conditions they experienced in the year 2000. Overall, our study results indicate that the NYSDEC staff, as well as the volunteers, served the campers well at the six campgrounds studied in the summer of 2000.

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